Vibrant Vietnam
Forging the Foundation of a High-Income Economy
Background Papers
May 2020
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<tr>
<td>ASEAN</td>
<td>Association of Southeast Asian Nations</td>
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<tr>
<td>CPTPP</td>
<td>Comprehensive and Progressive Agreement for Trans-Pacific Partnership</td>
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<tr>
<td>EVFTA</td>
<td>European Union-Vietnam Free Trade Agreement</td>
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<tr>
<td>EVN</td>
<td>Vietnam Electricity</td>
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<tr>
<td>FDI</td>
<td>foreign direct investment</td>
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<td>GDP</td>
<td>gross domestic product</td>
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<td>GSO</td>
<td>Government Statistics Office</td>
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<td>IMF</td>
<td>International Monetary Fund</td>
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<td>IP</td>
<td>intellectual property</td>
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<td>IPP</td>
<td>independent power producer</td>
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<td>IPR</td>
<td>intellectual property rights</td>
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<td>NTPs</td>
<td>Nationally Targeted Programs</td>
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<td>O&amp;M</td>
<td>operations &amp; maintenance</td>
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<tr>
<td>OECD</td>
<td>Organization for Economic Co-operation and Development</td>
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<td>PISA</td>
<td>Program for International Student Assessment</td>
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<td>PPPs</td>
<td>public-private partnership</td>
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<tr>
<td>R&amp;D</td>
<td>research and development</td>
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<tr>
<td>RONET</td>
<td>Road Network Evaluation Tool</td>
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<td>SBV</td>
<td>State Bank of Vietnam</td>
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<td>SEDP</td>
<td>Socio-Economic Development Plan</td>
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<td>SEDS</td>
<td>Socio-Economic Development Strategy</td>
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<td>SOEs</td>
<td>state-owned enterprises</td>
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<td>TVET</td>
<td>technical and vocational education and training</td>
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<td>WTO</td>
<td>World Trade Organization</td>
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BACKGROUND PAPERS
BACKGROUND
PAPER 1

Navigating a Changing Domestic and Global Environment

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1 This is a supporting paper prepared for the report Vibrant Vietnam: Forging the Foundation of a High-Income Economy. The paper was written by Sebastian Eckardt with inputs from Quang Hong Doan, Alwaleed Fareed Alatabani, Asya Akhlaque, Ketut Ariadi Kusuma, Katia D’Hulster, Sylvia Solf, Trang Thu Tran, Viet Tuan Dinh, Helle Buchave, Giang Tam Nguyen, and Zsolt Bango.
The formulation of Vietnam’s development strategy for the next decade needs to consider key global and domestic trends that are expected to shape Vietnam’s future development trajectory. On the one hand, profound changes in the global landscape present serious challenges to Vietnam’s export-led and foreign direct investment-driven model, and hence require radical changes in development policy during 2021–30 to seize emerging opportunities and manage downside risks. On the other hand, Vietnam is at a turning point where some of its traditional growth drivers are gradually weakening, and successful transition to new drivers will be critical for Vietnam to sustain its stellar performance.

Navigating a changing global landscape

Vietnam’s export-led model will face serious challenges associated with the rising uncertainty in global production and trade, compounded by rising protectionism. Over the past decade, global gross domestic product (GDP) and trade and investment flows have experienced a secular slowdown, weighed down by less favorable demographics, and subdued investment and productivity growth. Global GDP growth declined to 2.5 percent, which is about 1 percentage point less than a decade ago. The slowdown in global GDP growth will likely be accompanied by slower trade, especially of goods and weaker cross-border investment flows, that are exacerbated by trade tensions around the world. The volume of world trade in goods and services has grown by just over 3 percent a year since 2012, less than half the average rate of expansion during the previous three decades. As a result, the global tailwind that propelled Vietnam’s economy in the past three decades is likely to be weaker in the 2020s.

The emergence of disruptive technologies is creating new opportunities and risks. The increased adoption of big data, artificial intelligence, and advanced technologies such as robotics and 3D printing will reduce the importance of cheap labor in the location decision of multinationals, which has been Vietnam’s main comparative advantage. Vietnam may no longer be able to emulate the success of East Asian tiger economies by relying mostly on foreign investment and manufacturing exports to propel growth. At the same time, the diffusion of new technologies and the emerging digital economy offer opportunities for technological catch-up and leapfrogging.
Rising structural constraints to potential growth

Vietnam’s past performance has greatly benefited from favorable demography and sectoral restructuring, but these drivers are running their course. On average, these two factors accounted for approximately three-fourths of Vietnam’s per capita output growth during 1996–2012. The big decline in the fertility rate led to a sharp decline in the age-dependency ratio, which reached the turning point in 2013 and started to increase after that, reflecting Vietnam’s fast aging process. The shift from low-productive agriculture to relatively more productive manufacturing and service jobs represents another source of productivity gains, equivalent to about 3.4 percentage points of GDP growth per year during 1996–2012. These two weakening traditional drivers will contribute to lowering Vietnam’s long-term potential growth to an estimated rate of 6.5 percent (figure 1.1, panel A).

Vietnam’s rapid growth has, however, come with notable costs for natural assets and environmental quality. The extensive use of natural resources (land, water, mines, forests) and the rapid industrial process have generated significant costs for the economy. These costs are tentatively estimated to be around 6 to 10 percent of GDP. They have also translated into high levels of air and water pollution, affecting the quality of life of millions of households. Recently, the impact of global climate change has exacerbated the pressure on the environment as Vietnam has been ranked as one of the most vulnerable countries in the world. The negative economic impacts of climate change are estimated to be as high as 2 to 3 percent of global output by 2050, even under conservative assumptions. There is a risk that current economic growth will be built at the expense of future generations, hence, Vietnam needs to make the pivotal shifts to reduce the hidden cost and risk exposure associated with declining environmental quality and climate change.

FIGURE 1.1. Vietnam’s declining potential growth

![Diagram showing Vietnam’s declining potential growth](image)
Framing a growth strategy for the new era

Achieving the ambition of becoming a high-income country by 2045 requires Vietnam to sustain rapid growth of around 7 percent over the next two decades. Without decisive reforms to boost investment and productivity, Vietnam’s potential growth would continue to decrease, and is estimated to reach 6.3 percent in the next decade and then gradually decline to 5.5 percent by 2041–45. The Socio-Economic Development Strategy 2021–2030 is an important opportunity for Vietnam to make structural shifts to accelerate growth and build the foundation for a high-income society by 2045 (figure 1.1, panel B).

The new strategy needs to embrace the quality, not just the speed, of growth. Vietnam needs to shift from a strategy focused primarily on the pace of growth to one that simultaneously improves the quality of growth. Economic growth will need to rely increasingly on higher productivity to ensure it can be sustained without causing macroeconomic and fiscal imbalances. Growth will also need to continue to be inclusive, enabling all citizens to contribute to and participate in Vietnam’s rising prosperity. And finally, growth should not come at the expense of the depletion of Vietnam’s natural resources and must adapt to the increasing impacts of climate change.

Figure 1.2 presents a growth framework for Vietnam during 2021–2030 that will have to be based on a balanced accumulation and efficient and productive allocation of different types of capital—physical, human, and natural—as well as innovation, which in turn will be driven in large measure by deeper institutional and market reforms. As the long-term growth projections in figure 1.1 indicate, Vietnam still has plenty of room (and need) to accumulate and invest in productive assets, including in human, physical, and natural capital. This investment should largely be driven by private sector firms, but Vietnam also needs quality investment in sustainable infrastructure. Equally, high-quality human capital investment and a skilled, healthy, and flexible labor force will be crucial to moving up the value chain. Vietnam needs to also protect its “natural infrastructure”—its land, sea, rivers, air, and forests—not only to sustain a livable environment, but also because these natural assets generate significant economic benefits in agriculture, tourism, and other sectors. Finally, and perhaps most importantly, Vietnam will require productivity growth, which in turn requires the efficient allocation of resources across sectors and firms (from less to more productive uses) as well as unlocking within-firm productivity growth through innovation and technology adoption.

![Figure 1.2. Growth framework for 2021–30](image-url)
Policy Note

Introduction

Over the past 30 years, economic and institutional reforms together with investments in physical and human capital have yielded a dramatic six-fold increase in Vietnam’s per capita income. This extraordinary growth took place as Vietnam gradually shifted from a mostly closed and state-controlled economy to a more competitive, market-oriented system that is highly integrated into the global economy. Economic restructuring saw millions of Vietnamese move from villages to cities and from subsistence agriculture to wage-paying jobs in services and industry. Throughout the country, new and rehabilitated infrastructure connected people with jobs, markets, services, and information. Investments in education and health not only succeeded in improving the quality of life of millions of Vietnamese, but also enabled them to participate productively in Vietnam’s development process.

Despite its exceptionally rapid development, Vietnam’s transition to becoming a prosperous and modern economy has only just begun. Vietnam’s per capita income today is still only 40 percent the global average, about 30 percent of the regional average among ASEAN economies and a mere 5 percent of the average of high-income economies. While not an end in itself, sustaining strong growth is therefore a necessary condition for Vietnam to continue on its convergence path to rising prosperity and social progress. But Vietnam’s future transformation cannot be solely focused on achieving higher output. The economic, social and environmental sustainability of growth must take a central role, even more so than in the past. This means growth will need to increasingly rely on higher productivity to ensure it can be sustained without causing macroeconomic and fiscal imbalances. Growth will also need to continue to be inclusive enabling all citizens to contribute to and participate in Vietnam’s rising prosperity. And finally, growth should not come at the expense of depletion of Vietnam’s natural resources while adapting to the increasing impacts of climate change. In sum, this means shifting from a strategy focused primarily on the pace of growth to one that simultaneously improves the quality of growth.

The next decade offers a unique window of opportunity. The level and quality of growth in the decade matters a great deal for Vietnam’s long-term development trajectory. Given its open economy, high domestic savings rate and still young and largely rural labor force, Vietnam is well-positioned to enjoy years of sustained and high growth. But success cannot be taken for granted. Fully capitalizing on its favorable fundamentals will require a relentless focus on policy and institutional reforms aimed to engender higher productivity growth, ensuring efficient investment in human and physical capital, and sustainable and efficient use of Vietnam’s natural assets. At the same time, Vietnam will also need
to navigate a changing global terrain where shifting global trade patterns, disruptive technologies, rapid innovation and climate change are both reshaping opportunities and creating new risks.

This report aims to inform the government’s strategy to achieve rapid and high-quality growth during the upcoming SEDS 2021-30 and SEDP 2021-25. Building on an integrated analysis of key global and domestic trends that are expected to shape Vietnam’s development trajectory in the coming decade, this report presents policy options to seize emerging opportunities and manage downside risks.

Adapting to a changing global context

A track record of rapid and inclusive growth

Vietnam is enjoying its 30th year of virtually uninterrupted rapid economic growth (figure 1.3). The economy has expanded at an average of nearly seven percent since 1988 with growth only dipping below five percent once during this period.² Few countries have grown that fast for so long. As a result, per capita income has increased almost six fold since 1988. While remaining below the highs recorded in the 1990s, economic growth in recent years has been relatively resilient, broad-based, and job-friendly. After bouts of economic and financial turbulence following the 2008 global financial crisis, macroeconomic stability has been restored and Vietnam has emerged as a thriving lower middle-income economy and export powerhouse. Foreign investors are beating a path to its door, demanding to participate in and contribute to its growing prosperity.

![Sustained rapid growth](image_url)

Source: World Bank staff estimate based on official data.

Vietnam’s growth performance was driven by a combination of factors. First, growth was propelled by favorable demographic conditions, with rapid declines in fertility, and consequently a fall in dependency rates and a rise in the labor force. This demographic dividend was compounded by human capital investments. In fact, Vietnam started its reform over 30 years ago with levels of human

² Growth exceeded 5 percent every single year, except for 1999 when - following an external shock emanating from the Asian financial crisis GDP growth dipped to 4.9 percent.
capital that were much higher than countries at comparable levels of income—and it has seen dramatic further improvements since. Second, Vietnam has also benefited from persistently high domestic savings rates which allowed it to maintain high physical investment rates. Vietnam’s past growth was in large measure driven by capital deepening—a substantial accumulation of physical capital applied to Vietnam’s large stock of medium-skilled labor. Third, Vietnam experienced productivity growth driven by pragmatic, pro-growth policies. Growth in the 1990s was largely the product of agricultural productivity gains which came in the wake of decollectivization and the creation of individual land use rights. In the first decade of the new millennium, growth continued with the emergence of private sector enterprises after severe constraints on business registration were relaxed in 2000. Job creation was driven by strong growth in the service sector and export oriented manufacturing with the latter being propelled by decisive steps at trade liberalization and in particular Vietnam’s accession to the WTO in 2007. Capitalizing on its comparative advantage in labor intensive manufacturing, Vietnam attracted a significant and steady inflow of foreign direct investment (FDI).

**FIGURE 1.4.** Real consumption per capita in 2010 prices deciles

![Graph showing real consumption per capita in 2010 prices deciles](source: World Bank staff estimate based VHLSS.

Vietnam’s growth has not only been rapid but also inclusive. As can be seen from Figure 1.4, economic growth translated into strong consumption growth and welfare improvements across the income distribution. This is direct reflection of Vietnam’s employment driven growth pattern. Over the last twenty years, every 1 percent increase in output has been associated with the creation of roughly 160 thousand new jobs, driven by the rise of labor-intensive export-driven manufacturing and expanding employment opportunities in service sectors, predominantly in the private sector. Rising labor productivity associated with these shifts to more productive jobs in turn led to growing wages which are now the largest income sources among households in the bottom quintiles of the income distribution. As a result, poverty decline rapidly from close 60 percent in 1993 to less than 3 percent today (according to international poverty line at US$1.90 per day) while more than 13 percent of the population has joined the global middle class (with per capita spending of more than US$ 15 per day). Furthermore, Vietnam’s model of FDI-driven growth was particularly beneficial to women, as FDI firms clustered in such traditionally female-intensive sectors as textiles and apparel. By 2015, women made up 68 percent of workers employed in FDI firms, and consequentially were more likely than men to be employed in contract wage employment.3 Despite this overall inclusive growth pattern, poverty remains high among Vietnam’s ethnic minorities which now account for more than 80 percent of the remaining poor. Significant gender gaps also persist, though improvements have

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been made in recent years. Women earn 12.6 percent less than men who share their qualifications, age, ethnicity and location, and women remain disproportionately employed in low-wage occupations within sectors.

**Sustaining this rapid and inclusive growth will require addressing a confluence of external and domestic factors that shape Vietnam’s growth prospects in the next decade and beyond.** Domestically, the underlying trend growth remains subdued, reflecting the combined effect of a long-term deceleration in productivity, labor force, and investment growth, albeit to different degrees. At the same time, Vietnam will need to shift to a growth pattern that reduces the strain on the environment. Globally, shifting trade patterns, rapidly changing technologies and climate change present both opportunities for Vietnam but also new risks. The subsequent sections will analyze these key domestic and global trends and draw implications for Vietnam’s growth and development strategy going forward.

**Navigating a changing global landscape: Seizing opportunities and managing risks**

**FIGURE 1.5. Secular slowdown in global growth**

![Secular slowdown in global growth chart](image)

*Source: World Bank staff estimate.*

Vietnam will have to navigate a global landscape that is likely to change profoundly over the next decade. There are signs that the global environment may become more challenging. To start, global GDP, trade and investment flows have experienced a secular slowdown, weighed down by less favorable demographics, subdued investment and productivity growth. The impact of weaker global demand on Vietnam may, however, be at least partially offset by rising consumer demand across Asia where large populations will continue to enjoy growing incomes and stronger purchasing power. Furthermore, disruptive technologies are expected to simultaneously create opportunities for faster technological catch-up or even leapfrogging, but also threats to traditional labor-intensive manufacturing. Meanwhile, additional challenges include historically high levels of indebtedness in both advanced and major emerging economies, which not only constrain space for investment, but also create risks of renewed financial market stress, instability and potential crisis. Unsustainable production and consumption patterns are also putting pressure on global ecosystems causing long-lasting, and in some cases irreversible, environmental damage—with all the associated economic costs. To top this off, climate change is expected to increase the frequency and severity of natural disasters, driving up the costs of prevention and response. As effective responses to these global megatrends would entail stronger global collective action and cooperation, their costs may be exacerbated by heightened geo-political tensions, coupled with waning public support for global integration and declining trust in institutions, which could weaken the international rule-based system over the next decade.
**Global potential growth has steadily declined over the past decade.** Global GDP growth declined to 2.5 percent, which is about 1 percentage point less than a decade ago, while potential growth estimates declined to 1.4 from 2.2 percent in advanced economies and to 4.8 from 5.9 percent in emerging markets (Figure 1.5). A slowdown has even taken pace in the East Asia and Pacific region (EAP), which had experienced growth rates twice as high as the emerging market and developing economy (EMDE) median even since the 1997 Asian financial crisis. In large part, this EAP slowdown reflects slowing potential growth in China, from around 10 percent during 2003–07 to 7 to 8 percent during 2013–17. The slowdown in global potential growth over the past decade reflected weak investment growth, easing labor supply and slowing productivity growth.

**Looking ahead, the global economy is facing formidable challenges, with growth expected to be both tepid and subject to mounting downside risks.** Unless there is a surprise surge in productivity or investment, global potential GDP growth—the growth rate the global economy could sustain at full employment and capacity utilization—is projected to further moderate from 2.5 percent in 2013-17 to 2.3 percent over the next decade. Potential growth in advanced economies is projected to slow by 0.1 percentage point, from 1.4 percent to 1.3 percent and in emerging economies by 0.5 percentage point from 4.8 percent to 4.3 percent. The EAP region is expected to experience a broad-based slowdown in potential growth, from the current rate of 6.7 percent to a (still-robust) rate of around 6 percent during the next decade. Demographic trends that dampen labor supply are set to continue in China, and will also characterize Thailand and, of course, Vietnam (see also next section). A slowing pace of capital accumulation is also projected to reduce potential growth in the region with the steepest slowdown in investment expected in China, where policy efforts will continue to be needed to rebalance the economy and rein in credit growth. Meanwhile, productivity growth prospects are challenged by multiple factors including maturing global value chains (China, Malaysia), slowing human capital accumulation in lower-income economies with limited fiscal space (Cambodia, Lao PDR) and slowing factor reallocation (China, Malaysia, Thailand and also Vietnam).

**Figure 1.6. World trade (Index = 1 in 2000)**

**Figure 1.7. Trade in goods and services (Index: 2005 = 100)**

Source: World Bank staff estimate based on WTO data and World Development Indicators.
The slowdown in global GDP growth will likely be accompanied by slower trade, especially of goods and weaker cross border investment flows (Figure 1.6 and Figure 1.7). The volume of world trade in goods and services has grown by just over 3 percent a year since 2012, less than half the average rate of expansion during the previous three decades. Manufactured goods trade is expected to decelerate and its share in the total global trade will shrink. Several factors have been put forward for the slowing growth in global trade including maturing global and regional value chains, weaker investment activity (which tends to be trade intensive) and a slower pace of global trade liberalization, which had stalled even before the recent surge in trade disputes, but will likely be compounded by rising protectionism. In contrast, trade in services continues to expand due in part to digital technologies that have made many services more tradable, although barriers to services trade remain high, especially in Asia. Meanwhile, data globalization is increasing rapidly with cross border data flows expanding exponentially, transporting information, ideas and services across the world.

Despite the projected slowdown, Asia will continue to emerge as a demand hub of the world. As India and China continue to take up a rising share of world output as well as final demand, the economic center of gravity will continue to shift to Asia. Long-term growth projections by the OECD suggest that by 2060, India and China alone will account for close to half the world economy—up from less than a third today. The ASEAN region which already has a combined GDP of more than US$2.7 trillion will also continue to grow, with GDP expected to more than double over the next two decades, despite slower medium-term growth prospects. In conjunction with convergence in GDP, the Asian consumer class will become a major source of final demand. The shift of economic power to Asia will have profound effects on the direction, pace and scope of future trade and investment flows. Being right in the center of this dynamic region, will provide Vietnam with opportunities to attract investment and boost exports which may at least partially offset the general slowdown especially in more traditional markets in advanced economies.

**FIGURE 1.8.** More advanced economies invest more in automation… …and emerging economies start to deindustrialize at lower levels of income than in the past

Source: World Bank staff estimate based on data International Federation of Robotics and World Development Indicators.

Source: World Bank staff based World Development Indicators.
Accelerating technological change will create both opportunities and risks. There is little doubt that the pace of technological innovation is accelerating with the advent of big data, artificial intelligence and advanced manufacturing technologies including robotics, 3D printing, and smart manufacturing. The question is how deep that impact is, and how broad the consequences will be for economies, specific sectors and labor markets. Evidence on the pace of adoption and impact is still sparse, but the cost of these technologies is falling and adoption seems to be increasing. As can be seen from Figure 1.8, the stock of industrial robots, for example, has risen rapidly, especially in labor-scarce high-income economies, including Japan, South Korea but even in China. There is also some evidence that emerging markets are starting to deindustrialize at lower levels of income and earlier stage of their development than was the case in now high-income economies. For example, the share of manufacturing jobs in Germany peaked 1970 at 35 percent of the labor force when Germany had already achieved high income status. In contrast, China’s reached the manufacturing peak in 1996 with manufacturing share below 20 percent and at a level of income that was at fraction of Germany’s income in 1970. If some of the observed trends persist, they may present serious challenges to low-cost labor countries like Vietnam that depend on abundant and relatively cheap labor as a core comparative advantage. Vietnam may no longer be able to emulate the success of east Asian tiger economies by relying mostly on foreign investment and manufacturing exports to propel growth. At the same time, the diffusion of new technologies and the emerging digital economy (which tend to be characterized by lower capital intensity and entry barriers than traditional industries) offer opportunities for technological catch-up and leapfrogging. There are also new policy and regulatory challenges posed by some of digitalis technologies and emerging business models, including how to tax digital businesses and ensure competition in an environment with large returns to scale in terms of network effects and access to big data.

Aside of anticipated structural shifts in the global economy, historically high levels of indebtedness could lead to renewed episodes of substantial financial market stress and economic crises with significant repercussions on the global economy. Debt levels have increased rapidly over the past decade. Emerging market debt is now 90 ppt of GDP higher than in 2008. Financial stress especially in large advanced or emerging economies could lead to significant contagion effects if accompanied by heightened investor risk aversion and portfolio relocations among broad asset classes. Episodes of disorderly financial market developments could be triggered or amplified by several factors. Slowing activity in major economies could lead to a rapid deterioration in financial market sentiment, a re-pricing of risks, a sudden pullback by investors and a spike in bond spreads for more vulnerable borrowers. Shifts in expectations about monetary policy across major economies, sharp commodity price movements or idiosyncratic concerns about debt sustainability or domestic policy uncertainties could lead to disruptions in capital flows to emerging markets. Currency depreciations could amplify credit default risks, especially in countries with large external debt exposures. As in past crisis, contingent liabilities in the banking sector could also spill over to public sector balance sheets at a time when public debt levels remain elevated. The risks of financial instability leading to protracted weakening of the global economy is particularly pronounced because balance sheets of major central banks remain extended because of past or ongoing quantitative easing and real interest rates in major economies remain low and some cases negative. This would limit the ability to counter potential crises with monetary stimulus.
Amid slower growth, weak investment and rising debt, real interest rates, especially in advanced economies are at historically low levels. Real interest rates have been on a long-term downward trend which has been broad-based, both across countries and across asset classes. Yields on government securities have turned negative in major economies, including Japan and more recently part of the Eurozone. Reflecting a search for yield, the decline in risk-free rates has been mirrored in lower returns on emerging market debt, corporate bonds, and equities. Different explanations have been put forward to account for the excess of savings over investment, including demographics, weak productivity growth, low capital intensity of new service industries, declining cost of capital goods, debt deleveraging and persistent, policy induced global imbalances. Whatever the cause, low real interest rates reflect subdued medium-term growth expectations and will limit the ability of central banks to counter potential crisis with additional monetary stimulus. And not all countries have the necessary fiscal space to act decisively in a possible downturn.

A rising world population together with unsustainable production and consumption patterns are putting pressure on global ecosystems. An estimated quarter of the world’s land surface was degraded because of soil erosion, salinization and other factors, and the stress on water use is especially acute, with an estimated two-thirds of global population projected to live in areas of moderate-to-severe water stress. Atmospheric concentrations of carbon dioxide, a leading greenhouse gas, continue to rise, with emissions expected to triple by 2100 in the absence of action. This, in turn, has contributed to an increase in global surface temperature by 0.8 degrees since 1900, a rise in sea levels, ocean acidification and an increase in frequency and intensity of extreme weather events. Internationally recognized models predict (with high confidence) that global warming is likely to reach 1.5°C between 2030 and 2052 if emissions continue to increase at the current rate. This climate change, in turn, will have considerable negative economic impacts, as even under conservative assumptions, the impact is expected to be as high as 2-3% of global output by 2050. For countries like Vietnam, this can mean greater exposure to climate risks if concerted action is not taken to adapt to lowering emissions.

Geopolitical tensions may erode trust in the rule-based international system and hamper global collective action at a time when it may be needed most. The described global megatrends will call for even stronger global collective action and cooperation to tackle challenges and to mitigate risks. However, public support for global integration and for the institutions underpinning integration has been waning, especially among advanced economies. Rising economic nationalism and populism could lead to a protracted period of de-globalization in the next decade, reversing the tide of globalization that has been the dominant movement in the world economy since the early 1980s.

While not inevitable, deep-seated tensions could lead to a process of decoupling of the World’s leading economic powers. There are signs that this decoupling is already underway and

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4 Current estimates suggest that atmospheric concentration of carbon dioxide has risen from 280 parts per million (ppm) in pre-industrial era to 400 ppm in 2013 – a rise that makes the level at its highest in the last 800,000 years.
will likely continue, whatever the outcome of the recent trade disputes. For example, China’s share of US total trade (imports plus exports) peaked at just over 16% in 2017 and declined by nearly a percentage point in 2018. China’s direct investment in the US also plunged to just US$5bn in 2018 from US$29bn in 2017. Businesses and investors—especially in domains considered strategic such as telecommunications, payments and other infrastructure—are facing increased scrutiny from policymakers and regulators, and market access may decline unless there is a major initiative to reinvigorate global standard setting, governance and, ultimately, trust. At the same time, the world economy has become so deeply integrated across trade, investment, finance and technology that any drive to decouple will inevitably run into limitations posed by the enormous economic costs associated with disentangling these deep connections.

**Although the precise direction and pace of these global developments is hard to predict, Vietnam will need to position itself to take advantage of the opportunities and manage the downside risks associated with these potentially dramatic changes.** Elevated risks and heightened uncertainties call for an adaptable policy framework. They underscore the critical need for sound macroeconomic management to provide for adequate policy buffers to absorb potential shocks together with a renewed drive to bolster higher and sustainable growth, mitigate climate change-related risks, and adopt policies to harness the benefits of new technologies. Vietnam should also continue to engage in regional and global governance institutions to foster resilience of the economy amid increased global uncertainty.

**Domestic context: Rising structural constraints to potential growth**

While Vietnam’s recent growth performance is the envy of many, Vietnam’s underlying long-term potential growth has also been on a declining trend. Estimates of Vietnam’s potential growth—the growth rate the economy can sustain at full employment and capacity utilization—suggest it has moderated to around 6.5 percent. This reflects the fact that some of the drivers that propelled Vietnam’s past performance are starting to lose steam. Vietnam’s population is young but is aging at an unprecedented pace. As a result, labor force growth is already slowing. Tepid productivity and sluggish investment growth also weigh on Vietnam’s growth potential. This growth slowdown in Vietnam appears to be premature compared to other East Asian economies that sustained average growth rate of 7 percent when they were at Vietnam’s current income level. Consistent with this, Vietnam’s current potential growth is too low for Vietnam to achieve its ambitions of achieving upper middle-income status by 2035 and high-income status by 2045 (Figure 1.9 and Figure 1.10). For Vietnam to meet its aspiration, it will need to take steps to increase potential growth in the next decade.
Productivity growth—the main driver of GDP growth in the early phase of Vietnam’s transition—remains subdued. Owing to expansion of the FDI sector and to workers shifting from agriculture to services and manufacturing, productivity growth has recovered somewhat in recent years. However, it is still relatively weak, reflecting persistent inefficiencies in the allocation of resources in the economy. Growth accounting across a range of assumptions presents a picture of generally modest rates of total factor productivity growth in the last decade, although there have been signs of recovery in recent years. While converging, average labor productivity in the economy has been lagging GDP growth, although there are vast differences in productivity levels and growth rates between sectors and between different firms within sectors (Figure 1.11).

Investment growth has also slowed markedly. At around 26 percent, Vietnam’s gross capital formation has fallen below its long-term trend. As a result, Vietnam has, over the past six years, generated excess savings that are not absorbed domestically (reflected in Vietnam’s current surplus). While private sector investment, domestic and foreign, remains relatively buoyant, state sector investment has slowed markedly in recent years, reflecting fiscal constraints and Government efforts to rein in public debt. While this is a correction from excessive investment rates prior to the 2008 global financial crisis, slower capital accumulation is adding downward pressure to productivity and potential output growth. Because Vietnam is still a relatively capital-scarce economy, private and public capital accumulation is expected to remain a major driver of growth.
Meanwhile, demographic trends are starting to weigh on potential output. While the working age population and labor force will continue to expand for another two decades, the rate of increase has slowed to about 1 percent per annum—markedly lower than the average 2.5 percent expansion during 1990 to 2013. As a share of the total, the working age population is already starting to decline (Figure 1.12, right panel). The extent to which Vietnam will maximize returns on the remaining demographic dividend matters greatly. Countries including Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Papua New Guinea, and the Philippines will see a rise in working-age populations and could enjoy a demographic dividend if they generate sufficient jobs. Whether Vietnam employs its youth in more productive jobs will not only determine its aggregate growth rate, but will also directly affect the livelihood of its people.

Opportunities also exist to further close human capital gaps. Despite Vietnam’s remarkable track record of investing in people, Vietnam ranks 48 out of 157 countries according to recent World Bank Human Capital Index (HCI). Though this is higher than any other lower middle-income country, and above many countries with higher income levels than Vietnam (Figure 1.13), the lifetime productivity of a child born in Vietnam today will only be 67 percent of her potential had she enjoyed full education and health. Despite remarkable achievements in expanding educational attainment and quality, especially at primary and secondary levels, skill levels are not yet commensurate with the demands of a

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**FIGURE 1.12. Vietnam’s remaining demographic dividend is limited**

<table>
<thead>
<tr>
<th>Country</th>
<th>Years with positive labor force growth remaining at US$2500 per capita</th>
</tr>
</thead>
<tbody>
<tr>
<td>China 2004</td>
<td>14</td>
</tr>
<tr>
<td>Thailand 1998</td>
<td>17</td>
</tr>
<tr>
<td>Vietnam 2017</td>
<td>22</td>
</tr>
<tr>
<td>Japan 1962</td>
<td>38</td>
</tr>
<tr>
<td>Korea 1984</td>
<td>41</td>
</tr>
<tr>
<td>Taiwan, China 1976</td>
<td>49</td>
</tr>
<tr>
<td>Malaysia 1986</td>
<td>64</td>
</tr>
</tbody>
</table>

Source: World Bank staff estimate based on UN population data.

**FIGURE 1.13. Still room to improve quality of labor**

Source: World Bank staff estimate based on PWT 9.0.

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7 Launched by the World Bank in 2018, HCI measures the amount of human capital that a child born today can expect to attain by age 18. It conveys the productivity of the next generation of workers compared to a benchmark of complete education and full health.
rapidly developing economy. The problem is compounded by widespread malnourishment among children, manifested in a relatively high stunting rate of 25 percent, which is putting at risk the lifetime cognitive and physical abilities of too many children.

At the same time, rapid wage growth that outpaces labor productivity growth will erode Vietnam’s existing comparative advantage in labor intensive manufacturing and will increasingly shift labor demand from unskilled to skilled labor. As wages inevitably rise, including for unskilled labor, low-value labor intensive manufacturing firms may start considering relocating to lower cost countries. This trend may be exacerbated by technological changes that accelerate automation and change the optimal capital labor ratios in key manufacturing segments. Concurrently, as Vietnam aspires to move up the value chain, the demand for skilled labor will likely increase. Already today, the wage premium is particularly high at the top end of the education distribution, where the number of college graduates has expanded significantly but not enough to keep up with demand.

Rising wages will simultaneously spur the growth of the middle class, which will become a source of domestic demand but also place increased pressures on public services. As a result of broad-based growth in disposable household incomes, the share of Vietnam’s middle class (with disposable incomes of at least 15 dollars per day) will more than double from 13 percent of Vietnam’s population today to about 36 percent by 2030. This trend, together with a still relatively young population and rapid urbanization, will continue to spur healthy growth of domestic demand, especially for housing, consumer durables and services. Based on experience in other countries, it will also intensify pressures on quality public services and improved governance.

Being one of the most rapidly urbanizing countries in the World, urbanization holds significant promise in terms of fostering agglomeration and economic density (which in turn boost productivity) but also significant risks. Drawn by the economic opportunities offered by Vietnam’s major urban centers rural-urban migration continues unabatedly. Having doubled over the last 25 years, Vietnam’s urban population is projected to double once again in the next 30 years. By 2025 about half of Vietnam’s population is projected to reside in metropolitan areas. This agglomeration of economic activity may act as powerful driver of economic growth. Cities tend to have higher productivity due to economies of scale and clustering of firms allowing for knowledge spill-overs, innovation and dense ecosystems of service providers, suppliers and thick labor markets in which firms can flourish. However, without effective and integrated urban planning and adequate investment in urban infrastructure and service delivery, Vietnam could see these positive impacts of urbanization reverse course. Vietnam’s major cities are already experiencing unprecedented traffic congestion, pressure on core municipal services and the urban environment.

At the same time, rapid growth, urbanization and industrialization are taking an increasing environmental toll. This is evident in land degradation and soil erosion, rapidly growing greenhouse gas emissions and air pollution, increasing water degradation, deforestation and pressure on biodiversity. Greenhouse gas emission growth is outpacing Vietnam’s rapid economic growth, reflecting in large part a rising dependence on carbon-fueled power generation to meet the growing needs of Vietnam’s burgeoning manufacturing sector. According to the Yale
Environmental Performance Index, which ranks 180 countries worldwide on 24 performance indicators across ten issue categories, Vietnam ranked 132nd. These growing environmental stresses not only directly impact quality of life, but also potentially affect long term growth (right panel, figure 1.14). Managing Vietnam’s natural assets is crucial for sustainable growth in key sectors, such as agriculture, food processing, and tourism. Vietnam’s high vulnerability to climate change compounds these problems and exposes the economy and the population to risks of more frequent and more severe natural disasters that are already materializing. It is estimated that Vietnam currently faces VND 30 trillion per year in losses due to floods and typhoons. If more extreme events are accounted for, estimated losses could grow to VND 130 trillion in extreme weather years. Vietnam’s growth model, therefore, needs to not only respond to the risks but also lower risk exposure in a manner that contributes to growth.

**FIGURE 1.14. **Growing less green

Finally, while Vietnam has sustained macroeconomic stability in recent years, macroeconomic buffers remain thin. Sizable and persistent fiscal deficits have led to a rapid cumulation of public debt. While the government managed to restore fiscal discipline and reverse this trend, there is limited fiscal space to cope with a potential downturn, absorb potential contingent liabilities, or address development investment needs. Fueled by rapid credit growth, corporate and household balance sheets are increasingly leveraged, with Vietnam’s credit-to-GDP ratio standing at 135 percent—significantly above other lower middle-income economies. Rising indebtedness has left the economy more vulnerable to shocks and potential financial market stress, especially against a backdrop of legacy Non-Performing Loans that has not been fully addressed and relatively thin capital buffers in some banks. High debt may also become a drag on future growth as it constraints space for investment and implies a growing burden of debt service payments, which may reduce firms’ incentives to invest and grow.
Framing a growth strategy for the new era

**FIGURE 1.15. Vietnam’s long-term growth aspirations**

Vietnam will need to sustain rapid growth to achieve its aspiration of becoming a high-income country by 2045. As can be seen from, Vietnam would need to sustain growth of around 7 percent over the next two decades to cross into high income status by 2045. Potential growth has slowed to estimated 6.5 percent over the last decade. Moreover, looking ahead long-term growth projections suggest that without reforms, Vietnam’s potential growth will continue to decrease. Weighted down by slower labor force growth, potential growth is estimated to decelerate to 6.3 percent in the next decade, and then gradually decline to 5.5 percent by 2041-2045 (Figure 1.15). This is markedly lower than the growth experienced in fast growing economies when they were at Vietnam’s current income level. Notably, Vietnam’s growth pattern also varies in significant ways, with Vietnam’s current investment and productivity levels well below those observed historically in fast growing economies.

High growth is possible but will require reforms to unlock investment and productivity growth (Figure 1.16). First, unlocking higher investment, especially in the private sector could help revive growth.

**FIGURE 1.16. A secular slowdown in growth**

Source: World Bank staff estimate based on PWT 9.0.
Second, Vietnam needs to achieve a considerable increase in TFP, and its contribution to GDP growth needs to improve over time, from 2.5 percent in the next decade to 3.2 percent in the 2041-45 period. Achieving such high levels of TFP growth and sustaining them over the next 25 years is an extremely challenging task, and very few countries have succeeded in achieving similar outcomes. The average rate of TFP growth of countries that successfully moved from lower to upper middle-income status was only 1.05 percent, and the average rate of countries that successfully transitioned from upper middle income to high income status only reached 1.5 percent.\(^8\)

While sustaining strong growth is a necessary condition for Vietnam to achieve rising prosperity and social progress, the new strategy needs to embrace the quality, not just the speed, of growth. There is a growing recognition within Vietnam that the current growth pattern is unsustainable, and that Vietnam’s future transformation cannot be solely focused on achieving higher output. The economic, social and environmental sustainability of growth must take a central role, even more so than in the past. This means growth will need to increasingly rely on higher productivity to ensure it can be sustained without causing macroeconomic and fiscal imbalances. Growth will also need to continue to be inclusive, enabling all citizens to contribute to and participate in Vietnam’s rising prosperity. And finally, growth should not come at the expense of depletion of Vietnam’s natural resources, and must adapt to the increasing impacts of climate change. In sum, this means shifting from a strategy focused primarily on the pace of growth to one that simultaneously improves the quality of growth.

Vietnam’s future growth will have to be based on a balanced accumulation and efficient and productive allocation of different types of capital—physical, human and natural—as well as innovation, which in turn will be driven in large measure by deeper institutional and market reforms. As the long-term growth projections indicate, Vietnam still has plenty of room (and need) to accumulate and invest in productive assets, including human, physical and natural capital. This investment should in large measure be driven by private sector firms, but Vietnam also needs strong investment in sustainable infrastructure. Equally, high quality human capital investment and a skilled, healthy and flexible labor force will be crucial to moving up the value chain. Vietnam needs to also protect its “natural infrastructure”—its land, sea, rivers, air and

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forests—not only to sustain a livable environment, but also because these natural assets generate significant economic benefits in agriculture, tourism and other sectors. Finally, and perhaps most importantly, Vietnam will require productivity growth, which in turn requires efficient allocation of resources across sectors and firms (from less to more productive uses) as well as unlocking within-firm productivity growth through innovation and technology adoption.
BACKGROUND PAPER 2

Dynamic Firms

9 This is a supporting paper prepared for the report Vibrant Vietnam: Forging the Foundation of a High-Income Economy. The paper was written by Sebastian Eckardt with inputs from Quang Hong Doan, Alwaleed Fareed Alatabani, Asya Akhlaque, Ketut Ariadi Kusuma, Katia D’Hulster, Sylvia Solf, Trang Thu Tran, Viet Tuan Dinh, Helle Buchave, Giang Tam Nguyen, and Zsolt Bango.
Summary Note

The declining trend of Vietnam’s potential growth is one of the biggest challenges to achieving its ambitions of becoming a high-income country by 2045. Vietnam’s potential growth is estimated to have moderated to around 6.5 percent. This appears to be premature compared to other East Asian economies when they were at Vietnam’s level of development. This background paper examines two important drivers, investment and productivity, and proposes policy options for Vietnam to mitigate this slowdown in growth and sustain growth at 7 percent over the next decade.

Investment: low growth with poor quality

Vietnam’s investment is not only lower than it was in the past and below that of other fast-growing economies, but it has also fallen below Vietnam’s domestic savings rate. At around 26 percent, Vietnam’s gross capital formation has fallen below Vietnam’s long-term average. It is also markedly lower than investment rates were in aspirational benchmark fast-growing economies that invested around 31 percent of their GDP when they were at the level of income Vietnam is today. While Vietnam has been successful in attracting foreign direct investment, domestic investment as a share of GDP is relatively low. As a result, both the private and public capital stock per worker remain far below that of upper-middle and high-income economies. In addition, Vietnam has, over the past six years, generated excess savings that were not absorbed domestically.

At the same time, the quality of investment remains low, partly reflecting diminishing returns, but also pointing to inefficiencies in the allocation of capital. This is evidenced in Vietnam’s high incremental capital-output ratio (ICOR), which rose from about 2 in the early 1990s to a peak of 5.9 in 2009. The ICOR has declined somewhat since 2009 but remains much higher (and investment much less productive) than in the 1990s.

Subdued productivity growth and innovation

Vietnam’s total factor productivity growth remains far below the global productivity frontier. In 2014, Vietnam’s total factor productivity was about one-fifth the U.S. level, and it considerably lags that of other middle-income countries in East Asia. The rise of average labor productivity growth has also been relatively low, despite some improvement in recent years, and there are large and growing differences in performance across sectors and firms within Vietnam.
Firm-level evidence suggests that the existing resource allocation is highly inefficient. The impact of different sources of productivity growth varies across different firms depending on ownership. In general, resource allocation is a drag on productivity, but this effect is particularly pronounced for state-owned enterprises. In addition, firm exit contributes negatively to productivity growth, with this effect most pronounced in the domestic private sector. There is also evidence of growing dispersion in firm productivity and factor returns during 2009–16, suggesting a potential misallocation of labor and capital. This trend is present in all sectors, but primarily manufacturing and services.

Evidence also suggests that Vietnam’s innovation capacity remains constrained. Investment in research and development remains low, with Vietnam at about 0.4 percent of GDP compared to Australia and Singapore at 2.2 percent each, China at 2.1 percent, and Malaysia at 1.3 percent. Perhaps more importantly, these investments remain highly dependent on the public sector (56 percent), compared to China (22 percent) and Singapore (37 percent), which rely primarily on the private sector. Granted patents in Vietnam are one of the lowest compared with the number of applications. Self-reported innovations also seem to be lower than Vietnam’s level of development would suggest, particularly in terms of product innovation.

A reform agenda to unlock investment and productivity growth

A reform agenda with twin goals is proposed to enhance productivity and investment in Vietnam. The first goal is to improve the efficiency of resource allocation and promote the movement of resources from low-productive sectors or firms to high-productive ones. The second goal is to encourage firms to reduce costs and move to the national production frontiers and global frontiers.

Achieving these twin goals requires implementation of reforms in four priority areas. The first series of measures should focus on removing barriers that prevent the reallocation of existing resources to the most efficient firms. Second, a stable and efficient financial system is crucial not only for allocating Vietnam’s high national savings toward productive investment, but also for allocating resources to the most productive enterprises. Third, sustaining and deepening Vietnam’s integration in global markets and supply chains would ensure that firms in Vietnam continue to converge to the global productivity frontier through greater competition and knowledge flows embedded in investment and trade. Fourth, innovation capacity should become an ever more important driver of productivity growth as Vietnam emerges as a middle-income country. The right-most column of figure 2.1 elaborates recommended specific priorities in each of these four priority areas.
### FIGURE 2.1. **Recommended productivity agenda**

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<th>Goal 1: Improve Allocative Efficiency</th>
<th>Regulatory Reform and Competition Policy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Build the foundation of a “one government” approach</td>
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<tr>
<td></td>
<td>• Reinforce competitive neutrality</td>
</tr>
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<td></td>
<td>• Ensure efficient market exit</td>
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<td></td>
<td>• Enhance land use right markets</td>
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<td></td>
<td>• Increase the role of market force in allocation</td>
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<td></td>
<td>• Enhance banking sector soundness</td>
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<td></td>
<td>• Deepen capital markets</td>
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<table>
<thead>
<tr>
<th>Goal 2: Enhance Productive Efficiency</th>
<th>Deepening Integration</th>
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<tbody>
<tr>
<td></td>
<td>• Commit to an open and rules-based trade and investment system</td>
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<tr>
<td></td>
<td>• Foster regional integration</td>
</tr>
<tr>
<td></td>
<td>• Advance trade facilitation</td>
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<tr>
<th>Fostering Innovation</th>
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<tbody>
<tr>
<td>• Focus public innovation support on firm capability</td>
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<td>• Strengthen intellectual property rights</td>
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<td>• Improve start-up finance</td>
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Introduction

While Vietnam’s recent growth performance remains robust, Vietnam’s declining trend of long-term potential growth is arguably one of its biggest challenges. Vietnam’s potential growth is estimated to have moderated to around 6.5 percent. This reflects the diminishing impact of some of Vietnam’s past growth drivers. Labor force growth is already slowing to 1.07 in 2010-17 from 1.7 percent in the 1990s as Vietnam’s population is aging at an unprecedented pace. Productivity growth—the main driver of GDP growth in the early phase of Vietnam’s transition—remains subdued and the recent recovery is modest due to expansion of the FDI sector and workers shifting from agriculture to services and manufacturing. Investment growth has also slowed markedly and stabilized at around 26 percent. As a result, Vietnam’s gross capital formation has fallen below its long-term trend and Vietnam has, over the past six years, generated excess savings that are not absorbed domestically (reflected in Vietnam’s current surplus). This growth slowdown in Vietnam appears to be premature compared to other East Asian economies that sustained average growth rate of 7 percent when they were at Vietnam’s current income level. For Vietnam to meet its aspiration it will need to take steps to increase potential growth in the next decade.

To mitigate the slowdown in potential growth, Vietnam will need higher productivity and investment growth. As shown in the previous section, Vietnam’s long-term growth will depend in large measure on reinvigorating these two drivers of growth. Both investment and productivity growth remain subdued, despite a tentative recovery in the last few years. Indeed, as shown in the long-term growth projections in the previous section, Vietnam would need to raise the investment rate to 33 percent of GDP and almost double productivity growth to sustain growth of 7 percent over the next decade.

This section will examine potential constraints holding back investment and productivity growth in Vietnam and aim to identify policy options to unlock them. It will approach these two questions by blending macroeconomic and microeconomic perspectives. As the Growth Commission report put it: “The growth of GDP may be measured up in the macroeconomic treetops, but all the action is in the microeconomic undergrowth, where new limbs sprout, and dead wood is cleared away.” In this spirit, the section uses firm level analysis to understand the drivers of and potential constraints to investment and productivity growth.
**Investment growth is too low while quality needs to improve**

*Vietnam still has plenty of room for capital accumulation to boost labor productivity and aggregate growth.* Physical capital investment is a robust determinant of growth (Fernandez, Ley, and Steel, 2004; Durlauf, Kourtelllos, and Tan, 2008), although the impact of such investment varies widely. What is critically important for the effective translation of capital accumulation into output (i.e. for higher productivity of capital) is the incentive for making investment as well as the incentive for allocating that investment efficiently. As can be seen from Figure 2.2, the pace of Vietnam’s public and private capital accumulation has tracked its income levels. Nevertheless, both the private and public capital stock per worker remain for below that of upper middle and high-income economies. This corroborates that capital deepening (private and public investment) would be expected to continue being major drivers of growth.

**FIGURE 2.2. Vietnam remains relatively capital scarce**

(Vietnam’s capital stock per worker at historical levels of income per capita (blue line) compared with 2014 levels in other countries, thousand 2011 international US$, log-scale)

From a macroeconomic perspective, Vietnam’s high domestic savings should provide ample resources, but the absorptive capacity of the economy seems to be limited (Figure 2.3). Vietnam’s investment is not only lower than it was in past and below that of other fast-growing economies, it has also fallen below Vietnam’s domestic savings rate. As a result, Vietnam has, over the past six years, generated excess savings that were not absorbed domestically, which is reflected in Vietnam’s external current surplus. This suggests that it is not a macroeconomic constraint that holds back investment:
Vietnam could afford higher investment without incurring macroeconomic imbalances. Rather the constraints are likely at the microeconomic level. In particular, they may relate to lower returns on investment, higher marginal cost of capital, or a combination of both.

Yet investment growth has slowed markedly. At around 26 percent, Vietnam’s gross capital formation remains higher than the average of lower middle-income countries but has fallen below Vietnam’s long-term average. It is also markedly lower than investment rates were in aspirational benchmark fast growing economies that invested around 31 percent of their GDP when they were at the level of income Vietnam is today. While this is a correction from excessive investment rates prior to the 2008 global financial crisis, slower capital accumulation is adding downward pressure to productivity and potential output growth. While Vietnam has been successful in attracting foreign direct investment, domestic investment as a share of GDP is relatively low, as can be seen from figure 2.4 and 2.5 above. State sector investment has slowed markedly in recent years, reflecting fiscal constraints and Government efforts to rein in public debt. This has helped improve the quality and efficiency of investment, since the state has traditionally been a less efficient user of capital. At the same time, private sector investment, domestic and foreign, remains relatively buoyant, but has been insufficient to compensate for falling public sector investment.

Source: World Bank staff estimate based on official data.
At the same time, the quality of investment remains low, partly reflecting diminishing returns, but also pointing to inefficiencies in the allocation of capital. This is evidenced in Vietnam’s high incremental capital-output ratio (ICOR). Vietnam’s ICOR, which measures the productivity of investment, rose from about 2 in the early 1990s to a peak of 5.9 in 2009 (Figure 2.6). The ICOR has declined somewhat since 2009 but remains much higher (and investment much less productive) than in the 1990s. In part, this trend reflects diminishing marginal returns on capital, which are expected to decrease gradually as the capital stock of the economy expands and the most urgent gaps are addressed. However, the rapid deterioration experienced by Vietnam is unlikely to be the sole effect of a relative abundance of capital, especially because infrastructure and capital needs remain substantial in Vietnam. Rather, this occurs at least in part because additional capital may not necessarily be allocated to the sectors, activities and projects that generate the highest returns. For example, despite the recent slowdown, the state sector continues to absorb a significant share of investment. In addition, there are also large investment flows to sectors that may be profitable but not necessarily productive, in particular non-tradable sectors such as real estate.  

Real estate investment expanded by 29% per year on average in real terms over the last decade while average annual output growth in the sector was only 5.2% over the same period. These broad trends in macroeconomic data are confirmed by firm level evidence that suggest investment quality has been mixed but improving. Investment at the firm level was negatively correlated with Returns on Assets (ROA) in 2007 and 2008. Since 2009, investment started to increase with profitability, and this correlation is strongest in 2015 and 2016.

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10 Indeed, the real estate sector has the fourth highest average profit rate (as a share of turnover) among all sectors from 2010 to 2016. Before the freeze in the housing market in 2012, this sector has an average profit rate of 15-17% (GSO 2017).
Foremost, Vietnam needs to boost productivity to sustain long term growth. Evidence suggests that Vietnam has still ample space for catch-up growth. Vietnam’s total factor productivity growth—which measures contribution of overall productivity improvements for a given level of labor and capital inputs—has been lagging (Figure 2.8 left panel). Vietnam remains far below the global productivity frontier. In 2014, Vietnam’s TFP was about a fifth of the US level and it considerably lags that of other middle-income countries in East Asia (Figure 2.8, right panel). This suggests that there is significant room for Vietnam to grow through technology transfer and the adoption of better management practices from abroad. Equally, the rise of average labor productivity growth has been relatively low, although recent years have seen some improvement and there are large and growing differences across sectors and firms within Vietnam.
Looking at the microlevel, Vietnam’s enterprise sector has been experiencing significant churning and structural changes (figure 2.9). The share of SOEs—once the overriding form of formal enterprises in Vietnam—has declined steadily since the 1990s, although they remain dominant players in several sector including fertilizer, coal, utilities, banking, rubber and plastics, and construction. Meanwhile, trade and investment liberalization attracted more investments from the private sector, especially FDI. Between 2012 and 2017, the number of foreign-owned and joint-venture firms increased by more than 50 percent (Economic Census 2017). These firms are highly successful. While accounting for less than 3 percent of all firms, they employ approximately 30 percent of the formal workforce and account for more than 70 percent of total exports. The domestic private sector has also experienced uninterrupted entry growth. In the last 15 years, the number of active formal domestic private enterprises increased more than 10-fold to around half a million in 2017. However, most domestic private firms are small, with household enterprises and corporations accounting for more than 70 percent of private sector firms. Most of these firms are inward oriented, serving the domestic market and lack the scale, technology, and competitive pressure needed to boost productivity.

Evidence on the levels and drivers of firm level productivity growth suggests variation across different firms depending on ownership (Table 2.1). Overall productivity growth can be decomposed into four sources: i) reallocation of resources to higher productivity sectors, firms, and activities; ii) within firm upgrading though adoption and innovation of new (higher value) products and services (producing better things) and production technologies (producing them in a better, more efficient way; iii) entry of higher productivity firms; and iv) exit of lower productivity firms. Using enterprise survey data, we estimate how these four drivers play out across SOEs, FDI, and domestic private enterprises. The following stylized facts emerge from this exercise:

• Firm entry contributes positively to productivity growth across all firm segments. This is reflection of the dynamic firm creation enabled by Vietnam’s significant efforts to improve the legal and regulatory framework and to reduce the cost and time it takes to register and formalize a business.

Source: World Bank staff estimate based on Vietnam Enterprise Survey.

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• Firm entry contributes positively to productivity growth across all firm segments. This is reflection of the dynamic firm creation enabled by Vietnam’s significant efforts to improve the legal and regulatory framework and to reduce the cost and time it takes to register and formalize a business.
Within firm upgrading also contributes positively to productivity growth, particularly in the domestic private sector and, to a weaker degree, in FDI and state enterprises—albeit likely for different reasons. The strong growth in the domestic private sector is likely the reflection two factors: i) the relatively large distance to the productivity frontier which allows for catch-up growth and ii) stronger competitive pressures. On the flip side, the slower observed growth in SOEs may stem from lower competitive pressures while the same trend among FDI firms is due to their proximity to the productivity frontier.

Resource allocation is generally a drag on productivity, but this effect is particularly pronounced for SOEs.

Finally, firm exit contributes negatively to productivity growth, with this effect is most pronounced in the domestic private sector. This implies that the average productivity of exiting firms is higher than the average productivity of all firms. This is a counterintuitive finding as we would expect less productive firms to exit. This finding may stem from the fact that Vietnam’s insolvency framework is an area of the regulatory environment that is lagging substantially (see Table 2.1 below).

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Growing dispersion in firm productivity and factor returns also suggests that there is room for resource allocation to contribute to enhanced productivity. In a well-functioning market, economic resources will be reallocated to the most productive use. This process tends reduce the dispersion of total factor productivity as well as returns to capital and labor. In contrast, the evolution of dispersion in the marginal revenue product of capital and labor (MRPK, MRPL) from 2009-2016 across Vietnamese firms has increased over times, suggesting a potential misallocation of labor and capital. This trend is present in all sectors—primary manufacturing and services—although we find some evidence of less distortions in the use of labor in some years. Disentangling the specific causes of misallocation is difficult. Recent work by David and Venkateswaran (2018) comparing China and the US suggests that misallocation stems less from technological differences and informational frictions than from institutional or policy related distortions that systematically disincentivize investment by larger/more productive firms.

These measures of distortions need to be interpreted with caution however, as they are highly prone to measurement errors. See Annex 1 for further explanations of the methodology and caveats of these measures.
There are also large differences in productivity levels and growth rates across sectors. Labor productivity in agriculture is only about 40 percent of average labor productivity, in part due to underemployment, although there are large differences among subsectors from high productivity horticulture and fish farming to relative low labor productivity in rice farming (again with large differences in rice productivity across regions). With agriculture still accounting for almost 40 percent the labor force, future gains from structural transformation—moving people from agriculture to manufacturing and services—remain substantial. How rapidly structural transformation will continue will mostly depend on the pace of job creation in services and manufacturing. The contrasting experiences of other countries in the region is instructive. China had a similar share of agriculture in employment (47%) in 2004, yet by 2011 this had fallen to 35%. In contrast, it took two decades (1993-2012) for agriculture’s share in employment to fall from 46% to 32% in the Philippines. Slow change is also evident in Thailand, where the share of agriculture in employment fell from 46% to only 40% between 2001 and 2012. Outside East Asia, Turkey nearly halved its agricultural employment share (from 47% to 24%) in the two decades between 1990 and 2010. Sufficient job creation in services and manufacturing is a precondition to generate demand and pull more workers from agriculture. After slower manufacturing output growth following the 2008/09 global financial crisis, the rate of job creation has picked markedly.

Within agriculture, administrative controls on land, and direct state involvement in both input and output markets may prevent higher productivity growth. Many of the existing policies in the agricultural sector were important factors in the sector’s stability and inclusive growth over recent decades. Yet these policies and institutional legacies seem to now be delaying further transformation of the sector. Agricultural land consolidation remains at an early phase due in large part to a lack of functioning land and land lease markets. Shifts in land use patterns (towards higher value crops) have also been relatively slow reflecting administrative land use controls that favor rice production. Land consolidation and more market driven land use will be critical to enable mechanization and crop diversification and hence productivity gains. In parallel, tackling the challenges of food quality and safety, factor productivity, pollution, resource scarcity, and climate change will rest heavily on having a dynamic agricultural innovation system capable of generating responsive technical and management solutions and of ensuring their diffusion across the sector.

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Productivity growth is dampened by the incomplete restructuring of state-owned enterprises. The relative importance of the SOE sector has declined significantly, reflecting a combination of restructuring and rapid growth of private sector enterprises. Nevertheless, SOEs still remain dominant players in several sectors, and account for about one-third of all business assets and one quarter of output in the enterprise sector (Figure 2.11). While state ownership does not inherently lead to lower productivity, it may do so if it limits competition. Unless there are clear institutional safeguards, state ownership can be associated with distortions that favor SOEs at the expense of private sector competitors, especially if the state is both an active market participant and a regulator. Such distortions may not only deter more efficient private sector entry and growth, but also stifle incentives for SOEs themselves to maximize efficiency. In addition, overlapping responsibilities in the management of SOEs and weak corporate governance can undermine efficient use of resources in the state-owned sector. Indeed, evidence suggests that the average growth rates in the state sector have been consistently lower than private sector, although the gap has narrowed substantially since global financial crisis. However, controlling for capital intensity to reflect the fact that many SOE are capital intensive, the average labor productivity of SOEs is about 40 percent lower than the private sector. Even though the average SOE was larger in terms of employees, capital and turnover than foreign firms, particularly domestic private firms, their return on assets was less than half that of foreign firms and only slightly larger than that of domestic firms. While SOEs often have public service

13 Natural resource producers like Petro Vietnam and Vinacomin have exclusive access to mineral reserves. Others, such as EVN, Vinalines and Vietnam Airlines operate in highly regulated markets. Some SOEs operate in sectors that could be commercialized and be viable by the private sector. For example, Viettel, wholly owned by the Ministry of Defense, is Vietnam’s largest mobile network operator. Vinalines, wholly owned by the Ministry of Transport (currently undergoing IPOs), operates 14 ports, ships 25 percent of the total tonnage of Vietnam’s shipping market, and provides logistics services through 9 associates and affiliates. Likewise, Vietnam airlines, a limited liability company with the state holding a majority stake, owns 100% of Vietnam Air Service Company and 70% of the low-cost carrier Jetstar Pacific Airlines, and 49% of the Cambodian national airline Cambodia Angkor Air. Vietnam National Chemical Group (Vinachem), a 15-company group, produces and trades basic chemicals, raw materials for fertilizer and chemical production, phosphate fertilizers, and pesticides. Vietnam Cement Industry Corporation manufactures and sells cement through a network of dealers in Vietnam. Vietnam Pharmaceuticals, a parent Joint Stock Company with 3 affiliated units, 4 subsidiaries and 9 joint ventures, manufactures and commercializes pharmaceuticals.
Productivity growth in the domestic private sector is also constrained. Following the 2000 enterprise law there has been rapid private firm creation. However more than 80 percent of all firms are micro and small firms, which account for just around a quarter of total value-added output. The vast majority of these firms operate in relatively low value non-tradable service sectors (e.g. food, small-scale retail, etc.) where productivity is low and growth is anemic. These firms are largely inward oriented, serving the domestic market. Only about 17 percent of domestic private sector firms are directly engaged in export activities. Many of these firms simply lack the scale, access to technology and competitive pressure needed to boost productivity, and few of these enterprises ever reach medium size. Female entrepreneurs, who own a growing share of enterprises in Vietnam, face additional challenges limiting their firm growth and profits, including challenges in hiring labor, gaining management skills, expanding their networks, and balancing their entrepreneurial with domestic work. As a result of these challenges for enterprise growth, the Vietnamese economy is missing larger and more technologically advanced firms engaged in manufacturing and higher-value services linked to export markets and global value. Of the few existing medium and large domestic Vietnamese firms, most are engaged in property development and finance, sectors where they can capitalize on preferential access to state-controlled land, capital or licensees.

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Despite improvements, evidence suggests that regulatory constraints and bottlenecks continue to stifle private sector activity. Vietnam has undergone significant reforms to improve the regulatory environment. In addition to investing in reforms aimed at opening up the economy to trade and FDI, Vietnam also implemented a series of reforms aimed at reducing the cost of doing business by streamlining bureaucracy for businesses over the past years. For example, thanks to the introduction of online systems for tax filing and payment, the number of tax payments in Vietnam dropped from 45 to 10, while the time needed for a medium-size company to pay taxes fell from over 100 to about 62 working days per year. The time to start a business fell from 34 to 17 thanks to streamlined business registration. Getting connected to the electricity grid can be done in 31 days instead of 115 days 5 years ago, while the reliability of electricity supply has increased thanks to the reduction in outages and the introduction of monitoring and restoring service. Yet, firm surveys continue to reflect deep-seated concerns about the regulatory environment, a lack of transparency and biased treatment by government agencies. Data from the Provincial Competitiveness Index (PCI) in 2009-2016 suggest, for example, that only 30% of enterprises consider legal decisions and decrees to be transparent. Between 2013-2016, 72-95 percent of firms agree with the statement that “Contracts, land, and other economic resources mostly fall in the hands of enterprises that have strong connections to local authorities”. Deploying data from the Provincial Competitiveness Index 2013-2016 as proxies in set of panel regressions of firm outcomes (employment and value added output), we find corroborating evidence of regulatory distortions affecting firm performance and growth.

### TABLE 2.2

**Direction of impact of Provincial Competitiveness variables on firm (log employment), by firm type (all significant at 5% level)**

<table>
<thead>
<tr>
<th>PCI variable</th>
<th>Direction of impact</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Domestic</strong></td>
<td></td>
</tr>
<tr>
<td>Length of business registration in days (Median)</td>
<td>Negative</td>
</tr>
<tr>
<td>Firm rating of expropriation risk (1: Very High to 5: Very Low)</td>
<td>Negative</td>
</tr>
<tr>
<td>Province give priority to FDI attraction than private sector development (% agree)</td>
<td>Positive</td>
</tr>
<tr>
<td><strong>FDI</strong></td>
<td></td>
</tr>
<tr>
<td>If land expropriated, firms receive fair compensation (% Always or Usually)</td>
<td>Negative</td>
</tr>
<tr>
<td>Contracts, land, …, and other economic resources mostly fall in the hands of enterprises that have strong connections to local authorities (% agree)</td>
<td>Negative</td>
</tr>
<tr>
<td><strong>Exporters</strong></td>
<td></td>
</tr>
<tr>
<td>Percentage of firms waiting over three months to complete all steps necessary to start operations</td>
<td>Negative</td>
</tr>
<tr>
<td>Transparency of Legal Decisions and Decrees</td>
<td>Negative</td>
</tr>
<tr>
<td>Provincial officials are creative and clever about working within the national law to solve the problems of private sector firms (% Strongly Agree or Agree)</td>
<td>Positive</td>
</tr>
<tr>
<td><strong>Large firms</strong></td>
<td></td>
</tr>
<tr>
<td>Length of business registration in days (Median)</td>
<td>Negative</td>
</tr>
<tr>
<td>Firm rating of expropriation risk (1: Very High to 5: Very Low)</td>
<td>Negative</td>
</tr>
<tr>
<td>Percentage of firms that felt that enterprises in their line of business were subject to bribe requests from provincial authorities</td>
<td>Positive</td>
</tr>
<tr>
<td>Contracts, land, …, and other economic resources mostly fall in the hands of enterprises that have strong connections to local authorities (% agree)</td>
<td>Negative</td>
</tr>
<tr>
<td>Provincial court judge economic cases by the law (% Agree or strongly agree)</td>
<td>Negative</td>
</tr>
</tbody>
</table>

Source: World Bank staff analysis based on Provincial Competitiveness Index. Full Regression Results are included in Annex.

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14 PCI statistics are only available at the province level. We report average across provinces here.
This evidence suggests that land rights security, transparency of legal documents, and perceptions of biased treatment by the province or provincial courts have the strongest association with firm performance. In other words, the quality of the overall contractual environment, including formal procedures and the ways they are applied, appear to be the most important for firm performance. We find some counterintuitive results with regard to the effect of entry where the length of business registration is positively associated with business performance. This could be partly driven by the fact that in provinces with positive economic trends, entry rate is also higher, resulting in overcapacity and delays in the entry process (anecdotal evidence suggests that this was the case for Ho Chi Minh City, for example).

**FIGURE 2.15. Perception of bribery in government services**

Firm surveys also point to corruption in public administration as an area of concern. According to the World Bank Enterprise Survey 2015, 91% of firms expected to give gifts to public officials to get things done. This is a higher share compared to 52% EAP regional average of firms with the same expectation. The Provincial Competitiveness Index of 2017 shows that 59% of firms in 2017 paid bribes, though notably this was a drop from 66% from 2016 indicating declining corruption. Furthermore, the Worldwide Governance Indicators show decreasing control of corruption in recent years. The Enterprise Surveys indicate improved perceptions of bribery related to tax administration, although the number of firms who think they are expected to give gifts to public officials to get things done doubled in the past five years. Perceptions related to bribery in public services in Vietnam also remain much higher than the regional EAP averages (Figure 2.15).

Despite rapid credit growth, access to finance remains a constraint facing firms, especially small private enterprises and female-owned enterprises. According to the 2015 Enterprise Survey, access to finance was the main business environment constraint for SMEs in Vietnam. Only 29% of small enterprises (1–20 employees) have an active line of credit versus 57% of large firms (+100 employees). Meanwhile, only 30 percent of female-owned enterprises have access to bank loans—loans which also tend to be for lower amounts than those granted to male entrepreneurs.
who generate comparable levels of revenue.\textsuperscript{15} Paradoxically, these financing constraints emerge in an environment of high credit growth and ample liquidity. Vietnam has a sizable banking system with assets close to 2 times the value of GDP. Credit to the non-financial sector (excluding government) amounted to 135 percent of GDP in 2018, higher than in other lower middle-income economies. A growing share of loans is going to the real estate, financial, and consumer lending. In contrast credit growth to the SME sector has been anemic at around 3 percent annually as domestic SMEs compete for credit with SOEs and large domestic corporates. Consequently, SME investment is subdued and is largely internally financed.

Finally, there is some evidence that suggests Vietnam’s innovation capacity remains constrained. As argued above, Vietnam can, to a significant degree, rely on catch-up growth. Vietnam is still far from the global productivity frontier, and within Vietnam there are large and growing productivity gaps between leading and lagging firms across and within sectors. This suggests that Vietnam could gain significant productivity growth from focusing on technology transfer and the adoption of existing knowledge and from the reallocation of resources to more productive firms. At the same time, as Vietnam moves closer to the frontier, innovation capacity will become more critical. Disruptive technologies may also offer some opportunities. Investment in R&D remains low with Vietnam spending about 0.4 percent of GDP, compared to Australia (2.2%), Singapore (2.2%), China (2.1%), and Malaysia (1.3%). Perhaps more importantly, these investments remain highly dependent on the public sector (56%), compared to China (22%) and Singapore (37%) which rely primarily on the private sector. Equally, while growth in patent applications has been increasing over time (from 196 to 560 over a decade), the rate at which patents are granted of these growing applications\textsuperscript{16} is


\textsuperscript{16} Apart from patents, special types of contracts enabling the enforcement of industrial secrets through non-disclosure and non-compete contracts can be a source that stifles innovation activity. Due to the nature of these contracts (i.e., hidden), there is no publicly available data to capture this.
one of the lowest compared. While within firm productivity growth, especially among private sector enterprises, has been positive, self-reported innovations also seem to be lower than Vietnam’s level of development would suggest, particularly in terms of product innovation\(^\text{17}\).

**FIGURE 2.18. Innovation outcomes for Vietnam**

Source: World Bank staff estimate based on WBES and World Bank WDI.

**A policy agenda to unlock investment and productivity growth**

**Sustaining Vietnam’s growth in the context of a more challenging global environment will require a coordinated package of structural reforms.** The findings presented in the previous section point to potential sources of increased productivity and investment growth. While Vietnam’s high savings provide ample resources for investment, capital accumulation has slowed. Meanwhile, there is also evidence of a misallocation of resources both across sectors and firms, dampening overall investment levels and hampering productivity growth. For growth to occur, productive firms need to have access to land, labor, and financial resources to expand and upgrade their operations. At the same time, regulations that prevent market entry and expansion need to be addressed, with a priority on regulatory reforms and the establishment of a sound competition framework. The SEDS offers a unique opportunity to lay the foundation of a comprehensive and internally consistent policy framework where different policy elements reinforce each other for greater impact. Financial sector reforms should aim to contain risks to stability while enhancing the allocation of capital, and especially private sector investment to more productive. Meanwhile, real sector reforms should aim to increase the decisive role of market forces, and to foster greater competition, openness and innovation to help boost returns to private sector investment.

**Enhancing regulatory reforms to boost competition and productivity growth**

**A high-quality regulatory environment will be crucial to reinvigorating productivity growth in Vietnam.** To achieve more efficient allocation of resources requires well-functioning

\(^{17}\) Innovation measures used in this STI Note -sourced from the World Bank Enterprise Survey and FIRST-NASATI survey data sets - are all self-reported. It is important to underline that self-reported data can be subject to measurement bias. For example, different firms may have various interpretations on what constitutes ‘innovation’ per se. In fact, firms in developing countries tend to overestimate innovation rates (see Cirera and Muzi (2016)). Because of this, care is accounted for in interpreting the data.
product and factor markets (for capital and labor) to allow resources to move to high productivity sectors and enterprises rather than being bottled up in low productivity uses. Domestically, greater competition is crucial for inducing businesses to increase their productivity and efficiency. This will require comprehensive institutional and policy changes that would facilitate firm restructuring and exit of less efficient firms while promoting entry of new efficient firms, and easing the most binding regulatory, institutional, and financial bottlenecks to allow successful firms to invest and expand. Externally, sustaining and deepening Vietnam’s integration in global markets and supply chains would ensure that firms in Vietnam continue to converge to the global productivity frontier through greater competition and knowledge flows embedded in investment and trade.

**FIGURE 2.19.** Vietnam shows consistent improvement on the WEF-GCI and WBG Doing Business

Vietnam has made great strides in improving the regulatory environment. In addition to investing in reforms aimed at opening up to trade and FDI, Vietnam in recent years also implemented a series of reforms aimed at reducing the cost of doing business by streamlining bureaucracy for businesses. For example, the introduction of online systems for tax filing and payment decreased the number of tax payments in Vietnam from 45 to 10 while the time needed for a medium-size company to pay taxes fell from over 100 to about 62 working days per year. The time to start a business fell from 34 to 17 days thanks to streamlined business registration. Getting connected to the electricity grid can be done in 31 days instead of the 115 days it took 5 years ago, while the reliability of electricity supply has increased thanks to the reduction in outages and the introduction of monitoring and restoring service. These and other reform efforts have improved Vietnam’s comparative competitiveness and business environment. Vietnam is now positioned in the mid-range of major competitiveness indices, ranking 69th out of 190 on the WBG’s Ease of Doing Business Index, 77th out of 140 on the WEF-GCI.

The new reform agenda will have to address more difficult, long-term weaknesses in the overall quality of institutions, especially those related to legal enforcement and property rights. In line with the findings in the previous section, data from various surveys indicate that governance,
the efficiency and effectiveness of legal institutions, and property rights can be strengthened. In most of these indicators, Vietnam has recently deteriorated or barely improved, and in all of them it ranks lower than the regional averages. Overall, while Vietnam has made significant progress in simplifying its bureaucracy, its business environment still lags behind that of other countries in terms of the strength of legal institutions, property rights protections, and the overall transparency and predictability of regulations and their application. This is consistent with the earlier analyses showing that those aspects of the business environment seem to have the most explanatory power on firm performance. Another important element to consider is the creation of a level playing field for all economic actors regardless of ownership (see note on competition policy for further details).

For Vietnam to make a tangible impact through further business environment reforms, a paradigm shift in its approach to private sector regulation may be required. This implies an increased focus on reducing the unpredictability in the application of regulations, strengthening property rights protections, introducing risk-based principles to regulation, and closing implementation gaps (including following the relatively recent legal reforms such as the new insolvency law). Vietnam’s recent Resolution 2.0 has set out several of these principles. Some of the stated reform objectives and practices reference global best practices, such as risk-based inspections, electronic filing and payment services, or the introduction of standardized application forms, processes, single window services among ministries, agencies and provinces with provision of level-4 public service. A National public service portal was recently launched with data exchange, standardization, identification, and process integration across the country. In addition to the reform areas outlined by the Resolution, the following areas for reform may be considered:

- **Build the foundation for a “one government” approach vis-à-vis citizens and businesses by investing in unified databases on citizens and firms.** Unified databases on individuals and firms allow for effective monitoring of economic activity and evidence-based policy formulation, while increasing regulatory predictability and reducing bureaucracy. Oftentimes, governments also introduce unique citizen and company IDs to facilitate compliance by the private sector and enforcement by the public sector. In Norway for example, all public registers and public authorities since 2005 have a legal obligation to use the data registered in the Central Coordinating Register for Legal Entities instead of requiring businesses to resubmit this data to the concerned agency. As a result, the bureaucratic and duplication costs from having firms submit the same information to multiple authorities is eliminated. Such systems also facilitate compliance monitoring and enforcement by authorities through automatic cross-checks across connected registries. Some relevant efforts are already underway under the eGov program (e.g. eServices). A clear focus on promoting data-sharing for key registries, including people, businesses and land, as well as a data governance framework setting out key principles for data-sharing (e.g. capturing data from the source, maintaining a single trusted source and specifying common data uses at different government levels) will be essential to its success.

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18 In some areas, such as land administration or e-governance, reform efforts are already ongoing, including with support by the World Bank Group.
20 See also WBG e-Government Reforms program (P167349).
• **Complete the liberalization of product and service markets.** The continued dominance of the state in strategically important industries should be balanced with the potential benefits of further market liberalization. This is particularly true in services sectors, including the financial, communications, transport and utilities sectors. Opening these sectors will contribute to the rebalancing of growth to the service sector. It will also contribute to the overall competitiveness of the economy, as these sectors are important inputs to other sectors, such as manufacturing.

• **Reinforce competitive neutrality.** Market competition and competitive pressures are primary drivers of productivity growth. However, in Vietnam, the role of the state in the economy remains pervasive and state-owned enterprises continue to dominate certain sectors giving rise to concerns about competitive neutrality and the lack of a level playing field. Moreover, the discretionary interpretation and enforcement of rules by government authorities, particularly at the local level, is often tilted to benefit SOEs and discourages private sector entry and expansion. The Government’s commitment to a policy of competitive neutrality—which is also enshrined in the commitments in Chapter 17 of the CPTPP—is therefore of prime importance. In particular, fair competition reviews could be undertaken to cover new regulations as well as existing ones—including existing rules of public procurement, tendering and bidding, land use and taxation—to identify those that confer undue competitive advantage to some market participant and take actions accordingly.

• **Reform the state capital management system to require a market rate of return to SOEs.** Non-state enterprises may find themselves at a disadvantage even before entering competition in the product market (e.g. when bidding for a contract) since SOEs enjoy the supply of state equity that does not require a market rate of return, allowing them to undercut their competitors. Competitive neutrality, therefore, requires capital in SOEs operating in a commercial and competitive environment to earn rates of return like those of comparable businesses. In the same spirit, the CPTPP considers injection of equity capital into SOEs as a form of non-commercial assistance that is inconsistent with the usual investment practice, including for the provision of risk capital, of private investors.

• **Strengthen real property rights by strengthening the land administration system.** A well-developed registration system establishing property rights is essential in securing their protection and facilitating access to credit. The current real property system lacks accurate geo-references and suffers from being partly incomplete with land parcels either not recorded in digital form or not integrated in a national mapping system. Furthermore, land pricing and use systems are not fully integrated with the registration system. The need for land reform has been highlighted by the Government including in the Socio-Economic Development Strategy (SEDS) 2011-2020, and the National Environment Protection Development Strategy 2011-2020. Efforts are already ongoing to develop critical information systems, databases, and delivering public services.

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21 World Bank Vietnam Improved Land Governance and Database Project P154387.
22 Following Prime Minister’s Decision 714/QD-TTG dated May 22, 2015 on development of priority databases, including land database, MoNRE/GDLA has prepared a roadmap entitled: Comprehensive Program for the Development of Vietnam’s Multi-Purpose Land Information System (February 2016). The roadmap recommends the development of a Multi-Purpose Land Information System (MPLIS) and a National Land Database by pursuing a centralized model for data storage based on modern technology and building up institutional capacity to meet longer term requirements for better land administration and management. Several
Use clear risk-based criteria and sound data to strengthen risk-based regulations in areas such as licensing, inspections, and trade, and apply risk-based principles to new areas of regulation. Risk-based regulation means adapting the government’s degree of regulatory control to the actual hazards and level of severity posed by industry sectors, economic activities or business establishments. Risk is therefore the combination of the likelihood of an adverse event (e.g. a hazard or a harm) occurring, and the potential magnitude of the damage caused (e.g. number of people affected and severity of the damage for each). Lack of transparent risk-based systems to manage approvals also increase the risk of differential treatment of firms introducing uncertainty in the business environment. On the other hand, clear risk-based criteria allow authorities to allocate their (often limited) resources effectively where they are most needed. In the absence of these systems, often combined with heavy and complex compliance requirements, there is greater risk that officials resort to discretionary behavior to manage an unmanageable workload. Having sound data on individuals, firms and real property can support risk profiling and, therefore enable the development of risk-based approaches to regulation. Risk profiling can be conducted at the economy-wide, sector and firm-level. Such an approach is also particularly relevant for the regulation of new and emerging sectors such as in the shared economy or IT space.

Close implementation gaps, including in recent reforms facilitating contract and debt enforcement. Vietnam has undertaken significant legal reforms in recent years including reforms facilitating contract and debt enforcement. However, for such legal changes to have an effect on the ground, additional measures are needed, such as regulation and training of insolvency professionals. Furthermore, it is important to assess the consistency of implementation, especially the functioning of courts, across provinces. In fact, where legal institutions are ineffective, improvements in the law may have limited impact. A study of the transitioning economies of Eastern Europe and the former Soviet Union between 1992 and 1998 found that reforms in corporate and bankruptcy laws had little effect on the development of their financial institutions until their legal institutions became more efficient. In another area, while Vietnam regulatory framework governing non-possessor rights and rights over movable assets compares well globally, Vietnam still lacks a notice-based collateral registry in which all functional equivalents can be registered.

Strengthen the rule of law and the functioning of the courts. Effective enforcement mechanisms are essential for supporting a competitive business climate by providing predictability in economic transactions, guaranteeing property rights, and creating a level playing field among firms. Efficient contract enforcement is essential to economic development and sustained growth. Just as important as the regulatory framework for investment is the quality of the judiciary system. Economic and social progress cannot be achieved without respect for the rule of law and effective protection of rights, both of which require a well-functioning judiciary that resolves cases in a reasonable time and is predictable and accessible to the public. Economies with a more efficient judiciary, in which courts can effectively enforce

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contractual obligations, have more developed credit markets and a higher level of development overall. A stronger judiciary is also associated with more rapid growth among small firms. Overall, enhancing the efficiency of the judicial system can improve the business climate, foster innovation, attract foreign direct investment and secure tax revenues. High-quality legal institutions are correlated with robust FDI inflows, while weak contract enforcement raises the cost of borrowing.

- **Ensure effective and efficient market exit.** A well-functioning insolvency framework is essential for the healthy circulation of credit. By facilitating the efficient business exit and liquidation of nonviable companies, an insolvency framework supports the efficient reallocation of resources across the economy. As shown in the previous section, Vietnam has received no productivity growth from market exit. Despite some progress, especially in terms of providing a more adequate legal framework and an increase in the number of filed insolvency cases, some weaknesses persist. Vietnam ranks 133 out of 190 economies in the World Bank Doing Business Indicator on Resolving Insolvency. It costs 15.7 percent of the value of the insolvency estate to resolve an insolvency case in Vietnam, almost 5 times more than in the Republic of Korea. It takes on 5 years to work out an insolvency case, almost ten times longer than the global best performer, Ireland. Vietnam’s recovery rate is estimated to be at 21.3 cents on the dollar, less than a third of the recovery rate in Japan (global best performer). Reinforcing the insolvency framework could include: easing commencement rules to provide incentives to initiate cases early on; strengthening creditors rights, including in the appointment of the insolvency administrators and in the divestiture of assets; building stronger national professional standards for insolvency administrators; and enhancing the role of commercial courts.

**FIGURE 2.20. Vietnam’s insolvency framework is weak**

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Fostering innovation

As Vietnam progresses towards being a middle-income country, innovation capacity will become an ever more important driver of productivity growth. Vietnam can implement an enterprise-centric innovation strategy that continues to reap significant productivity gains from prioritizing technological catch-up by adopting strategies from the existing global knowledge pool rather than by pushing innovation at frontier. Equally, as shown in the diagnostic section, there is also significant potential to reap gains from enabling greater knowledge diffusion between frontier and lagging firms within Vietnam, while simultaneously allowing productive resources to flow to the most productive and innovative enterprises. The significant presence of FDI offers the potential for domestic firms in Vietnam to integrate and move up the global value chains and thereby realize productivity and growth gains. Several additional steps could be taken to foster greater innovation and technology adoption:

• **Revamp public innovation support so that it focuses on building firm (management) capabilities.** Current science, technology and innovation (STI) programs, such as tax incentives and research grants, are overly focused on promoting technological innovation and R&D. Instead, a broader view of innovation should that recognize the importance of incremental innovation for productivity growth. In promoting access to new technologies, the Government should prioritize the diffusion of improved production processes from better management capabilities. Private firms should be placed at the center of innovation strategies, and programs should be designed to facilitate and strengthen collaboration and linkages between university and industry stakeholders. It is also important to invest in improving in government competencies and processes—especially M&E and learning— to generate and implement effective policies. Implementing such reform in STI policies requires attention to the sequencing in introducing these changes, especially to give time to improving existing agencies competencies.

• **Strengthen Intellectual Property Rights:** Enforceable intellectual property rights (IPR) play a critical role in fostering innovation and technology adoption. They are particularly important for encouraging MNCs to share their technologies with local firms and for enabling them to conduct R&D in Vietnam without fear of suffering from property right infringements. Vietnam does not fare well in IPR ranking compared to its competitors. According to the 2018 Global Competitiveness Report, Vietnam is ranked 105 out of 140 countries, behind Singapore (3rd), Malaysia (24th), Indonesia (44), China (49th) and the Philippines (52nd). This is a priority agenda for Vietnam as it deepens its regional integration.
through new trade agreements like the CPTPP, EVFTA, ASEAN and RCEP, and tries to capture supply chains relocating from China. Improving IP protections would also help attract venture capital and private equity, which in turn can help scale up of start-ups in Vietnam. While IPR law exists on paper, the main issue is lack of adequate coverage of on-line enforcement of copyright and weak enforcement of IP rules leading to rampant violation of IPR. Vietnamese law allows for IP criminal lawsuits, but implementation faces numerous obstacles due to a dearth of specific rules and procedures to guide investigations, prosecutions and adjudications of criminal proceedings in IPR infringement cases. This has posed challenges for IPR criminal enforcement and copyright piracy remains rampant. Vietnam should improve IPR enforcement standards and related procedures as well as IP dispute resolution to make them simpler and more accessible to motivate enterprises to utilize them. China, facing similar challenges, has strengthened IP enforcement through the launch of specialized IP courts. Among other things this entails adjustments to IP court procedures, such as strengthened specialized enforcement units, and applying more significant fines and sanctions for non-compliance.

**Improve start up finance:** In step with the broader financial sector reforms outlined in the previous section, specific steps could be taken to enhance the availability of start-up finance for innovation. Firms require different means of financing as they move from one phase to the next in their life cycle. While Vietnam is increasingly becoming attractive emerging market destination for venture capital and private equity (VCPE), its promise is far from realized. Reforms of the insolvency law and the secured transactions law should explicitly enable movable collateral to be used by SMEs and startups.

**Preserving and deepening Vietnam integration in global and regional markets**

Vietnam is one of the most open economies in the World, and is linked to the global economy through trade, investment, and ideas. Vietnam has successfully leveraged integration into global and regional markets to boost growth and development. The export sector, which is dominated by FDI enterprises, generates significant domestic value added and jobs. Yet, this has created new vulnerabilities as it is exposing the economy to external risks. Vietnam’s productivity growth still depends greatly on technology transfer embedded in cross-border trade and investment flows. The benefits to preserving and deepening Vietnam’s integration in world markets are substantial. By the same token, Vietnam has a lot to lose from escalating conflicts and protectionist measures. While Vietnam has greatly reduced tariffs barriers, there is significant potential to rationalize non-tariff measures and barriers.

**Maintain commitments to an open and rules-based trade and investment system.** Working with international partners, Vietnam should support the continued enforceability of WTO commitments through the WTO dispute settlement system. Taking decisive steps to ensure greater openness to trade and investment in goods and especially services, according to CPTPP and EVFTA commitments, will help diffuse risks of trade disputes and will contribute to boosting Vietnam’s competitiveness. Aside from tariffs reductions and measures to improve market access and infrastructure connectivity, Vietnam could focus more on behind the border issues, including IPP, trade in services, public procurement, non-tariff measures etc. Continuing to remove barriers to cross-border investment would bolster productivity growth through
greater competition and access to foreign technology, especially in services sectors such as financial services, professional services, and telecommunications, which remain subject to higher levels of restrictiveness. The environmental and social impacts of any new trade and investment policy should be carefully assessed, including in terms of differentiated impacts on women and men, ethnic minorities and vulnerable groups to inform policy design and appropriate mitigation measures if necessary.

- **Foster regional integration.** Given the growing economic importance of Asia, there are significant long-term benefits to advancing stronger regional integration. In addition, in the possible event that trade and investment relations with Western countries continue to be strained, integration in the Asian region will be of great strategic value for Vietnam to prevent isolation from important world markets. Vietnam’s participation in the CPTPP and RECEP offer great opportunities to advance this agenda of lower tariff and non-tariff trade barriers regionally. Strategic investments in cross-border connectivity in the region could also contribute to lowering logistics and trade costs.

- **Advance trade facilitation to further reduce trade costs.** In the past two and half decades, under the effects of the multilateral and bilateral free trade agreements (FTAs) signed and implemented by Vietnam, tariffs on international trade have been reduced. This has contributed to significantly reducing trade costs, and has substantially boosted international trade, making Vietnam one of the most open economies in the world. However, with lower tariffs, the room for continued tariff reduction is narrowing, so that further reductions in trade costs can only achieved by reducing costs of non-tariff measures and logistics. Despite some initial progress, Vietnam’s non-tariff trade costs for both imports and exports remain relatively high and above the ASEAN-4 average. These costs are driven by compliance with regulations, border clearance procedures, port handling, transport and logistics. There is hence great potential to cut the cost of trade by rationalizing measures and procedures related to cross border trade transactions, expanding the use of risk-based management (especially in specialized inspection agencies involved in border management), and applying electronic service systems and in particular for National Single Window.

**Enhancing efficient financial intermediation**

**A stable and efficient financial system is crucial for allocating Vietnam’s high national savings—worth 31 percent of GDP in 2018—toward productive investment.** Vietnam’s has a fairly substantive financial system for a low middle-income country. However, the system is undiversified and continues to be dominated by the banking sector, with banking sector assets accounting for about 135 percent of Vietnam’s GDP and 80 percent of total financial system assets. Despite growth in recent years, Vietnam’s capital markets remain shallow. Corporate bond and equity markets—a major source of investment financing and long-term capital in many middle-income economies—remain at a relatively nascent stage of development. In the past, the policy focus has been on boosting credit growth. While this may induce short-term economic growth, it can lead to poor investment and asset quality, thus intensifying risks of instability, if capital allocation is impaired. For the financial system to support sustainable, long term growth, it must efficiently distribute capital and risks, allowing for growing credit to be allocated to productive enterprises and investments.
Further advancing banking sector reforms should take center stage in the coming years. In the short to medium term, the banking sector will remain the main channel to mobilize savings and intermediate them to investment and other uses. The banking sector has been reasonably successful at mobilizing savings but has fallen short in most productively allocating credit for uses that demonstrate the highest financial and economic returns. Much of the lending in the past, especially by state-owned banks, has gone to SOEs. This has often crowded out lending to more productive segments of the domestic private sector that frequently faces challenges related to access and cost of financing. Credit growth has been rapid in recent years however the output efficiency of credit has declined. Vietnam has made great strides in addressing some of the legacy vulnerabilities over recent years. Banking sector soundness has improved on the back of strong macroeconomic performance as well as recent reforms undertaken to address the resolution of bad assets and improve oversight. However, some vulnerabilities remain as capital buffers, at least in some banks, remain thin. Looking ahead, the creation of a more market-based financial sector is expected to improve the mobilization of savings, the diversification of risks, and the allocation of resources in the economy, all of which are critical for Vietnam’s future growth trajectory. At the same time, finance, if not managed well, can be disruptive to economic growth. Even if an outright crisis is avoided, the turn of the financial cycle that follows an unsustainable credit expansion can be associated with a prolonged episode of deleveraging, with an extended period of lackluster economic growth.

- **Establish a bank recovery and resolution framework, based on international good practice.** The authorities should establish an effective mechanism in the legal framework that would allow for an orderly exit of weak or failing financial institutions. The resolution of individual cases of poor liquidity or solvency should be done in a manner that ensures burden sharing and contains contagion. The role of the government in providing fiscal support should be clearly defined, thereby helping contain moral hazard and also protect fiscal soundness. For example, central bank emergency liquidity support should be limited to solvent banks facing short-term liquidity problems. Bank resolution will need to go hand-in-hand with improved corporate debt restructuring and insolvency as well as careful communication to markets to enhance the understanding and tolerance of financial market risks. In establishing procedures to address weak credit institutions, the SBV needs to be particularly mindful of how to deal with banks that are classified as systemic. A set of guiding principles and procedures regarding the provision of public assistance and the necessary safeguards needs to be designed. Similarly, recovery and resolution plans need to be developed by financial institutions.

- **Improve the Capital Adequacy of Weak Credit Institutions.** The current capital base of many banks is low, while credit has increased rapidly over time, particularly in the past four years. The average Capital Adequacy Ratio (CAR, risk-weighted assets and off-balance sheet exposures to regulatory capital) for the banking sector has been declining since 2012. Thin capital is particularly concerning for SOCBs which are reaching a minimum threshold of just over 9%, while equity capital has negative growth. Given the timetable to adopt Basel II standards by 2020, and the fact that many banks will need to raise capital to meet the minimum requirements, the government should develop a comprehensive strategy to recapitalize the banking sector. In the immediate term, the issuance of bonds will help banks raise new capital. Direct capital injections using divestment proceed from SOE equitization could be considered. In the absence of direct government support for the state-owned banks, it will be imperative to
allow the banks to retain their earnings to help recapitalize the banking sector. Consideration should also be given to reducing the foreign ownership limit on banks to sell equity to mobilize Tier-1 capital.

- **Improve Corporate Governance in the Banking Sector, especially SOCBs.** Ensuring sound corporate governance of state-owned financial institutions would reduce risks of related party lending, excessive risk taking and misallocation. Banks should clearly assign and enforce corporate governance responsibilities, including appropriate board committees, with effective SBV oversight. Measures could include a strengthened role for the board of directors, the appointment of more independent board members and improved risk management practices. For example, the Basel Committee on Banking Supervision’s Corporate Governance Principles requires banks to assign roles to senior management, the board of directors, and shareholders, as well as other stakeholders, providing a clear definition of the powers and duties of each role. Banks also need to have non-executive and independent members on their boards. Furthermore, banks are required to put in place appropriate committees on compensation, audit, and risk management. They are also expected to develop policies to address conflicts of interest and related party transactions. It will be imperative that SBV issues regulations for reinforcing good corporate governance and ensuring that banks, including state-owned banks, comply with the corporate governance regulations during onsite inspections.

- **Consistently apply International standards on accounting and auditing for financial reporting.** Current accounting methods based on Vietnam Accounting Standards (VAS) are not in line with International Financial Reporting Standards, and their financial statements should reflect net asset values and their economic position. The annual balance sheets, income statements, and disclosures of SOCB should be audited by independent auditors in accordance with International Standards on Auditing and published by the banks.

- **Increase the role of the market and market discipline in resource allocation.** This transition would require the financial sector to become more diversified by expanding private and non-banking financial sectors while minimizing direct state intervention and control. This approach would be consistent with the objectives of the Development Strategy of Vietnam Banking Sector to 2025. Banks should take full responsibility for managing their loan portfolios based on risk instead of adhering to allocating credit to priority sectors. The regulatory and supervisory role should remain the core role of SBV’s mandate to ensure healthy operations in the banking sector and the protection of consumers as it seeks broader autonomy as part of the medium-term development strategy.

- **Promote greater competition.** Vietnam has gradually liberalized the banking sector. This has led to an increased presence of foreign banks in Vietnam, which have helped increase competition in the sector, despite the foreign ownership limit in the banking sector being capped at 30%. The SBV started to grant licenses to wholly foreign-owned banks in 2008. In January 2014, the ownership limit for a single foreign investor was raised from 15% to 20% of shareholder equity, with a maximum ownership for all foreign investors in a single bank capped at 30%. In addition, there has been a growing partial privatization of the SOCBs that led to the creation of Joint Stock commercial Banks (JSCBs) and greater efforts to achieve compliance with the international capital standards under
the Basel capital framework. The government has already announced its intention to further open-up the financial sector to private and foreign investments, but more is needed, such as further lowering barriers to entry and ensuring even treatment of non-state-owned entities. These measures will be key in incentivizing financial development driven by market forces. The parallel strengthening of bank supervision and resolution would create the conditions to allow greater entry and competition without increased financial sector risks.

- **Further reduce direct state intervention in the banking system.** While the government has gradually reduced its role in direct credit allocation, there remain areas of direct administrative intervention and control. Consideration could be given to moving away from assigning specific credit growth limits for each commercial bank. SBV divides commercial banks into four groups, depending upon their performance in previous years, to allocate credit growth quotas. This system undermines competition, compromises weaker banks’ balance sheets, and pushes up deposit rates due to competition for deposits to meet these targets. One alternative is to use a credit growth target as guidance for the entire banking system. Reaching the target through properly calibrated macroprudential instruments should be the routine policy, as is common in any market-oriented financial sector. Consideration should be also given to removing the interest cap on short-term deposits. SBV applies an interest rate cap of 5.5 per cent for short-term deposits of 1-6 months. The rates for longer tenors are floating but benchmarked on the 6 months rate. Interest rates can be set through monetary policy instruments and in the process strengthen the transmission mechanism of monetary policy to the economy.

- **Deepen capital markets.** Alongside further steps to enhance banking sector soundness, developing domestic capital markets would increase availability of long-term financing for investment while at the same time providing more diversified savings options for households. Vietnam’s capital market remains relatively small compared to those of other ASEAN member countries. As a result, the banking system still uses short term resources for long-term financing, thus creating significant maturity mismatch and contributing to liquidity risks to the banking sector. Strong commitments from the authorities have substantially improved Vietnamese capital markets Vietnam, but more work is required to improve the functioning of capital markets and to strengthen and diversify the investor base in Vietnam. The areas that will require more attention over the coming years, that should inform the SEDS for the development of the capital markets, are summarized as follows:

- **Modernize the legal foundation of capital markets.** A strong and stable regulatory and legal framework and efficient market infrastructure are fundamental to providing market participants with the confidence to enter the market. Strengthening the regulatory

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26 The cap regulation was imposed since 2010 when commercial banks, especially ailing ones with poor liquidity, increased deposit interest rates to attract deposits. This led to a sharp rise in lending interest rates and precipitated the 2012 turbulent period. Now the macroeconomic situation is stable the cap could be removed as inflation remains low and liquidity in the banking system is favorable.
foundation and enforcement, including the Securities Law and the implementing regulations, will be key. Areas of improvements include inter alia: disclosure and market transparency, conduct of market participants, institutional and operational arrangements, and market structure. Supervisory and enforcement capacity will need to be enhanced to ensure market integrity and efficiency. The authorities will need to strike a balance between (a) protecting investors and preserving investor confidence for the right development of the market, and (b) offering flexibility in the issuance process and ensuring that the cost to enter the market is not prohibitively expensive.

- **Broaden the investor base.** A broader and more diverse investor base, especially one that includes non-bank investors, is important for sustaining market growth and increasing liquidity and reducing volatility. In this regard, the Vietnam Social Security Fund should be allowed, and even encouraged, to expand its investment expertise and to diversify its investments beyond government securities. It should do this to improve its financial performance and ability to honor its long-term liabilities, as well as to support the development of corporate bond and equity markets. The development of private pension funds will also be important for creating long-term saving vehicles for individuals and a long-term funding mobilization tool for capital markets. Fueled in part by a dynamic, consumer-oriented, private sector, there has been rapid expansion of the retail banking, life insurance, and mutual fund sectors over the past decade in Vietnam—a trend that is likely to continue. Meanwhile, though foreign investors can provide substantial liquidity for capital markets in Vietnam, the associated risks need to be well managed. Working towards the inclusion of Vietnam into the global emerging market equity and bond indices will generate an impetus to drive necessary reforms, and will in turn attract more foreign capital inflow with such positive signals of being upgraded.

- **Improve governance, information dissemination, and market infrastructure.** A significant challenge in Vietnam is to build a robust credit culture where risks are measured and priced objectively through a high standard of information disclosure. Exposure to the corporate bond market remains extremely limited, in part due to the current lack of transparency and information available to prospective investors, but also due to the lack of sufficient high-quality issues on offer. High-quality analysis, such as that provided by credit rating agencies, is needed to ensure that financial markets can function adequately, and bond issuances can be rated and priced accordingly. Meanwhile, accessible and reliable information regarding the markets and the securities is necessary to increase investor confidence. There is still room for improvement in providing reliable and timely information to foreign investors.
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<td>Creating a national public service portal with data exchange, standardization, identification, and process integration across the country.</td>
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BACKGROUND

PAPER 3

Efficient Infrastructure

This is a supporting paper prepared for the report *Vibrant Vietnam: Forging the Foundation of a High-Income Economy*. The paper was written by Madhu Raghunath, Vivien Foster, and Aditi Raina with inputs from Alwaled Fareed Alatabani, Anna L Wielogorska, Kien Trung Tran, Jen JungEun Oh, Shigeyuki Sakaki, David Malcolm Lord, Mark Alexander Giblett, Rahul Kitchlu, Zhiyu Jerry Chen, and Victoria Hilda Rigby Delmon.
Summary Note

As Vietnam advances in the middle-income country spectrum, the key challenge in the infrastructure sectors is not primarily of quantity but of quality, with a focus on prioritization, quality, and efficiency of investments. This note focuses on answering this question: “How can Vietnam finance and deliver core growth-enhancing infrastructure in the context of tight public finances?” The note surveys a substantial body of analytical work undertaken during the last five years by the World Bank and other international organizations on Vietnam’s infrastructure sectors. The analysis is concentrated on two pillars: how to improve the efficiency of resources that are already being spent, and how to raise additional resources.

Improving efficiency

There is abundant evidence that Vietnam’s infrastructure investments are not as efficient as they could be. This affects both the capital efficiency of investments and the operating efficiency of infrastructure systems. Capital efficiency requires well-selected projects to be implemented at least cost. This entails both selecting the project that represents the most efficient way of meeting demand and building that project as cost-effectively as possible. Operational efficiency requires ensuring that the costs of running an infrastructure service are kept close to the technically feasible minimum. In Vietnam, under both aspects, there is scope to achieve much greater impact from the current investment envelope, or conversely to achieve similar outcomes while spending less.

In Vietnam, least-cost planning is effectively implemented in sectors that are centralized, such as electricity; however, the same culture does not exist in other geographically or institutionally decentralized sectors. Institutional fragmentation greatly complicates the infrastructure planning process, and failures to coordinate across spatial or sectoral jurisdictions can lead to costly mistakes in project selection. Examples of all of these problems are prevalent across the transportation, water, and urban infrastructure sectors. It is recommended that capital efficiency be optimized through planning, financing, and coordinating infrastructure across geographic and sectoral jurisdictions.

Single-source selection remains the main form of bidding to select investors, despite the legal requirement of competitive procurement. In the transport sector, it has been reported that the lack of competition, low bid price, and low number of bids for tenders has led to the high cost of road construction. In the power sector, the lack of open competition is one of the key constraints affecting further development of independent power projects for the further expansion of generation plants. Therefore, it is recommended that competitive procurement be more consistently applied, and that measures be taken to address associated implementation challenges.
Despite high levels of infrastructure investment in Vietnam, maintenance budgets have typically not been adequately funded. Good maintenance generates substantial savings by reducing the total life-cycle cost of transport and water and sanitation infrastructure by more than 50 percent, and also increases the lifetime of assets. In Vietnam, a shortage of maintenance funds has been observed across several sectors, particularly for water- and transport-related infrastructure. Going forward, greater efforts need to be made to estimate maintenance requirements of infrastructure assets and align budgetary allocations at the design stage.

Operational performance of Vietnam’s utilities against its East Asian neighbors shows that it is exceptionally high in the electricity sector, moderate in the water sector, and barely incipient in the wastewater sector. Strong operating efficiency of utilities is closely associated with their ability to deliver reliable universal service to citizens. Vietnam urgently needs to catch up with the development of wastewater systems, improve operations in the water sector, and deepen policy reform in the energy sector.

Vietnam’s poor performance on trade logistics, ranking well below regional peers such as China, Malaysia, and Thailand, hinders its trade competitiveness and overall value for money of infrastructure investments. Two important sources of high logistics costs are customs facilitation and the trucking industry. Therefore, it is recommended that Vietnam redouble its efforts to fully automate the clearance process and consolidate and modernize its trucking fleet. The productivity of infrastructure investments is often dependent on a supportive enabling environment in terms of regulatory, administrative, and institutional factors. Improvements in these “soft dimensions” can greatly increase the efficiency of infrastructure service provision and enhance the impact of existing infrastructure at negligible cost.

Raising resources

Vietnam has done relatively little to expand and diversify funding sources for infrastructure. Irrespective of how infrastructure is financed, it must ultimately be funded either through user fees or tax contributions. Vietnam has tended to set user fees for network services at comparatively low or symbolic levels and has yet to develop adequate local tax bases to fund (in particular) urban infrastructure. Once adequate funding can be captured for the sector, there is scope to diversify financing sources by increased reliance on private sector project finance, corporate balance sheet financing by state-owned enterprises, and developing new local capital market instruments.

In the utilities sector, only electricity recovers operating expenditures. The others—water, wastewater, and solid waste management—do not. Even in the energy sector, tariff earnings are not adequate to cover the investment costs of the sector. Therefore, there is a need to substantially increase the percentage of public service costs covered through user charges, while safeguarding affordability.

Despite increased responsibility over spending, central fiscal rules and norms affect local autonomy over budget decisions in selected areas and distort resource allocation. Minimum
allocations are sometimes set without due consideration of actual needs or the level of service provision by central authorities within a province. With the increased emphasis on decentralization, local governments need to be provided with greater revenue autonomy to allow for enhanced and effective service delivery. Measures could include flexibility in setting specific tax rates/user fees, introducing modern property taxation, and increasing revenue-sharing arrangements between the central and local governments.

Vietnam’s new regulatory framework for procuring public-private partnerships (PPPs) is, on paper, well-designed relative to regional peers in terms of PPP preparation, procurement, and management. In practice, however, it has seldom been applied. The lax implementation of the regulatory framework for PPPs acts as a disincentive for foreign investors. There are several important measures that should be taken to unlock the potential for further private sector finance of infrastructure, including the enactment of a PPP law, a standard PPP contractual framework, and a priority PPP pipeline list, along with adequate provisions for risk-sharing mechanisms.

Constraints on the banking sector necessitate finding alternatives to loan-based infrastructure financing. The overall market of corporate bonds remains relatively small, at around 6.9 percent of GDP, compared to bank deposits amounting to 137 percent of GDP. Underdeveloped equity and bond markets prevent institutional investors from financing infrastructure investment. State-owned enterprises with strong financial performance may be able to raise corporate bonds or syndicated loans on the strength of a credit rating. This approach is already being tried with some success in the power sector but remains to be adopted for other areas of infrastructure. Potential candidates could be the Vietnam Expressway Corporation or Vietnam Airlines in the transport sector.

Table 3.1 summarizes the key overarching recommendations under the two pillars.

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<td>3. Plan infrastructure based on demands of productive and social sectors.</td>
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<td>8. Introduce independent mechanism for procurement complaints.</td>
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<td><strong>Improving efficiency</strong></td>
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<td>2. Ensure budgeting of maintenance expenditures for new projects.</td>
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<td>3. Use service contracts to institutionalize maintenance activities.</td>
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<td>4. Raise additional funding sources for road maintenance.</td>
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<td>5. Catch-up with development of wastewater systems.</td>
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<td>7. Complete full automation of the customs clearance process.</td>
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Policy Note

Introduction

Vietnam has been doing a remarkable job of investing in infrastructure. Since 2012, Vietnam has consistently invested around 6-8 percent of GDP in critical infrastructure networks, which is towards the upper end of World Bank’s normative range for infrastructure investment needs in East Asia and Pacific. This sustained commitment to infrastructure has yielded many important achievements, including: universal access to energy; exponential growth of power generation capacity; improved transport services and logistics that have enabled business and exports to become a key growth driver; and widespread provision of treated water services.

Yet, Vietnam’s middle-income status is creating further demands for infrastructure. Several recent assessments coincide in their finding that Vietnam’s infrastructure investment needs will only increase going forward. Estimates for the period 2015-25 lie in the range of USD 17-25 bn/year, based on studies undertaken by the ADB, UNESCAP and WB as well as KPMG. While few estimates have been made beyond the 2025 horizon, it is expected that the energy sector alone will have investment requirements of the order of USD8-12 bn/yr through 2030. Such estimates reflect underlying exponential growth rates for infrastructure services, which have consistently exceeded GDP growth. Thus, while the economy grew at almost 6 percent on average from 2008-15,

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28 Rozenberg, J. and M. Fay eds. (2019) Beyond the Gap: How Countries Can Afford the Infrastructure They Need While Protecting the Planet, Sustainable Infrastructure Series, World Bank, Washington DC. The estimates produced by this study are based on the objective of meeting the Sustainable Development Goals by 2030 and may not fully encompass a country’s infrastructure investment agenda.


electricity demand and containerized freight volumes grew at approximately twice this rate. Another key driver of infrastructure investment is the need to enhance infrastructure quality. According to the World Economic Forum’s index, the quality of Vietnam’s infrastructure ranks about 80 out of 137 economies worldwide, ahead of some neighboring countries such as Philippines, Lao PDR and Cambodia, yet still lagging-behind other regional peers such as Thailand, China and Indonesia.

At the same time, the historic model of public financing in Vietnam of infrastructure will be increasingly constrained. Vietnam has been relying primarily on public investment to finance infrastructure expansion, with private investment in infrastructure limited to less than 1 percent of GDP over the last decade and captured almost entirely by the energy sector. However, fiscal deficits and high levels of public debt in Vietnam are making it increasingly difficult to fund infrastructure publicly. Vietnam recorded a government budget deficit about 4.7% of the country’s GDP in 2017. Public and publicly guaranteed debt has risen steeply from 51.7% of GDP in 2010 to around 61.4% of GDP in 2017\(^{31}\). While the fiscal space has gradually improved in 2018-19, public finances are projected to remain tight for some years to come, at least until the completion of the government’s draft Medium Term Financial and Budgetary Plan (2016-20). Moreover, Overseas Development Assistance is in decline, since – as a middle-income country – Vietnam has graduated from concessional financing windows of IFIs. Concessional loan disbursements have fallen from an estimated 4.6% of GDP in 2010 to 2.7% of GDP in 2015 and to 1.3% by 2018, leaving the country more dependent on non-concessional sources.

To ease these constraints, concerted action is required on two key pillars: (1) improving expenditure efficiency; and (2) tapping new sources of funding and financing. This chapter surveys a substantial body of analytical work that has been undertaken on Vietnam’s infrastructure sectors during the last five years, by the World Bank and other international organizations; seeking to distill the common messages that are relevant to the current infrastructure challenge\(^{32}\). The chapter takes a cross-cutting approach, identifying the main issues that are relevant to many if not all infrastructure sectors, while at the same time providing concrete sectoral illustrations. The balance of evidence points towards two broad strategies that need to be mainstreamed across Vietnam’s infrastructure sectors.

\(^{31}\) Vietnam’s statutory public debt ceiling is set at 65% of GDP.

\(^{32}\) This comprises of approximately 29 studies primarily from the World Bank and other international organizations such as UNESCAP, UNCTAD, EU and the IMF. Two sectors are not addressed in full in this report – railways and urban infrastructure. The single railways track between Hanoi and HCMC carries only about 4% of Vietnam’s freight and therefore, the focus was maintained on maritime (ports), road and air transport infrastructure. Secondly, urban infrastructure issues are detailed in a parallel World Bank 2019 report called “Vietnam: Urbanization Review - Shifting the GEAR: Putting Vietnam’s Urbanization onto an Efficient, Inclusive, and Resilient pathway”.

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**FIGURE 3.2. Estimates of infrastructure investment needs**

<table>
<thead>
<tr>
<th>Estimation Level/Sector</th>
<th>Time horizon</th>
<th>Annual average ($billion)</th>
<th>% of GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country level*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADB</td>
<td>2015-2025</td>
<td>16.7</td>
<td>5.42%</td>
</tr>
<tr>
<td>WB</td>
<td>25</td>
<td></td>
<td>~11%</td>
</tr>
<tr>
<td>KPMG</td>
<td>2013-2020</td>
<td>24.2</td>
<td>9.66%</td>
</tr>
<tr>
<td>UNESCAP</td>
<td>2016-2020</td>
<td>23.4</td>
<td>9.68%</td>
</tr>
<tr>
<td>Electricity**</td>
<td>2016-2030</td>
<td>8 - 12</td>
<td></td>
</tr>
<tr>
<td>Gas**</td>
<td>2015-2035</td>
<td>2.5</td>
<td></td>
</tr>
<tr>
<td>Water and Sanitation***</td>
<td>-2030</td>
<td>2.7</td>
<td></td>
</tr>
<tr>
<td>Solid Waste Management***</td>
<td>-2030</td>
<td>1.08</td>
<td></td>
</tr>
</tbody>
</table>

Source:


Pillar I: Improving efficiency

There are many dimensions of efficiency of infrastructure spending. Due to data limitations, attention here will focus on capital and operating efficiency, or whether assets are built and operated at least cost. For future analytical work, a dimension of potential interest is allocative efficiency, or whether resources are allocated to their highest economic value. Assessing allocative efficiency would require both richer information about expenditure patterns, as well as a macro-economic model to estimate the economic return to different types of infrastructure investments. This exercise is not possible at present. Another related and important issue that lies beyond the scope of the current exercise would be to examine the spatial and socio-economic equity of infrastructure spending. It is important to note that, in general, a strong Public Investment Management (PIM) framework enables governments to improve the efficacy (strategic fit of the project) and efficiency (economic cost-benefit analysis) of investment expenditure, by systematically identifying and selecting projects based on country priorities, determining appropriate financing modalities and consistently monitoring the fiscal affordability of all projects.33

A. Capital efficiency

Capital efficiency is achieved when well selected projects are implemented at least cost. This entails both selecting the project that represents the most efficient way of meeting demand and building that project as cost-effectively as possible. First, the selection of efficient projects is generally achieved through least cost planning, which is a process where demand is estimated and the most cost-effective interventions for meeting that demand are systematically identified. Ideally, demand management approaches should be considered alongside supply expansion as alternative ways of achieving supply-demand balance. Least cost planning calls for a single technically-competent entity with a global view of the economy to examine all available options in a comprehensive and even-handed manner. Good sector data and modeling tools provide a solid basis for least cost planning. The analysis should take whole life costing into account to ensure that solutions are found that are cost effective to build and operate. Second, the efficient implementation of projects is generally achieved through competitive procurement. Projects selected through the least cost planning process are tendered out so that alternative companies can compete for construction contracts. The goal of government procurement is to deliver infrastructure services at the lowest costs with a reasonable level of quality. For this, competition is key as it would induce the bidding firms to reveal their true costs leading to not only lower procurement costs but also preventing corruption and collusion. The competitive process creates pressures for companies to drive down construction costs, making this typically the most effective method for achieving value for money.

A.1. Selecting least cost projects

In Vietnam, least-cost planning is effectively implemented in sectors that are centralized such as electricity. Vietnam’s power sector plans benefit from a strong technical planning culture, with a high degree of compliance as the plans are treated as authoritative. Vietnam has a clearly

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33 Key features of an effective public investment management systems are detailed in the Appendix 3.
identified entity with functional responsibility and technical competence to produce least cost power generation master plans. Master plans for all types of energy are prepared by the Institute of Energy (from 1995-2010 under EVN, then under MOIT). EVN and its subsidiaries treat the plans as mandatory government directions for investment decisions. Plans thus lead to timely initiation of power procurement to minimize the possibility of power shortages. The plan is reviewed and revised after 5 years and occasionally updated. As a result, Vietnam has averted major crises of supply, with rapid construction of generation capacity from a total of 2.2 GW in 1990 to over 50 GW in 2019, leading to a reserve margin of 30 percent by 2019. This has had an important impact on the reliability of supply with outages being drastically reduced to less than 1,000 minutes per year.

However, in other areas of infrastructure where responsibilities are geographically decentralized or otherwise fragmented, the same culture of defining and abiding by least cost plans does not exist. Over the last three decades, the responsibilities, and resources have been greatly decentralized and local governments are now responsible for 65 percent of the total public expenditures, up from 35 percent in 1996. Under this system, the local autonomy and competition contributed greatly to the dynamic economic and social progress. At the same time, weak planning and management capacity of many local governments also contributed to various excesses and fragmentation. Furthermore, the planning system in Vietnam is characterized as institutionally complex, overlapping and overproduction of plans—around 20,000 plans, guided by more than 70 legal documents and 70 decrees. These plans are prepared by different ministries/departments, often based on different schedules, and use inconsistent data and projections for planning. There are virtually no effective mechanisms for inter-provincial or inter-city/district coordination, resulting in over competition for resources and duplication of infrastructures such as ports, airports and industrial parks.

Institutional fragmentation greatly complicates the infrastructure planning process, and failures to coordinate across spatial or sectoral jurisdictions can lead to costly mistakes in project selection. While national infrastructure networks need to function as integrated systems, the division of institutional responsibility prevents the relevant decision-makers optimizing and planning infrastructure accordingly. Even when they attempt to do so, it may be challenging to coordinate and synchronize different budgeting processes and implementation timelines. When it comes to decentralization, recent studies suggest a significant disconnect between planned investments and effective demand at the provincial level. This is because individual provinces tend to identify and undertake their own infrastructure plans and projects that end up competing against each other rather than being strategically coordinated. Examples of all of these problems are prevalent across the transportation, water and urban infrastructure sectors.

**Ports.** The port and marine terminal systems – in particular – exhibit high geographical, administrative and operational fragmentation with planners having emphasized quantity of terminals over quality.

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of cargo services, leading to excess capacity in port infrastructure (most notably in the southern part of Vietnam). The promotion of multiple small ports in both the HCMC-Cai Mep and Haiphong-Cai Lan corridors has made Vietnam the most fragmented container terminal market in the world. The number of terminals in HCMC/Cai Mep and Haiphong/Cai Lan is about twice as high as that found at the world’s major ports, while handling significantly lower volumes\(^\text{36}\). The underutilization of port facilities in the South has also led to financially weak investments for terminal operators, which might hinder their willingness to make further At the same time, there is inadequate attention to the development of the kind of large-scale facilities that are increasingly being demanded by the market. As a result, Northern ports in the Hanoi area are at risk of saturation in the medium term\(^\text{37}\).

**Multi-modal corridors.** Highway projects that provide access to inland container depots, marine ports, and airports are seldom planned and implemented as integrated systems\(^\text{38}\). Existing road corridors often go through the inner city, mixing traffic of trucks traveling to ports with commuters’ motorbikes, which aggravates congestion while preventing adequate usage of port facilities. The access roads to the Inland Waterways ports are small and have a handling capacity of 10-15T trucks, which limits the usage of bigger trucks for the last mile delivery of the goods carried through the IWT network\(^\text{39}\). In the port sector, only one of the 18 dry ports are connected by rail to the national railway network\(^\text{40}\). Haiphong port is missing a direct access road and a railway connection to ease container movements. The Vung Tau Seaport Complex is built to handle large intercontinental ships but poorly connected both by road and inland waterway\(^\text{41}\).

**Airports.** Similar issues of supply-demand mismatch are found in the airport sector, which are once again planned and implemented at the provincial level, leading to problems of both under and over-capacity in different cases. For example, Hanoi’s Noi Bai airport has a capacity of 21 million passengers per year but accommodated some 24 million passengers in 2017. Ho Chi Minh City’s Tan Son Nhat International airport handled 36 million passengers in 2017, although its design capacity is 25 million. Conversely, there are concerns about over-supply of airports at the provincial level. Take the case of Ba Ria-Vung Tau that already has an operational airport on Con Dao Island while the mega Long Thanh International Airport being planned in southern Dong Nai Province is just 40 kilometers away. Rather than building another airport in the south of the province, greater efficiency can be obtained by improving the expressway connection between Ba Ria-Vung Tau and HCMC\(^\text{42}\). Furthermore, despite the fact that Vietnam’s air freight market has grown by an average of 15.6 percent between 2011-2017, only two out of Vietnam’s 22 airports have specialized areas for air cargo and aviation logistics:

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Noi Bai in Hanoi and Tan Son Nhat in Ho Chi Minh City. This limited lack of facilities is constraining the growth of this dynamic sector.\textsuperscript{43}

**Irrigation.** In the agricultural sector, there is a budgetary challenge in aligning sub-national spending with national priorities. The Ministry of Agriculture and Rural Development (MARD) controls a fifth of the irrigation sector spending, with four-fifths directly managed by sub-national governments under a complex institutional structure. Such decentralization has supported a shift from major infrastructure projects to small, local ones and limited scope for major water sector infrastructure investments. A recent study found that reducing water stress in just one basin required 24 measures from seven ministries, six provincial councils, multiple municipalities, numerous irrigation companies and private firms, and millions of farmers and city dwellers.\textsuperscript{44} Beyond irrigation infrastructure, even the planning of Water Resource Management is complicated by the involvement of three distinct ministries: Natural Resources and Environment; Agriculture and Rural Development; and Trade and Industry.\textsuperscript{45}

**Urban infrastructure.** Despite large investments in urban infrastructure and intensive industrialization, there are signs of overall stagnation of labor efficiency in key urban centers and limited scale of agglomeration benefits at the metropolitan level.\textsuperscript{46} The weak contribution of agglomeration to economic efficiency reflects infrastructure shortages that create congestion effects and constrain factor mobility. Also, planning constraints that prevent replacement of ageing infrastructure in city centers tend to drive development to the peripheries. In major cities, like Hanoi and Ho Chi Minh City, there is a sharp imbalance between the city’s core area, where population density can be as high as 44,000 people per square kilometer, and suburban areas with a density that can be as low as 100 people per square kilometer, leading to urban sprawl.\textsuperscript{47} Such low-density development with limited infrastructure impedes positive agglomeration effects and creates fragmented urban areas that do not function as economically and physically integrated metropolitan areas.

Going forward, it is recommended that capital efficiency can be optimized through planning, financing and coordinating infrastructure across geographical and sectoral jurisdictions. The following specific recommendations can be offered.

**First, Vietnam should strengthen the framework for inter-governmental coordination on infrastructure planning; and increase planning capacity at the provincial and municipal levels.** Coordination needs to improve both between national and provincial governments, as well as between provincial governments. Where any degree of decentralization has taken place, the

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relevant sub-national authorities should be actively involved in the national planning process, and their own capacity to undertake forecasting and planning activities should be further enhanced. This is especially important given the synchronous nature of connectivity infrastructure with other critical sectors such as between transport and urban planning, transport and irrigation, etc. There needs to be a clear delineation of roles and responsibilities, as well as decision-making processes, across layers of government. In the case of large cities, there is a need for stronger cross-municipal collaboration particularly in large metropolitan areas, notably the large economic poles in the Southeast and Red River Delta regions. While the Vietnam has had some success with the establishment of Regional Steering Committees to coordinate various regulatory and investment issues, these arrangements need to be further strengthened so that the committees may function as true cooperatives on regional issues. In particular, the Regional Steering Committees could draw up cooperative economic development plans, to turn the focus of local economic planning and investment from competing with neighboring provinces for similar investments toward specialization and inter-provincial cooperation. This would necessitate some pact for sharing of local tax revenues across jurisdictions and could be further supported by targeted fiscal support from the national government. The case of New York and New Jersey joint Harbor Development Commission provides an interesting example of coordination across jurisdictions (see Appendix).

Second, Vietnam’s infrastructure planning should be more closely informed by an understanding of the demand patterns and business requirements of the productive and social sectors. Infrastructure planning must be informed by a clear understanding of the economic and social geography of the country, and how this affects the spatial patterns of demand for infrastructure services. Transport provides a particularly clear example. Transport planning and investment strategies need to be informed by value chain criticality of transport corridors, to promote a robust, trade-oriented connectivity policies and investments. At present, the objectives of enhancing trade competitiveness are not explicitly linked with the objectives of improving connectivity. Trade information, especially on value chains, is rarely used in policy formulation. Therefore, there needs to be systematic collection of relevant trade and transport data in addition to other economic statistics, a system where such data are consolidated and analyzed, and procedures by which the analytical outputs have tangible influence over the planning and investment decision processes. It is advisable that relevant trade and transport data are shared also with the private sector, who can then make their business decisions based on the overall economic trends and public sector investments, such as strategically locating along their relevant value chain linkages or deepening their participation in certain value chains. The ongoing efforts by the Ministry of Transport (MOT) to establish the Vietnam Logistics Statistical System is an important step in the right direction.

Third, Vietnam should develop a strong national planning system for each of the main infrastructure sectors, building on the successful experience in the power sector. The

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48 Ibid.
national planning process should not only encompass the different tiers of government, but all the different areas of infrastructure that need to work together to deliver on the country’s development vision. Nowhere is the cross-sectoral coordination of planning more necessary than in the transportation sector, where an integrated national multi-modal planning framework is needed to rationalize investment decisions across related modes of transportation. It is essential to re-configure the network in international gateways with a view to enhance capacity and efficiency. The relatively new deep-sea ports in Vung Tau Seaport Complex and Lach Huyen present opportunities to further consolidate cargo, attract large intercontinental vessels, and hence lower transport costs and transit time. Investments in hinterland connectivity are critical for success of these ports. Critical gateways should be viewed as a network with complementary roles and unnecessary competition at the local level must be discouraged.

Fourth, Vietnam should take measures to enhance multi-modal connectivity between terrestrial and aquatic modes of transportation. The strengthening of exchange nodes between terrestrial and aquatic infrastructure, as well as the improvement of logistics for inland waterways and maritime transportation would bring benefits both by reducing transport costs and enhancing the resilience of the transport system. Several measures need to be implemented, including promotion of containerization of inland waterway transport, development of river ports with strong hinterland connection, and promotion of coastal shipping along the north-south corridor. Consolidation at gateways with the structure and capabilities to handle intercontinental vessels, supported by good domestic shipping and land connectivity, is beneficial for importers, exporters, and shippers alike, as such an arrangement can significantly lower transit time and reduce trade costs with some of Vietnam’s major trade partners.

A.2. Implementing projects at least cost

By law, the default mode of public procurement in Vietnam is competitive, yet this is not typically adhered to. Single Source Selection remains the main form of bidding to select investors. For example, in 2017, almost 70% of all public contracts were directly contracted, accounting for about 13% of the total value of public contracts that tended to be of small value. Contracts procured by direct negotiation on average led to savings of 2.6%, compared to 7.0% for competitively procured contracts. While the revised Public Procurement Law (PPL) can be considered a comprehensive and mature law broadly following international standards, appropriate implementation and enforcement lags behind. A common practice is the deliberate division of works into smaller packages for direct contracting or less competitive bidding methods. Further, some legal documents issued for specific sectors still allow widespread use of direct selection that tend to compromise quality of civil works. In the transport sector, it has been reported that the lack of competition, low bid price and low number of bids for tenders has led to high cost

51 The key reasons are: first, the projects are in the urgent group with investment decision to be made by the Prime Minister; second, only one investor registers after 30-day disclosure of the project portfolio
52 In 2017, USD 16.84 billion was awarded through the open competitive bidding (including ODA financed contracts), representing some 72.84% of the total contract value awarded.
53 Public Procurement Law No.43/2013/QH13
of road construction\textsuperscript{55}, and that private construction and operation of port facilities does not follow competitive tendering\textsuperscript{56}. In the power sector, the lack of open competition is one of the key constraints affecting further development of Independent Power Projects for the further expansion of generation plant\textsuperscript{57}.

**Even where competitive procurement is applied, significant implementation challenges persist.** For the vast majority of contracts that were competitively procured following the Procurement Law, the level of competition and bidding results were low – only 3 bids were received, with 2 rejected as non-responsive and, therefore, only one qualifying and being selected with the bid price close to approved cost estimate.\textsuperscript{58} Another practice that compromises the value for money is the manipulation of evaluation criteria or choice of inappropriate contract types to allow adjustment of unit prices. Furthermore, where intensive competition does exist, the problem of low-balling has arisen such that the winning firms bid below the engineering cost estimates in order to secure the contract, but then face difficulties in delivering the desired quality of infrastructure.

**There is scope to further expand the scope of e-Procurement, which has proved successful for smaller contracts, but has not yet been extended to larger ones.**\textsuperscript{59} Since the Ministry of Planning and Investment issued the e-procurement implementation roadmap, the number of e-procured contracts increased sharply from 500 in 2015 to 8,200 in 2017 (with aggregate values rising from USD 18 million to USD 352 million respectively). Savings from e-procurement in 2017 was 8.2%, higher than the average number of 7.0% through regular procurement processes. The ratio of contracts, subject to competitive procurement, under the e-Procurement system in 2018 was only 28.5\textsuperscript{60}, due to the restrictions on technical, resources and communication at the Public Procurement Agency. The trend also shows that while the transparency and competitiveness of small value procurement is increasing (less than VND 20 billion/USD 870,000), more active measures need to be undertaken to increase the transparency and competitiveness of large value procurements. The success of the e-Procurement system should be based on the value of the packages as opposed to the number of packages procured.

**Going forward, it is recommended that competitive procurement be more consistently applied, and that measures be taken to address associated implementation challenges.** The following specific recommendations can be offered.

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\textsuperscript{55} Academic research suggests single-bid contracts are more expensive on average, so increasing the number of bidders could lead to greater savings for the government. A study conducted in Europe estimated that one additional information item published decreases single bidding by 0.4-0.7 \% points. Considering that single bidder contracts are on average 7.1\% more expensive than contracts with two or more bidders, the associated annual price savings across Europe with just an increase of five items leads to savings of about €3.6-6.3 billion per year.

\textsuperscript{56} World Bank. The Role of the State in Vietnam’s Economic Development: Enhancing the role of the state in facilitating a more competitive and productive economy.


\textsuperscript{58} An ongoing World Bank study under ASA - Assessing the procurement impact of disclosing ceiling budgets in the bidding documents for procurement of works, China and Vietnam


First, Vietnam should develop clear procedures for addressing unsolicited bids in the context of private sector participation. The World Bank’s global benchmarking report “Procuring Infrastructure Public-Private Partnerships” identifies the lack of a regulatory framework for addressing Unsolicited Proposals as one of the weaknesses in Vietnam’s Public-Private Partnership (PPP) procurement framework (see Appendix 2 for details)\(^\text{61}\). In particular, the study highlights the lack of any vetting procedure to ensure that Unsolicited Proposals meet basic pre-feasibility requirements. Also, there are no provisions for the projects that are put forward in such Unsolicited Proposals to be opened-up to competitive bids by additional interested parties.

Second, Vietnam needs to incorporate measures to safeguard quality in competitive procurement processes. The design of competitive processes should reflect the multi-dimensional nature of bidding, and particularly the need to balance cost and quality considerations. Typically, this involves defining objective parameters that can be used to assess the quality dimension of competing proposals and specifying the relative weights that will be applied to cost and quality dimensions of the bid evaluation. For critical areas, it may also be important to specify technical minimum quality standards that should not be compromised by cost-cutting measures.

Third, Vietnam may benefit from a move towards more standardized contracts. Several countries, including Colombia (see Appendix), have found that standardizing bidding documents and contractual instruments used for particular types of infrastructure can help to promote stronger participation in public tenders\(^\text{62}\). Such documents specify in detail the requirements the bidders must meet to apply for the tender and potentially win the contract, including transparency agreements, basic bidding letters, past experience, organizational capacity, financial status, social clauses to hire local staff, among others. Standard documents enable the contracting process to be more transparent and prevent tender specifications from being tailored to favor particular bidders. They are also helpful for smaller firms who have limited capacity to prepare ready-made documents that they are aware of as opposed to trying to bid for customized specifications.

Fourth, Vietnam should introduce a more independent mechanism to deal with procurement complaints. This would help to improve transparency of procurement information and enhancing contract management and could be achieved through the following actions. First, it is necessary to strengthen inspection, examination and audit of procurement and to consolidate the provisions on procurement sanctions within single instrument as opposed to scattered across multiple instruments such as the Criminal Code, the Law on Anticorruption and numerous decisions and decrees. Second, in order to ensure the law is properly implemented, it is necessary to raise awareness and to consolidate the system of state management of public procurement. It is clearly not sufficient to indicate behaviors through the law, but these must be reinforced by positive implementation practices with strong management and accountability.

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B. Operating efficiency

Operational efficiency is achieved when the costs of running an infrastructure service are kept close to the technically feasible minimum. Once capital investments have been made, the resulting assets are used to deliver a variety of infrastructure services, typically incurring additional costs to operate the system. In the case of infrastructure, a major component of operating costs is asset maintenance. Maintenance expenditures are complex because they create a short-run cost, but at the same time generate a long-run benefit by postponing the need for rehabilitation and prolonging the overall life of an asset. Following a sound maintenance regime will thus minimize the lifecycle cost of operating the asset. A second major component of operating cost (at least for network utilities) are losses of water or energy that can take place in poorly maintained distribution systems. While some loss of water or energy is technically inevitable, many utilities around the world experience losses far above these minimum standards. Finally, for the case of transport, efficiency depends as much on the nature of transportation services provided across the road network as on the condition of the road network itself. This makes it particularly important to ensure that there is an adequate regulatory environment for transportation companies to ensure that vehicles are operated efficiently, and associated logistics run smoothly.

B.1. Minimizing lifecycle costs of infrastructure through regular maintenance

Despite high levels of infrastructure investment in Vietnam, maintenance budgets have typically not been adequately funded. The problem of inadequate maintenance is essentially one of poor asset management. The key concept of asset management is preventive maintenance management. In conventional maintenance methods, corrective/palliative maintenance is carried out wherein repairs are undertaken based on information collected through periodic examination on the damage and deterioration of infrastructure. On the other hand, predictive maintenance management requires future forecasting of infrastructure based on damage factors and deterioration mechanisms of facilities and repairing them in advance by making good use of the latest technology. Good maintenance generates substantial savings, reducing the total life-cycle cost of transport and water and sanitation infrastructure by more than 50 percent, and also increases the lifetime of assets.

An analysis conducted on member countries of the Organization for Economic Cooperation and Development (OECD) suggests that each additional $1 spent on road maintenance saves $1.5 in new investments, making better maintenance a very cost-effective option. For the developing world, infrastructure maintenance needs represent about 50 percent of infrastructure investment needs overall; while in the water and transport sectors maintenance needs can be as large as investment

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needs\textsuperscript{67}. In Vietnam, a shortage of maintenance funds has been observed across several sectors, particularly for water and transport-related infrastructures. The Central Fund only meets 44.05\% of the minimum needs in road maintenance. The centralized and increasing yearly revenue has enabled the budget allocation to the responsible units, who could perform road maintenance promptly to ensure traffic safety and sustain road quality. However, as the road network expands, the demand for maintenance will rise sharply and the existing toll collection may not be sufficient to meet overall maintenance needs.

**Water.** In inland waterways, the maintenance backlog is considerable. Despite the recent increase in the level of Vietnam Inland Waterways Administration (VIWA) Operations & Maintenance (O&M) funding allocated through the state budget\textsuperscript{68}, resources still fall well short of the sector’s need.\textsuperscript{69,70} Similarly, the irrigation systems in Vietnam are servicing well below their designed capacities in part due to deferred maintenance. Between 2009 and 2012, public expenditure on new irrigation investment increased substantially, but the allocation to O&M was reduced. In fact, about 70 percent of the total O&M budget provided by the government is currently utilized to cover the administrative costs of irrigation management entities with only the remaining 30 percent allocated to maintenance activities, which is evidently inadequate\textsuperscript{71}. Similarly, while access to rural water supply and sanitation has increased significantly under the National Target Program (NTP) for Rural Water Supply and Sanitation, arrangements for sustainable O&M are undeveloped. As of June 2016, MARD reported that 10 percent of piped water schemes were not functional, while 15 percent functioned below their design capacity. In mountainous and ethnic-minority areas, an estimated 33–48 percent of piped water schemes are entirely out of use or operating poorly\textsuperscript{72}.

**Transport.** In transport, while recurrent expenditure grew twice as fast as capital expenditure from 2009 to 2012, total capital expenditure still represented about 82 percent of the total transport expenditures in 2012\textsuperscript{73}. This is observed particularly in the road sector where even though Vietnam has a complete road network with a relatively high road density of about 0.87km of road per sq.km, the full potential is hindered by its poor condition due to low levels of maintenance and associated funding. Total recurrent expenditure for road maintenance increased on average at about 15 percent annually in the period 2009-12, yet by 2012 it still only represented about 10\% percent of the level of capital investment, compared to 22\% in Bangladesh, 30\% in the OECD and 37\% in Indonesia. Indeed, it is estimated that Vietnam’s recurrent expenditure on roads at the national level barely covers 50 percent of the maintenance norm-based needs\textsuperscript{74}. A similar story can be told at the provincial

\textsuperscript{67} Rozenberg, Julie, and Marianne Fay. 2019. Ibid.
\textsuperscript{68} It has increased by nearly 80\% percent over the 5 years, 2013-2017.
\textsuperscript{70} The average budget allocation to the road network is between 15-20 times higher per tonne-km carried than for the waterways network, even though waterways carry 80 percent of the scale of traffic task handled by road transport and have much lower adverse external costs of congestion, environment and accidents.
\textsuperscript{72} Ibid.
level where current levels of recurrent expenditure cover just over 40 percent of maintenance requirements. These maintenance shortfalls take place despite the existence of a dedicated Road Maintenance Fund in Vietnam since 2012 aimed at security such resources for both national and provincial roads. The reason is that the combination of road user charges and budgetary transfers flowing into the fund, which amounted to VND 9.6 trillion (USD 450 million) in 2016, fall well short of the amount needed to meet the full annual maintenance needs for the sector. While annual maintenance plans exist, there are no systematically developed replacement or major repairs plans, and new investments are undertaken without clear provision for future maintenance requirements.

Going forward, greater efforts should be made to estimate maintenance requirements of infrastructure assets and align budgetary allocations at the design stage. The following specific recommendations can be offered. While they are broadly applicable across infrastructure sectors, the discussion here focuses primarily on the road sector.

First, Vietnam should introduce technical tools to support the estimation of prudent maintenance expenditures and guide interventions. Across all infrastructure sectors, there needs to be a systematic effort to estimate prudent levels of maintenance expenditure. Numerous engineering tools exist for making such calculations, including RONET model for road networks and other GIS tools (see Appendix for an example of their successful application in the Indian State of Karnataka). Technological innovations driven by infrastructure network digitalization are increasingly facilitating the process of maintenance through real time remote monitoring of asset condition through numerous low-cost sensors installed throughout networks. Vietnam may want to consider how such “smart infrastructure” approaches can be harnessed to move from a reactive to a preventive maintenance regime.

Second, Vietnam should introduce fiscal rules to ensure that the maintenance costs associated with infrastructure investments are adequately budgeted. Every time a new infrastructure asset is built, an on-going maintenance liability is created which is not currently being factored in during procurement or recorded in the budgeting system. Under-maintenance of infrastructure assets is a false economy that creates major rehabilitation liabilities for the state. For the sake of fiscal prudence, it is important that budgetary space is identified to cover the maintenance costs of infrastructure. For large projects, this can be done by calculating the lifetime maintenance cost at the time of investment appraisal and ensuring that this is integrated into the structure of the relevant institutional budget. More generally, the Ministry of Finance and the relevant line Ministries should monitor the breakdown of capital spending and maintenance spending in each infrastructure sector and ensure that there is an adequate balance. In addition, use of lifecycle costs (rather than merely investment costs) as a basis for comparison between bidders at the procurement stage can help to ensure that infrastructure design already factors in the most efficient balance between investment and maintenance expenditure.

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75 These findings are based on recent pilot projects using Road Asset Management Systems (RAMs), such as the Vietnam Provincial Road Maintenance Management System – RONET and MTEFs in five provinces.
Third, Vietnam may wish to consider the use of service contracts to institutionalize maintenance activities. Some countries, particularly in Latin America, have made successful use of multi-year performance-based service contracts for O&M of the road sector. The CREMA (Contrato de Recuperacion y Mantenimiento) in Argentina is a combined rehabilitation and maintenance contract that requires the Contractor to rehabilitate and subsequently maintain a sub-network of roads under a lump-sum contract for a total period of five years. The contract specifies the sections that need rehabilitation as well as the minimum solution or overlay thickness that is required in order to ensure a positive Net Present Value for the investment at a 12 percent discount rate. It also specifies required road service outputs and uses a system of penalties to ensure that the Contractor rapidly corrects unsatisfactory performance in execution. The contract is awarded to the lowest evaluated bidder\textsuperscript{76}. Such contracts offer several advantages.\textsuperscript{77} First, by introducing a competitive process for tendering out maintenance activities of specific segments of the road network they help to create competitive pressures to minimize costs. Second, the multi-year nature of the contracts means that budgetary space for maintenance activities is locked-in for the medium term. Third, the performance-based character of the contracts helps to ensure that maintenance delivers the desired results in terms of smoother roads and a better user experience.

Fourth, Vietnam should raise additional funding sources for road maintenance. The purpose of road funds is to ring-fence fiscal resources for road maintenance. Vietnam had such a fund in place, but it did not deliver the intended results for road maintenance due to the insufficiency of the resources it receives from administrative fees and road user charges\textsuperscript{78}. In many countries that have introduced road funds, fuel levies provide the main source of revenue, based on the rationale that they constitute an imperfect proxy for road usage. Vietnam does not currently use fuel levies for this purpose but may want to evaluate their potential role in the future. Poland (see Appendix) provides a successful example of a country that has managed to raise adequate resources for road maintenance through a dedicated fund.

\textbf{B.2. Operating infrastructure networks efficiently}

The performance of Vietnam’s network utilities varies significantly across sectors. Benchmarking Vietnam’s utilities against East Asian neighbors shows that performance is exceptionally high in the electricity sector, moderate in the water sector, and barely incipient in the wastewater sector. Strong operating efficiency of utilities is closely associated with their ability to deliver reliable universal service to citizens\textsuperscript{79}. There are many ways to define a well-performing utility, from one that


\textsuperscript{77} In several wastewater/health projects financed by the World Bank in Vietnam, competitive bidding was piloted for O&M services and the results have been promising along with achieving reduced prices for O&M.

\textsuperscript{78} Due to some concerns about the fairness and transparency of operation of the road fund, and conflicts with the Law on Fee and Charge (came into effect in Jan 2017), the road fund was recently removed. However, road maintenance fee continues to be collected to finance road maintenance. The fee gets channeled into the State budget and its use will follow the government’s procedures and requirements for recurrent expenditure.

is financially sustainable to one that provides reliable services. In this note, operational effectiveness encompasses quality of service and coverage as well as costs. Financial sustainability, which is key element, is discussed separately in the next section.

**Electricity.** Vietnam has already achieved universal access to electricity in both urban and rural areas. To a considerable extent, this success reflects the strong technical and operational performance of the national utility. All five of EVN’s distribution subsidiaries report revenue collection ratios approaching 100 percent and distribution losses of 5-7 percent that align with international best practice. The quality of service in electricity supply to consumers has steadily improved and interruptions had reached relative low levels of 1000 minutes per year by 2015. In addition, EVN has been a profitable company in recent years with strong and growing revenues, debt equity ratios and a stable gross profit margin\(^{80}\). As the power sector continues its anticipated double-digit expansion in the coming years, it will be important to sustain technical and operational performance on the supply side, while making further progress with the implementation of demand side energy efficiency actions under Vietnam’s National Energy Efficiency Program to further optimize the use of electricity. According to the Gerner et al. 2018, the sector still faces constraints as electricity tariffs do not recover full costs and supply and the gas and LNG sectors require an updated policy and regulatory framework.

**Water.** In the water sector, expansion of piped water to urban households has been rapid. Piped water now reaches 79 percent of the population and is almost universal in urban areas. Nonrevenue water, previously high, is being progressively reduced and is now 21.5 percent, comparable to levels in other countries in the region, but well above levels in developed countries\(^{81}\). Most water utilities ensure supply for 14–20 hours a day, and water quality is generally good. However, reliability of water supply has declined in recent years. Between 2009 and 2015, there was a reported three-fold increase in the percent of firms in Vietnam experiencing water outages (from 3.2 to almost 10 percent). The most dramatic rise was seen in the South East, that encompasses HCMC, the largest economic center in Vietnam. This reflects issues related to asset maintenance, operation and investment. Inefficiencies remain high in the sector, primarily due high energy consumption and water losses. The results of an assessment of the technical non-revenue performance of 18 utilities on a scale from A-D (developed by the International Water Association), revealed that only 5 were rated at B or higher\(^{82}\).

**Wastewater.** Infrastructure for urban sewerage and drainage is limited in Vietnam, with one of the worst performances in the region. Only 4 percent of urban households have piped sewerage, and only half of the small share of wastewater collected is treated, reflecting the state of chronic under-investment in centralized wastewater management systems. With the low rate of collection and treatment and the prevalence of leaky septic tanks, contamination of water resources—surface water and groundwater—is widespread. The domestic wastewater tariff is set at a maximum of 10 percent of the water supply tariff, whereas in practice the costs of collecting, treating, and disposing of wastewater can be several times the cost of supplying water. This low level of cost recovery has

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82 ‘B’ indicates potential for improvement, ‘C’ indicates poor performance and ‘D’ indicates even worse performance where leak reduction is imperative.
created disincentives to invest in sewerage networks, and treatment. Other key reasons for the under-performance of Waste Water Treatment Plants include: the use of combined systems where incoming flow characteristic fluctuate, improper training and capacity, lack of technology transfer, and pressure to save operation and maintenance costs.

Going forward, there needs to be a focus on institutional governance and management reform of the Water, Wastewater utilities and Energy sector. The following specific recommendations can be offered.

First, Vietnam urgently needs to catch-up with the development of wastewater systems. This will entail structuring wastewater systems in a holistic way that encompasses: household connections, sewerage networks, pumping stations, wastewater treatment and resource recovery facilities. Failure to acknowledge the importance of any of these components will lead to project ineffectiveness and unsustainability. Expanding and upgrading wastewater collection and treatment and implementing resource recovery has great potential in Vietnam. Concerted action is required by government through independent oversight and monitoring agency to promote, support and incentivize the use of advanced treatment and recovery technologies.

Second, Vietnam should continue to work on improving the operational efficiency of water utilities. Reducing unaccounted for water involves efforts to address both technical and non-technical losses. As far as technical losses are concerned, monitoring of water flows through the network has traditionally been done through system-level and customer-level meters. Modern technologies now allow for the introduction of sensors in water mains to monitor water pressure and help detect the presence of leaks (See Appendix for e-Pulse technology being used in Washington, D.C.). When it comes to non-technical losses, there is a need to work directly with communities to design approaches that help support a stronger payment culture. In addition to investments to address the infrastructure deficient in both water and wastewater, future the reform should also include: strengthening the monitoring of performance; improving benchmarks of efficiency measures related to non-revenue water and energy efficiency; enhancing capacity through better support for provincial people’s committees (PPCs) and utilities; strengthening incentives to reward improved performance; and enhancing delivery of nonrevenue water and energy efficiency programs through better planning and contracting (e.g. performance-based contracts).

Third, deepening policy reforms in the energy sector. Greater efforts need to be made to improve the transparency of electricity tariff setting and regulatory decision-making processes. This can be achieved through a multi-year cost recovery trajectory for electricity tariffs. To deepen the Gas markets, the governing role of MOIT could be provided with additional regulations related to gas allocation, approval of gas prices and transport charges, manage licenses of infrastructure investments etc. For the LNG sector, develop an LNG strategy to capture benefits of cost reduction and supply flexible arrangements.

B.3. Creating the enabling environment for efficient services over infrastructure networks

The productivity of infrastructure investments is often dependent on a supportive enabling environment in terms of the regulatory, administrative, and institutional factors. Improvements in these “soft dimensions” can greatly increase the efficiency of infrastructure service provision and enhance the impact of existing infrastructure at negligible cost. Nowhere is this more evident than in the transportation sector, where service delivery depends not only on the public infrastructure provided but, in the way that other actors provide services across those infrastructures. Trade logistics, customs and trucking are examples that highlight this point. Vietnam is handicapped by poor performance on trade logistics, ranking well below regional peers – such as China, Malaysia and Thailand. Moreover, the costs of logistics are exceptionally high in Vietnam at 20 percent of GDP, about twice as high as for many relevant comparator countries. The higher logistics costs hinder trade competitiveness and overall value of money of infrastructure investments. Two important sources of high logistics costs are customs facilitation and the trucking industry.

Customs. The problems with customs clearance stem partly from government regulations being cumbersome and not easily understood. Currently, Vietnam operates a hybrid customs system with a hybrid that involves two models operating in parallel: the electronic system (completing documentation and applying for a Vietnam Customs entry number via the Vietnam Customs portal) and the manual system (physical documents hand-delivered to Vietnam Customs officials for signature). As a result, there is inconsistent interpretation, implementation, and enforcement of government regulations across provinces and among government officials, making customs clearance a relatively time-consuming and unpredictable process especially for imports, and motivating facilitation payments to prevent more lengthy delays. Consequently, beneficial cargo owner (BCO) supply chains are required to hold redundant inventory, particularly for just-in-time (JIT) manufacturers, creating higher administrative costs for BCOs and logistics service providers (LSPs).

85 The report projects that the extra time involved in clearing international shipments in Vietnam cost BCOs an estimated $96 million in 2012 and will cost $182 million in 2020 in avoidable logistics costs. In addition, facilitation payments add approximately 15 percent to the cost of an imported 40-foot container and about 13 percent to the cost of an exported container of general merchandise cargo.
**Trucking.** In Vietnam, the structure of the trucking industry is a source of significant inefficiencies. There has been a proliferation of small and medium enterprises each owning only a few trucks, as well as owner-operators with a single truck which they drive themselves. This fragmentation not only hampers scalability and lowers service quality and efficiency of operations, but, it also lowers the proportion of heavy trucks that can move more freight and help lower congestion, costs and emissions. Partly as a result of the investment constraints faced by small businesses, 94 percent of the truck fleet in Vietnam is more than 5 years old, with a large proportion in the 8-12-year category. The older fleet leads to higher logistic costs and GHG emissions, driven by higher total cost of operations and decreased fuel efficiency.

Going forward, if Vietnam is to grow rapidly over the next 20 years, it will need to be well connected to world markets for goods, services, capital and people. The following specific recommendations can be offered.

**First, Vietnam Customs should redouble its efforts to fully automate the clearance process.** This will significantly reduce human intervention and paper work and provide a consistent, predictable, and transparent clearance process. This system will enable products to be cleared in a timely manner since all interactions with Vietnam Customs officials regarding establishing tariff classifications, product valuation, proper licenses, and other customs formalities will be settled in advance of the actual importation and exportation of cargo. A further step would be to connect electronically not only traders and customs officials, but all agencies involved in international trade through an online single window, allowing traders to file standard information and documents through a single-entry point to fulfill all import, export, and transit-related regulatory requirements, and allowing cross-sharing of data with related private and public participants such as banks and insurance companies as well as immigration and vehicle registration authorities. Such a system has been introduced in South Korea, generating US$18 million of savings during its first year of introduction.

**Second, Vietnam should take measures to consolidate and modernize its trucking fleet.** A possible approach for achieving greater consolidation might be to introduce regulations on the minimum capital required to establish a trucking company. Support could also be provided to set up cooperatives for owner-operators that would enable the smaller players to pool resources and achieve scale efficiencies. The fleet could also be improved through growth-based lending schemes that provide preferential lending rates for more fuel-efficient and bigger sized trucks. In addition, it would be important to introduce a truck fleet modernization program with incentives for truck owners to scrap their older vehicles (such as registration tax waivers, scrap values rebates, higher road user charges for older trucks, etc.).

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Pillar II: Raising funds

C. Funding infrastructure

Irrespective of how infrastructure is financed, it must ultimately be paid for either by taxing citizens or charging consumers. Confusion often arises between infrastructure funding and infrastructure finance. While finance is simply a way of spreading costs of capital investments over time, these costs must ultimately be funded either from government tax revenues or through user charge revenues. Beyond their critical function in raising revenue, user charges strengthen the accountability relationship between consumers and infrastructure providers and convey important economic signals to users about the costs associated with the service. In Vietnam, there has been preference for tax-payer finance over user charges for infrastructure. Furthermore, such taxation is far more developed at the national level than at the sub-national level, while responsibility for infrastructure financing and service provision has been increasingly decentralized.

C.1. Tapping the potential of user fees

In Vietnam the state is responsible for regulating user charges for infrastructure with a view to safeguarding affordability and access. The model for user charges differs across sectors. For infrastructure that is planned and regulated by national line ministries like transport and energy, the user charges are set by their regulatory bodies like ERAV in MOIT. For sectors like water supply and sanitation, solid waste management, the fees are set by provinces or large cities. Overall, there is substantial scope to increase the extent of cost recovery through user charges for utility-based services in Vietnam (see table).

<table>
<thead>
<tr>
<th>Sector</th>
<th>User Fees</th>
<th>Cost Recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water*</td>
<td>Household: VND 5,300-11,400/m3 (USD 0.23-0.49/m3)</td>
<td>60-70%</td>
</tr>
<tr>
<td></td>
<td>Non-Residential: VND 9,600-16,900/m3 (USD 0.41-72/m3)</td>
<td></td>
</tr>
<tr>
<td>Waste Water*</td>
<td>Household: 10% of invoiced amount for tap water</td>
<td>Negligible</td>
</tr>
<tr>
<td></td>
<td>Industrial (discharges &gt;20/m3/day): Fixed component (= VND 1.5m) plus variable component based on concentration of 6 pollutants</td>
<td>Inadequate</td>
</tr>
<tr>
<td>Solid Waste**</td>
<td>Household: VND 26,500/household/month (USD 1.13)</td>
<td>36%</td>
</tr>
<tr>
<td>Energy</td>
<td>Average Retail Tariff: VND 1.72/kWh</td>
<td>54%</td>
</tr>
</tbody>
</table>

* Based on Ho Chi Minh City tariffs
** Based on Hanoi tariffs

Electricity. In the energy sector, tariffs have struggled to keep pace with inflation and are not adequate to cover the investment costs of the sector. Compared to East Asian peers like the Philippines, Thailand and Cambodia, Vietnam’s electricity tariffs are relatively low. As of 2019, the average tariff stood at US$ 0.08 per kilowatt-hour, compared to a cost recovery benchmark of US$0.12 per kilowatt-hour in 2019. This tariff level allowed EVN to cover operational costs and service existing debt without funding new investment. Moreover, the present tariff is also below the price at which
E VN is expected to purchase electricity from upcoming, new (renewable and thermal) generation.\textsuperscript{38} Despite the existence of a sector regulator, ERAV, final decisions on tariff determinations are taken by the Ministry of Industry and Trade based on powers delegated by the Prime Ministers. Nevertheless, tariff increases are unpredictable and have barely kept up with inflation. Nominal average electricity tariffs increased by 53 percent from January 2010 to January 2015, whereas cumulative inflation for the same period was around 56 percent. Cost appreciation has been substantial due to a combination of currency depreciations, fuel price hikes, and droughts reducing availability of cheap hydropower. Despite EVN’s high levels of operational efficiency, the shortfall of tariffs weakens the financial performance of the company.

\textbf{FIGURE 3.4. Average electricity tariffs}

![Average electricity tariffs (2017 US$ per KWh)](image)

Source: RISE database (2016).
Note: Retail residential tariffs for first 30kWh per month.

\textbf{Water.} In the water and wastewater sector, the situation is even worse as there is not even a single city where tariffs permit full recovery of operating expenditure; which itself often lies below advisable norms. For example, in Buon Ma Thuot about 28 percent of operating expenditure is recovered through tariffs, while in Da Lat City the ratio is only 18 percent. Even worse, domestic wastewater tariff are set at 10 percent of water tariffs; whereas in practice the costs of collecting, treating and disposing of wastewater can be several times the cost of supplying water\textsuperscript{39}. As a result, local governments must partially subsidize operating costs of wastewater in addition to financing capital expenditures. Without the development and deployment of acceptable and effective wastewater tariffs and billing systems, it will be impossible to improve service delivery and expand wastewater and septage management, which will require significant investment. Low water and wastewater tariffs also discourage water conservation both by consumers through greater efficiency of usage and by utilities through leakage reduction programs. Nevertheless, low wastewater tariffs are the norm across the ASEAN region, in contrast to China which charges over USD 0.20 per cubic meter of wastewater treated.

**Irrigation.** Despite the existence of a legal framework to support farmers’ contributions to the operations and maintenance of the irrigation system through an irrigation fee, in practice a fee waiver has been in place since 2008, leading to forgone annual revenue of about US$250 million at 2012 price. The lack of adequate funding for maintenance is reflected by the degradation of the irrigation system, which currently functions at only about 50–60 percent of its design capacity. Countrywide, only 26 percent of canal lengths are fully functional, and about 1,500 small and medium-size dams and reservoirs need to be rehabilitated and modernized.

**Solid Waste Management.** Current user tariffs for solid waste collection and management in Vietnam fail to observe the “polluter pays” principle with at least 80 percent of costs being financed by local authorities, including both investment costs and even part of operating costs. Studies suggest that full cost recovery tariffs would amount to US$20 (VND 470,000) per person per year compared to current prices of US$3.40 (VND 79,500) per person per year. Based on international benchmarks, which suggest that no more than 1.0–1.5 percent of household budgets should be allocated to solid waste, there is scope to significantly increase Vietnam’s solid waste tariffs to US$8.50 (VND 200,000) per person per year. Thus, a combination of affordable tariff increases, cross-subsidies between user categories, and improved revenue collection, could materially improve the financial standing of the sector even though some degree of public subsidy would still be required.

**Going forward, Vietnam needs to substantially increase the percentage of public service costs that are covered through user charges.** The following specific recommendations can be offered.

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90 International experience demonstrates that up to two thirds of the life-time costs in solid waste management are generated by operational expenses and municipalities can spend more than half of their budget funds on solid waste management services. The governments need to decide on the cost-recovery targets it aims for; by when they should be achieved and consequently, the amount of subsidies that will be needed until cost-recovery is achieved.

First, consider the creation of regulatory capacity to set tariffs for urban services such as water, wastewater and solid waste. Regulatory agencies play an important role in estimating the revenue requirements of different infrastructure service providers for the purposes of tariff-setting. At present, provincial governments are beholden to tariff decisions taken at the national level, which may bear little relation to local costs and do not allow local authorities to find an adequate balance between tax finance and user charges.

Second, set a target of recovering at least full operating and maintenance costs of infrastructure services through user charges. While affordability constraints and social concerns may preclude an immediate adjustment to full cost recovery tariffs, it is critical that the operating and maintenance costs of the network are at least safeguarded through user charges. Otherwise, under-maintenance will lead to network deterioration creating further investment liabilities for the state. Tariff increases are best implemented in a phased manner over time, and should keep ahead of inflationary pressures.

Third, it will be important to accompany this policy with a careful assessment of where genuine affordability problems may exist. It would be important for the regulator to verify what tariff levels are genuinely affordable for the population, and the extent to which cross-subsidization between customer categories may provide a way to reconcile cost recovery and affordability objectives. A communications strategy is also important to encourage public acceptance of higher user charges.

C.2. Building a robust base for local taxation

Vietnam is a highly decentralized country when it comes to infrastructure investment. Between 2011 and 2015, sub-national capital spending accounted for about 70 percent of total state capital spending, amongst the highest in the developing world where the average was barely 40 percent. This reflects rapidly increasing sub-national investment sourced from sub-national budget contingency provisions and over-realized budget revenues (i.e. land and lottery revenues) as well as central budget transfers to sub-national governments. As a result, there have been strong incentives for sub-national development, particularly through rural roads, clean water systems and improvement of local education and health services.

The current system of intergovernmental transfers and revenue sharing results in most provinces being net recipients of general government revenue. The law assigns certain revenues to the local budgets, but the authority to set tax rates remains with the central government.

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92 Affordability is generally assessed by estimating the share of infrastructure outlays in total household expenditures. If this fraction (sometimes called the affordability ratio) rises above a certain threshold, affordability is considered to be problematic. However, this ratio needs to be seen in the context of different income levels, especially for the 20th percentile household. What the thresholds should be are fundamentally normative questions and therefore, do not have a definite answer. However, there are some rules-of-thumb that are cited in literature that need to be reviewed within specific contexts of application. For water, it is considered affordable if 3-5% of the household budget is spent towards it. For energy and heating, the number increases to 10% of household expenditure (Frérot, 2011; Fankhauser and Sladjana, 2007).

Revenues available for local budgets include tax revenues that are fully assigned to provincial and city governments, tax revenues that provinces and cities have to share with the central government, other revenues assigned to local governments by the central government, and domestic borrowing. A growing share of government revenue is collected at the sub-national level, increasing from 30 percent in 2002 to 35 percent in 2012. Despite increased responsibility over spending, central fiscal rules and norms affect local autonomy over budget decisions in selected areas and distort resource allocation. There are minimum allocations set for education as well as science and technology without due consideration of actual needs or the level of service provision by central authorities within a province.

**Going forward, there is room to expand the scope of existing tax policies to allow for enhanced and effective service delivery.** With the increased emphasis on decentralization, local governments will need to be provided with greater revenue autonomy, which can be achieved through the following approaches.

**First, local governments should be given more discretion to set tax rates (within a band) for a closed list of selected taxes as well as user-fees.** Surcharges, or piggybacking on central taxes, may provide additional subnational revenue. For example, surtaxes could be imposed on Personal Income Tax (which is small now but likely to grow) or on excises.

**Second, Vietnam should consider the full introduction of modern property taxation over the long term replacing the existing agricultural and non-agricultural tax policies.** Local authorities have a comparative advantage in identifying and valuing properties because they are familiar with the housing and land availability within their jurisdictions. Incentives for more of efficient use of land and property can also be encouraged by introducing taxing regime for urban land redevelopment, especially in large cities.

**Third, Vietnam should evaluate the possibility of increasing revenue-sharing arrangements between central and local government.** One option is to do so individually for different tax instruments. Relevant examples include: VAT or CIT could be shared on a formula basis; and/or centralized natural resource taxes could incorporate offsetting transfers to poorer provinces. Alternatively, a general pool of shared taxes (including VAT, CIT, and PIT) could be created at the central level, applying the same sharing formulas for the pool as a whole. These reforms should improve accountability, spending efficiency, transparency and equity of the revenue arrangements, while promoting fiscal responsibility, spending efficiency, and eventually local economic performance and revenue efficiency.94

**D. Financing infrastructure**

In Vietnam, the primary source of infrastructure financing has been through public sector financing; although private finance has to some extent also played a role. Public sector

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financing comprises direct fiscal support, balance sheet financing from State-Owned Enterprises (SOEs), guarantees by central government for borrowing by SOEs, Official Development Assistance (ODA), and the publicly-owned Vietnam Development Bank. Vietnam has also benefited from foreign and domestic private sector investments, with or without contractual support from government through Independent Power Projects (IPPs), BOTs, BTs (predominantly in the transport sector), divestitures (also known as equitization or Land-for-Infrastructure), and other Public Private Partnerships (PPPs). In the medium term, Vietnam has the potential for optimizing financing for infrastructure through three potential avenues: private sector project finance; SOE corporate finance; and innovative financial instruments. It is, however, important to highlight that during the transitional period, while complementary sources of financing are being mobilized that certain levels of public sector investment would be necessary to support critical infrastructure investment needs.

D.1. Attracting project finance

Over the last few years, MPI has been trying to promote the PPP concept making progress with the regulatory framework. In 2015, the Government introduced Decree 15/2015/ND-CP, which was a marked improvement on previous legislation as it provided a single legal framework for private investment in public infrastructure sectors. It sets out more clearly the procedures that need to be followed by the authorities when procuring a PPP project and removed the 30% cap on government support for a PPP project. Decree 30/2015/ND-CP was also introduced in 2015 to provide guidance on the procurement framework for PPP projects. At least on paper, Vietnam’s regulatory framework for procuring PPPs looks well-designed relative to regional peers when it comes to PPP preparation, procurement and project management; although the framework for dealing with unsolicited proposals is clearly deficient (see chart).

However, in practice, the new regulatory framework for PPPs has seldom been applied. While the two PPP Decrees became effective in April/May 2015, it seems that no project procured under the PPP Decrees has had more than one qualified or interested investor, even though reportedly 18 PPP projects (out of 53) have been “competitively” procured.95 There are several reasons for this, including the fact that any project classified as a PPP project must follow the processes and requirements set out in the Decrees, which includes preparation of feasibility studies and the running

of a competitive tender. However, most ministries and line agencies do not have the capacity to run competitive tenders and, as such, it seems that some projects which should be procured under the Decrees are instead being given licenses under the Law of Investment. More importantly, the Decrees do not support a comprehensive government risk management framework, especially for Fiscal Commitment and Contingent Liabilities (FCCL) arising from PPP projects. While PPPs face challenges across all infrastructure sectors, the track record in the energy sector is somewhat better than that in the transport sector.

**The PPP Law also lacks adequate clarity and provisions for risk-sharing mechanisms.** Regulatory clarity on aspects such as potential government guarantees for a certain minimum financial return for the developer or exchange rate/foreign currency convertibility would help build foreign investor confidence and improve bankability of projects. The current model transfers substantial risk on to the private sector which curtails their interest in participating in PPP deals. To attract private sector investors and operators, a transparent policy framework and fair allocation of risk are key.

**Energy.** The private sector has made a substantial contribution to the development of new power generation capacity in Vietnam in the form of Independent Power Projects. The international private sector has contributed primarily to the development of large thermal plants, underpinned by government guarantees to cover a range of risks associated with the SOE off-taker, currency convertibility issues and termination payments. Small scale renewable energy projects, on the other hand, have primarily been the purview of the domestic private sector and have not enjoyed comparable credit enhancements. The lack of a standardized IPP contract and guarantee package has led to protracted negotiations with international private investors sometimes lasting several years and has limited access to foreign capital. While there is also additional potential for PPPs to support development of midstream gas infrastructure, these face the additional challenge of needing to integrate commercial and financial arrangement with the main downstream off-takers in the electricity sector.

**Transport.** In the roads sector, several PPPs /concessions for national toll road projects have been awarded on a direct contracting basis and had to be subsequently renegotiated leading to the state ultimately bearing most of the risk. In a “Supervision Report regarding the implementation of policies and regulations on investment and exploitation of transport works in the form of Build-Operate-Transfer (BOT) contract” No.: 197/BC-UBTVQH14 published on 23 October 2017, the National Assembly conducted a critical assessment on the current BOT practice in the transport sector, acknowledging the shortcomings of the contractual framework and difficulties in attracting foreign capital. The lax implementation of the regulatory framework for PPPs acts as a disincentive for foreign investors. While, there are opportunities to tap into cross-border commercial financing, investors remain risk averse due to lack of strict enforcement of contracts, foreign exchange convertibility, lack of clarity for government support for infrastructure and procurement of PPPs. Furthermore, Vietnam currently does not have guidance on risk allocation and mitigation strategy including FCCL. The government is undertaking a comprehensive review of the existing PPP framework and is also drafting a new Law on PPP Investment to address the shortcomings with Decree 63 and other relevant PPP regulations. This core objective needs to be reflected in the forthcoming
PPP Law as it will open the opportunities for cross-border investors to enter the market. In sectors like transport and water, projects are often bid out as part of a broader package of support, wherein investors are provided land to develop infrastructure. Such projects lack robust oversight to maximize the performance of the assets including valuation of stripped assets (such as selling off land identified for water systems).

Going forward, there are several important measures that could be taken to unlock the potential for further private sector finance of infrastructure. The following specific recommendations can be offered.

First, Vietnam should accelerate the preparation of the PPP law. At present, the country’s legal and regulatory framework for PPPs rests largely on Decrees that are inconsistent with other laws and not universally applied. Therefore, there is a need for a PPP law that provides a robust legal framework for PPPs that, inter alia; i) establishes the institutional enabling environment for PPPs, ii) clarifies the role and responsibilities of key stakeholders, iii) explains the process for PPP selection and procurement, iv) clarifies government support and v) institutionalizes the importance of effectively managing fiscal commitments and contingent liabilities.

Second, Vietnam should adopt a well-grounded and consistent contractual framework for all PPP projects. There are significant advantages to adopting a single standardized contract for each of the major categories of PPPs (such as toll roads and IPPs). Doing so avoids protracted bilateral negotiations for every contract, thereby lowering transactions costs, building confidence and reducing risks.

Third, the government should develop a medium-term strategy for scaling-back credit enhancements gradually as market confidence develops. There is a greater need for credit enhancements at early stages in market development when the government’s reputation remains unproven, which decline over time as a track record of respecting contractual commitments is established. The government’s position on credit enhancements needs to be informed by these considerations.

Fourth, the government should identify and publish a pipeline of priority projects for PPPs. Since there are sizable fixed costs for international private investors to enter and participate in new emerging markets, countries wishing to attract strong international participation do best by working on a multi-year pipeline of investment opportunities, so that potential investors can understand that there will be a recurring stream of opportunities that justify their engagement in a new market.

D.2. Raising corporate finance

Constraints on the banking sector necessitate finding alternatives to loan-based infrastructure financing. Local banks have limited space for infrastructure loan portfolio growth due to the long-term tenors required for infrastructure financing and limited financing available for new and smaller private sector developers. In infrastructure, capital market products that could be developed include - project bonds (or revenue bonds), partially guaranteed corporate bonds or infrastructure funds. However, in Vietnam, the fixed income market is dominated by government bonds.
The overall market of corporate bonds remains relatively small, standing around 6.9% of GDP, as compared to bank deposits amounting to 137% of GDP. It is also illiquid, highly collateralized, and bank-centric, where it functions largely as a quasi-credit market. It has hampered by cumbersome procedures for bond issuance, high transaction costs and lack of transparency and information for investors. Most corporate bonds have been issued through private placements, some of which are resold among retail investors (beyond 100 individual investors), a practice that is risky for both banks and retail investors given the presence of implicit guarantees. Underdeveloped equity and bond markets prevent institutional investors from financing infrastructure investment. Institutional investors are also constrained by the instruments that they can invest in by Law. For example, institutional investments are unable to buy infrastructure specific products (e.g. project bonds) due to regulatory restrictions and tax differentials. Institutional investors are essential for market development due to the long-term nature of infrastructure projects that matches the long-term liabilities of institutional investors, such as Pensions Funds and Insurance Companies.

**SOEs with strong financial performance may be able to raise corporate bonds or syndicated loans on the strength of a credit-rating.** By establishing a contractual relationship between SOEs and commercial financiers, corporate finance brings multiple benefits. On the one hand, corporate finance provides an additional source of capital whose tenor is better aligned with the life of the associated assets. On the other hand, the exposure of the SOE to the capital markets introduces additional scrutiny of management practices and provides the discipline for operational and financial management to be conducted in line with private companies, thereby raising the overall level of efficiency. This approach is already being tried with some success in the power sector, but remains to be adopted for other areas of infrastructure.

**Electricity.** The prime example of SOE corporate finance is the national power utility EVN. Constrained ODA flows, and the Government of Vietnam’s limited ability to offer government guarantees, have prompted EVN to seek complementary commercial financing opportunities to secure the large amounts of investments needed. The company aims to issue an international bond to raise capital. The first step in this process was to obtain a credit rating, which was achieved in June 2018, yielding an Issuer Default Rating (IDR) of ‘BB’ with a ‘Stable Outlook’ for long-term foreign currency by Fitch Ratings. EVN’s ratings align with Vietnam’s sovereign rating. Fitch’s ratings assignment is premised on EVN’s strong linkages to the state, its market position, and robust demand for electricity, coupled with solid collection rates. EVN is the first government-linked non-financial corporate rated by Fitch in Vietnam. Similarly, as of April 2019, the National Power Transmission Corporation (NPT) has also received a BB/Stable Rating by Fitch Ratings. Petro Vietnam (PVN) is also already undergoing the credit rating process as are EVN’s Power Distribution Companies (PCs).

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Going forward, there is considerable scope to further develop this approach. The following specific recommendations can be highlighted.

First, development of a non-government bond market requires regulatory reforms, policy incentives, and market infrastructure building development. This includes promulgation of new Securities Law, policy incentives for investors in the form of tax incentives, amendments to investment limits as well as adjusted rules for banks’ holding of listed corporate bonds and improvements to the regulations of corporate bond placements. In addition, there is a need to define a suitable model and capital structure of credit rating agencies as well as for broadening the base of investors and issues for corporate bonds. Lastly, the government may consider initiating efforts towards establishing new instruments in the near to medium term, such as green bonds, infrastructure-related capital market instruments and securitization\(^9\).

Second, companies that have obtained a credit-rating need to follow through with a bond issue. For EVN and NPT who have already received a rating, it is critical that they maintain the rating and use it to issue offshore US dollar conventional or green bond to achieve funding diversity.

Third, transport-related SOEs should also consider going through a comparable credit-rating progress. Potential candidates could be the Vietnam Expressway Corporation (VEC) or Vietnam Airlines. If a company is not immediately ready for a credit-rating, a shadow rating could be obtained and used as a health check that could pinpoint further financial and operational strengthening measures that may be needed to prepare for a definitive rating.

\(^9\) Ibid.
Conclusion

This note has focused on answering the question of “how can Vietnam finance and deliver core growth-enhancing infrastructure in the context of tight public finances”. As Vietnam advances in the middle-income country spectrum, the key challenge in the infrastructure sectors is not primarily of quantity but of quality with a focus on prioritization, quality and efficiency of investments. Therefore, to answer the above question, the analysis was concentrated on two pillars: how to improve the efficiency of resources that are already being spent; and how to raise additional resources.

• **Improving efficiency.** There is abundant evidence that Vietnam’s infrastructure investments are not as efficient as they could be. This affects both the capital efficiency of investments and the operating efficiency of infrastructure systems. Regarding capital efficiency, infrastructure investment projects are not always adequately screened and coordinated to ensure their economic viability, nor are they always implemented at least cost. Regarding operating efficiency, there is a systematic shortfall in infrastructure maintenance that prejudices lifecycle costs, while infrastructure services are not always efficiently run due to deficiencies in management and regulation. Overall, there is scope for Vietnam to achieve much greater impact from its current investment envelope (‘more bang for the buck’), or conversely to achieve similar outcomes while spending less.

• **Raising resources.** Vietnam has done relatively little to expand and diversify funding sources for infrastructure. Irrespective of how infrastructure is financed, it must ultimately be funded either through user fees or tax contributions. Vietnam has tended to set user fees for network services at comparatively low or symbolic levels and has yet to develop adequate local tax bases to fund (in particular) urban infrastructure. Once adequate funding can be captured for the sector, there is scope to diversify financing sources by increased reliance on private sector project finance, corporate balance sheet financing by SOEs, and developing new local capital market instruments.
The table below summarizes the key overarching recommendations under the two pillars:

<table>
<thead>
<tr>
<th>Improving efficiency</th>
<th>Raising resources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Improve Capital Efficiency</strong></td>
<td><strong>A. Increase Sector Funding</strong></td>
</tr>
<tr>
<td>1. Strengthen inter-governmental coordination on infrastructure planning.</td>
<td>1. Create regulatory capacity to set tariffs for urban services.</td>
</tr>
<tr>
<td>2. Develop a strong national planning system for each sector.</td>
<td>2. Target recovery of operating expenditures through user charges.</td>
</tr>
<tr>
<td>3. Plan infrastructure based on demands of productive and social sectors.</td>
<td>3. Safeguard affordability for most vulnerable populations.</td>
</tr>
<tr>
<td>4. Enhance multi-modal connectivity between land and water transport.</td>
<td>4. Allow local governments to set tax rates and user-fees for local services.</td>
</tr>
<tr>
<td>5. Develop clear procedures for addressing unsolicited bids for PPPs.</td>
<td>5. Phase-in a system of modern property taxation for local jurisdictions.</td>
</tr>
<tr>
<td>7. Standardized contracts for infrastructure procurement.</td>
<td></td>
</tr>
<tr>
<td>8. Introduce independent mechanism for procurement complaints.</td>
<td></td>
</tr>
<tr>
<td><strong>B. Improve Operating Efficiency</strong></td>
<td><strong>B. Tap New Sources of Finance</strong></td>
</tr>
<tr>
<td>1. Introduce technical tools to estimate prudent maintenance expenditures.</td>
<td>1. Accelerate the preparation of the PPP law.</td>
</tr>
<tr>
<td>2. Ensure budgeting of maintenance expenditures for new projects.</td>
<td>2. Adopt a standardized contractual framework for PPPs.</td>
</tr>
<tr>
<td>3. Use service contracts to institutionalize maintenance activities.</td>
<td>3. Aim to scale-back credit enhancements gradually as track record builds.</td>
</tr>
<tr>
<td>4. Raise additional funding sources for road maintenance.</td>
<td>4. Publish a medium-term pipeline of priority projects for PPPs.</td>
</tr>
<tr>
<td>5. Catch-up with development of wastewater systems.</td>
<td>5. Encourage use of convertibility and transferability insurance products.</td>
</tr>
<tr>
<td>7. Complete full automation of the customs clearance process.</td>
<td>7. Conduct credit-ratings for additional SOEs in transport particularly.</td>
</tr>
</tbody>
</table>
References


Appendix 3.1: Compendium of international case studies of potential interest to Vietnam

Road sector financing: case of the national road fund of Poland

For almost 15 years now, Poland’s National Road Fund (KFD) has been a very useful tool for road sector financing. It has been assigned fixed sources of funding - fuel charge, proceeds from toll collection on national roads (electronic, manual collection), road toll charges, penalties and fines. It has effectively stabilized funding for ambitious programs involving construction and upgrade/modernization of national roads, as exemplified by a marked and sustainable improvement in the quality of national road network over that period.

There is a clear demarcation in the use of funds through the state budget and the KFD, which are earmarked by expenditure type. Budgetary resources are allocated primarily to operations and management (including preparatory work) as well as current maintenance (summer and winter) and periodic maintenance on the network of national roads. KFD resources may be allocated to investment projects on new road sections and major modernization projects involving class upgrade on an existing road or a marked improvement in operational parameters of an existing road. Due to this dual model of funding, viable expenditures from each source are clearly identified and there is no overlap.

The main success factors for KFD role in the system of financing roads in Poland can be summarized as follows:

• Support for KFD as a financing mechanism regardless of political divisions.
• Relying on state owned Bank Gospodarstwa Krajowego (BGK) infrastructure, expertise and financial market standing to ensure effective management of KFD.
• Securing substantial and reliable streams of funding for KFD as a way to leverage additional market financing.
• Modifying KFD mandate and procedures in reaction to new developments and experience (both positive and negative) - KFD has evolved towards the current system whereby, in practical terms, it is used to finance most investment projects on national roads.
• Consistent pursuit of ever-closer cooperation between key domestic partners (Ministry of Infrastructure, GDDKiA, Ministry of Finance) and international ones (EU, EIB).

Working across jurisdictions: case of the port authority of New York and New Jersey (PANYNJ)

The Port Authority of New York & New Jersey was established on April 30, 1921. It was the first bistrata agency ever created under a clause of the constitution permitting compacts between states with congressional consent. In the early years of the 20th century, there were disputes between the states of New Jersey and New York over rail freights and boundaries. At the time, rail lines terminated on the New Jersey side of the harbor, while ocean shipping was centered on Manhattan and Brooklyn. Freight had to be shipped across the Hudson River in barges. In 1916, New Jersey launched a lawsuit against New York over issues of rail freight, with the Interstate Commerce Commission (ICC) issuing an order that the two states work together, subordinating their own interests to the public interest. The Harbor Development Commission, a joint advisory board set up in 1917, recommended that a bi-state authority be established to oversee efficient economic development of the port district. The Port of New York Authority was established on April 30, 1921, through an interstate compact between the states of New Jersey and New York. This was the first such agency in the United States, created under a provision in the Constitution of the United States permitting interstate compacts. The Port Authority was created to promote and protect the commerce of the Port District and to undertake port and regional improvements not likely to be financed by private enterprise, or that would not be attempted by either state alone. These include the development of major infrastructure: a modern port for the harbor shared by the two states, tunnel and bridge connections between the states, and, in general, trade and transportation projects that secure the region’s economic well-being.


Using standard tender documents to increase number of bidders: Case of Colombia

Increasing competition in public procurement process has several advantages from obtaining better prices for goods and services to reducing collusion and bid-rigging. Therefore, in order to encourage more companies to bid for public contracts, in 2014, the Colombian Society of Engineers (SCI) began analyzing official government procurement data. Their results revealed that in 2019, in over half of all department contracts, there was only one bidder. In total, this amounted to more than 2500 contracts worth approximately USD 300 million. At the municipal level, 94% of the contracts had three or fewer bidders (i.e. around 21,500 contracts worth USD 2379 million).

As an outcome of this analysis, in April 2019, Colombia started utilizing standard tender documents for public transport infrastructure. Such documents specify in detail the requirements the bidders must meet to apply for the tender and potentially win the contract including transparency agreements, basic bidding letters, past experience, organizational capacity, financial status, social clauses to hire local staff, among others. Standard documents, therefore, enable the contracting process to be more transparent and prevent tender specifications from being tailored to favor particular bidders. They are also helpful for smaller firms who have limited capacity to prepare ready-made documents that they are aware of as opposed to trying to bid for customized specifications.

Using road asset management systems to adequately allocate funds towards maintenance: Case of Karnataka, India

During the 1990s Karnataka State had one of the lowest road densities (at 654 km per 1000 sq. km) among Indian states. The capacity constraints of the road network were exacerbated by inadequate attention to and funding for road maintenance and the lack of a rational and strategic road maintenance management framework for resource allocation. During the 1990s, funding for road maintenance was about 60% of the requirements based on the recommendation of Government of India’s 10th Finance Commission, which was itself based on rather low unit rates.

Through a World Bank project, a GIS-based Road Information System (RIS) for the entire state road network was installed which is used was then used for maintenance planning and overall decision-making process. This made a significant contribution to the improvement in funding of the State’s road network. Overall, during project implementation PWD experienced a substantial decline in variance between MTFP planned expenditures and actual allocation for O&M of the road network (see table below).

<table>
<thead>
<tr>
<th>FY</th>
<th>Planned Expenditures (MTFP), Rs. Billion</th>
<th>Actual Allocation, Rs. Billion</th>
<th>Variance, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001-02</td>
<td>4.52</td>
<td>3.51</td>
<td>22%</td>
</tr>
<tr>
<td>2002-03</td>
<td>4.52</td>
<td>2.11</td>
<td>53%</td>
</tr>
<tr>
<td>2003-04</td>
<td>3.92</td>
<td>2.51</td>
<td>36%</td>
</tr>
<tr>
<td>2004-05</td>
<td>4.01</td>
<td>3.33</td>
<td>17%</td>
</tr>
<tr>
<td>2005-06</td>
<td>5.13</td>
<td>2.62</td>
<td>49%</td>
</tr>
<tr>
<td>2006-07</td>
<td>10.18</td>
<td>10.11</td>
<td>1%</td>
</tr>
</tbody>
</table>


Using new technology for improved maintenance targeting: Case of ePulse technology in the water sector

ePulse technology is a non-invasive acoustic solution that assesses a pipe’s condition and simultaneously detects leaks. It analyzes information about the pipe material, the time frame in which it was installed, the diameter of the pipe and the original wall thickness to estimate the condition and the remaining service life of the pipe. The ePulse system was used in Washington, DC, during pipe replacement works. Condition assessment found that 32 kilometers of pipe were in good condition, numerous leaks were located, and $14 million in investments were saved.

## Appendix 3.2: Vietnam ‘procuring infrastructure public-private partnerships’ results

<table>
<thead>
<tr>
<th>Vietnam</th>
<th>East ASIA and Pacific</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Preparation of PPPs</strong></td>
<td></td>
</tr>
<tr>
<td>Central budgetary authority’s approval</td>
<td>No</td>
</tr>
<tr>
<td>Fiscal treatment of PPPs</td>
<td>Yes</td>
</tr>
<tr>
<td>PPP’s prioritization consistent with public investment prioritization</td>
<td>Yes</td>
</tr>
<tr>
<td>Economic analysis assessment</td>
<td>Yes</td>
</tr>
<tr>
<td>Fiscal affordability assessment</td>
<td>Yes</td>
</tr>
<tr>
<td>Risk identification</td>
<td>Yes</td>
</tr>
<tr>
<td>Comparative assessment (value for money analysis)</td>
<td>Yes</td>
</tr>
<tr>
<td>Financial viability or bankability assessment</td>
<td>Yes</td>
</tr>
<tr>
<td>Market sounding and/or assessment</td>
<td>Yes</td>
</tr>
<tr>
<td>Environmental impact analysis</td>
<td>Yes</td>
</tr>
<tr>
<td>Assessments included in the RTP and/or tender documents</td>
<td>Yes</td>
</tr>
<tr>
<td>Draft PPP contract included in the RTP</td>
<td>Yes</td>
</tr>
<tr>
<td>Standardized PPP model contracts and/or transaction documents</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Procurement of PPPs</strong></td>
<td></td>
</tr>
<tr>
<td>Evaluation committee members required to meet specific qualifications</td>
<td>Yes</td>
</tr>
<tr>
<td>Public procurement notice of the PPP issued by procuring authority</td>
<td>Yes</td>
</tr>
<tr>
<td>Foreign companies permitted to participate in PPP bidding</td>
<td>Yes</td>
</tr>
<tr>
<td>Minimum period of time to submit the bids</td>
<td>Yes</td>
</tr>
<tr>
<td>Availability of various procurement procedures for PPPs</td>
<td>Yes</td>
</tr>
<tr>
<td>Direct negotiation not discretionary</td>
<td>No</td>
</tr>
<tr>
<td>Tender documents detail the procurement procedure</td>
<td>Yes</td>
</tr>
<tr>
<td>Tender documents specify prequalification/shortlisting criteria (if apl)</td>
<td>Yes</td>
</tr>
<tr>
<td>Clarification questions for procurement notice and/or the RFP</td>
<td>Yes</td>
</tr>
<tr>
<td>Pre-bidding conference</td>
<td>Yes</td>
</tr>
<tr>
<td>Financial model submitted with proposal</td>
<td>Yes</td>
</tr>
<tr>
<td>Proposals solely evaluated in accordance with published criteria</td>
<td>Yes</td>
</tr>
<tr>
<td>Treatment when only one proposal is received</td>
<td>Yes</td>
</tr>
<tr>
<td>Publication of award notice</td>
<td>Yes</td>
</tr>
<tr>
<td>Notification of the result of the PPP procurement process</td>
<td>Yes</td>
</tr>
<tr>
<td>Standstill period</td>
<td>No</td>
</tr>
<tr>
<td>Negotiations with the selected bidder restricted</td>
<td>Yes</td>
</tr>
<tr>
<td>Publication of contract</td>
<td>No</td>
</tr>
<tr>
<td><strong>PPP Contract Management</strong></td>
<td></td>
</tr>
<tr>
<td>System to manage the implementation of the PPP contract</td>
<td>Yes</td>
</tr>
<tr>
<td>System for tracking progress and completion of construction works</td>
<td>Yes</td>
</tr>
<tr>
<td>Monitoring and evaluation system of the PPP contract implementation</td>
<td>Yes</td>
</tr>
<tr>
<td>Foreign companies permitted to repatriate income</td>
<td>Yes</td>
</tr>
<tr>
<td>Change in the structure (stakeholder composition) of the private partner and/or assignment of the PPP contract regulated</td>
<td>Yes</td>
</tr>
<tr>
<td>Modification/renegotiation of the PPP contract (once the contract is signed) regulated</td>
<td>Yes</td>
</tr>
<tr>
<td>Circumstances that may occur during the life of the PPP contract regulated</td>
<td>Yes</td>
</tr>
<tr>
<td>Dispute resolution mechanism</td>
<td>Yes</td>
</tr>
<tr>
<td>Grounds for termination of a PPP contract</td>
<td>Yes</td>
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<td><strong>Uncollected Proposals</strong></td>
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<tr>
<td>Regulation of USPs</td>
<td>Yes</td>
</tr>
<tr>
<td>Assessment to evaluate unsolicited proposals</td>
<td>Yes</td>
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<td>Vetting procedure and/or pre-feasibility analysis of USPs</td>
<td>No</td>
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<tr>
<td>Evaluation of consistency of USPs with other government priorities</td>
<td>Yes</td>
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<tr>
<td>Competitive PPP procurement procedure for USPs</td>
<td>No</td>
</tr>
<tr>
<td>Minimum period of time to submit the bids</td>
<td>No</td>
</tr>
</tbody>
</table>

Appendix 3.3: Key features of an effective public investment management

Governments must strengthen management of public investments to improve the efficacy (strategic fit of the project) and efficiency (economic cost-benefit analysis) of the investment expenditure. A Public Investment Management (PIM) governance framework should encompass both, traditional public investment financing as well as a PPP process to determine project prioritization (based on cost-benefit analysis and expenditure efficiency), financing modalities (for example, on-budget or through PPPs), and continuous monitoring of the fiscal affordability of all projects.

Key features of an effective public investment management system

- **Strategic investment guidance, project concept development and preliminary screening:** Broad strategic guidance for public investment, derived from a national plan or other medium to long term strategic document that establishes economy-wide development priorities, is an important way to anchor government decisions and to guide sector-level decision-makers. First level screening of all project proposals should be undertaken to ensure that they meet the minimum criteria of consistency with the strategic goals of government and meet the budget classification tests for inclusion as a project rather than as a recurrent spending item.

- **A formal project appraisal process:** Projects or programs that meet the first screening test should be subject to the appraisal of their viability which requires undertaking feasibility analysis. Its objective is to answer the essential question of whether a spending agency or line ministry should proceed with a project even though it is consistent with government priorities. This process requires a regulated set of project preparation steps, such as pre-feasibility study and feasibility study, including preliminary design, environmental and social impact assessments, that must be completed before a project can be approved for funding.

- **Independent review of appraisal:** Where departments and ministries (rather than a central unit such as the ministry of planning) undertake the appraisal, an independent peer review might be necessary in order to check any subjective, self-serving bias in the evaluation. This function can be performed by the ministry of finance or by a designated specialized agency.

- **Project Selection, Detailed Design and Budgeting:** A detailed project design must be developed to ensure that the project is accurately costed and can be tendered and implemented (a “ready-to-go” check), including a full risk assessment, performance indicators and an implementation strategy which should be used by an implementing agency. It is essential that the process of appraising and selecting public investment projects is linked in an appropriate way to the budget cycle even though the project evaluation cycle may run along a different timetable.

- **Efficient project implementation:** It is critical to establish and develop effective measures, such as efficient procurement plans, guidelines and institutional capacity to manage and monitor project implementation, total project cost management system and multi-year budgeting.
• **Ability to make project adjustments:** The funding review process should have some flexibility to allow changes in the disbursement profile to take account of changes in project circumstances.

• **Provision for sustainable operation of facilities:** Once a project is completed, there should be a process to ensure that the facility is ready for operation and services can be delivered. This requires effective handover of management responsibility for operation and maintenance, and upkeep of robust and up-to-date capital asset registers.

• **Basic completion review and ex post evaluation:** A systematic review should apply to all projects upon completion to assess whether a project was delivered as specified, on time and according to budget. In addition, an ex post evaluation should be carried out two to three years (or more) after project completion to assess the project’s outputs and outcomes against objectives established in the design.

Skilled workers and opportunities for all

This is a supporting paper prepared for the report Vibrant Vietnam: Forging the Foundation of a High-Income Economy. The paper was written by Keiko Inoue and Kevin Macdonald with inputs from Toby Linden, Lucas Arribas Layton, Nkosi Mbuya, Huong Lan Dao, Wendy Cunningham, Harry Moroz, Nga Thi Nguyen, Caryn Bredenkamp, Hui Sin Tao, Dilip Parajuli, Giang Tam Nguyen, and Huyen Thi Thanh Le, and draws on analytical work done by the World Bank on education, nutrition, social protection and jobs, poverty, and agriculture.
Vietnam has an impressive record of sustained equitable growth, but pockets of poverty and human capital disparities remain. As of 2016, ethnic minorities made up 73 percent of the poor people nationally (9 million), even though they comprise just 14 percent of the total population. Human capital disparities are observed for ethnic minorities in three critical areas: (a) a stubbornly high stunting rate of 31.4 percent, compared with 15 percent for the Kinh majority; (b) lower access to, and lower learning outcomes in, secondary education and beyond; and (c) reduced access to good jobs and lower earnings. Female ethnic minorities face distinct hurdles, especially with respect to accessing nonagricultural jobs.

Vietnam will also need to strengthen the supply and quality of the labor force to serve as the engine for the new growth model. Vietnam’s labor force is low skilled, and employers have taken notice. According to the 2017 Vietnam Labor Force Survey, two of every three workers in Vietnam today have no more than a lower secondary education. Only 30 percent of today’s youth, who should have completed tertiary education by age 25, have done so. If educational attainment continues to grow at its current rates, the share of the labor force with tertiary education will only increase from 11 percent today to 15 percent by 2050. Establishing a national competitive edge in the global market requires innovative workers with more sophisticated skills and greater individual productivity.

Underinvesting or investing inefficiently in human capital is a missed opportunity, considering the large payoffs for individuals and societies, and across generations. The overall private returns to schooling in Vietnam are 9 to 10 percent, which is comparable to the global average but higher than in most countries in the region. The returns to tertiary education have increased in recent years and are about 18 to 21 percent. People are also more productive when they are healthier. Private returns to human capital investments add up to large benefits at the societal level, and can have intergenerational impact, especially when targeting girls and women.

Closing the human capital disparities for ethnic minorities is indeed completing the last mile of human capital formation. Three key recommendations are offered:

(a) Develop a strong governance framework for the new Ethnic Minority Nationally Targeted Program. The program will benefit from a “whole-of-government” approach with high-level champions and strong cross-sectoral coordination. The incentive mechanisms need to be aligned with efforts to allocate resources proportionate to the level of deprivation, so that the poorest and most vulnerable communes benefit. One recommendation is to apply a results-based funding approach, to ensure a closer linkage between allocated budget and desired
outcomes, including reduced stunting rates, improved enrollment and learning outcomes throughout the education pipeline, and enhanced access to formal jobs and better wages. Safeguarding the voice and participation of beneficiaries in decision making, and designing interventions that are culturally and linguistically sensitive, are important dimensions.

(b) **Invest in human capital building interventions with strong evidence of cost-effectiveness.** To address stunting, nutrition interventions are most effective during the first 1,000 days of life—from the first day of pregnancy to the child’s second birthday. To enhance access to quality secondary education and beyond, ethnic minorities’ access to full-day schooling should be enhanced. And to stimulate demand for more and better human capital services, the government could provide conditional cash transfers and behavioral change counseling.

(c) **Facilitate diversification into more stable jobs, with special consideration for women.** To reduce the “economic distance,” the government will need to integrate lagging areas into network economies, create a secondary economy based on regional advantages, and reduce the cost of migration. And to help workers move up the value chain, improving technical and socio-emotional skills development and access to labor market information for ethnic minorities will be paramount. Specific interventions for women should be integrated, including provision of childcare facilities and promoting participation in the digital marketplace.

**Improving overall workforce development for a changing economy requires undertaking systemic tertiary education reforms in both technical and vocational education and higher education while more effectively leveraging the private sector.** Three shifts are recommended:

(a) **Set clear, results-based targets to accommodate structural shifts in the economy.** Moving beyond the usual inputs-based approach requires a focus on improvements in access and equity (gross enrollment, equity index); quality (proportion of internationally and nationally accredited programs, student satisfaction); relevance (graduate employability, employer satisfaction); research (volume and impact of publications); and innovation and technology transfer (volume of patents and startups). Government targets should be sufficiently ambitious to leverage the transformational potential of tertiary education. This includes ensuring that sufficient investments are made in the tertiary education system.

(b) **Expand coverage while promoting equity.** The key here is more diversification. Options for the government include supporting efforts to develop more cost-effective, non-university options including vocational education and training; promoting a larger share of quality private tertiary education institutions (potential to grow from current 15.7 percent to 30 percent); scaling up cost-effective alternative modalities including open university and hybrid models with satellite learning centers supported by online and in-person learning; promoting closer linkages with the world of work; stronger outreach and then retention of students from underrepresented groups; and articulating policies to build bridges and pathways to allow for transfer between vocational education and training institutions and universities.
(c) **Build closer alliances with employers to ensure skills supply is aligned with technological megatrends and the proposed growth framework.** This can be accomplished by providing more dedicated funding for applied research (for example, matching grants), capacity building to set up technology transfer and enterprise linkage promotion offices within tertiary education institutions, and a clear definition of intellectual property and distribution of revenues. Technology can also be harnessed to improve skills development itself by, for example, using more sophisticated adaptive learning using big data to move toward personalized learning that meets students where they are in the learning process, and then progresses with them as they gain more competencies.
Human capital achievements and challenges

Vietnam has an impressive record of sustained equitable growth and human capital development. The share of people living in extreme poverty halved between 2010-2016, and per capita consumption of the bottom 40 percent grew by about 6 percent annually during the same period. Vietnam’s significant achievements in improving human capital are reflected in the country’s high performance in the 2018 Human Capital Index (HCI) where it ranked 48 out of 157 countries, the highest among lower middle-income countries (see Annex 4.1 for Vietnam’s ranking on all HCI indicators).

Human capital indicators reflect both the remarkable progress and emerging challenges in the past 25 years. From 1993 to 2017, the infant mortality rate decreased from 32.6 to 16.7 (per 1,000 live births). Between 1990 and 2016, life expectancy increased from 70.5 to 76.3 years, and is
the highest in the region for countries at a similar income level. The net enrollment rate for primary school increased from 78 percent in 1992–1993 to 93 percent in 2014, for lower secondary school from 36.0 percent to 84.4 percent, and for upper secondary school from 11.4 percent to 63.1 percent. Vietnam has also closed gender gaps along a wide range of social and economic measures (including bringing female labor force participation within 11 percentage points of that of men), but the high and widening sex ratio at birth (115 in 2018) shows that fundamental gender discrimination persists. At the same time, Vietnam is one of the most rapidly aging countries and the 65+ age group is expected to increase 2.5 times by 2050.

Despite Vietnam’s equitable growth, pockets of poverty and human capital disparities remain. As of 2016, ethnic minorities make up 73 percent of the number of poor people nationally (9 million), even though they comprise just 14 percent of the total population. The average per capita consumption of ethnic minorities is less than 45 percent of the majority Kinh and Hoa. With just 3 percent of the Kinh and Hoa classified as poor, continued progress among ethnic minorities is vital to the national poverty reduction agenda.

Poverty also has a strong geographic dimension. Ninety-five percent of poor people lived in rural areas in 2016, although the rural population accounts for just 68 percent of the total population. The poor are concentrated in the Northern Mountains and Central Highlands, where the density of ethnic population is also high. Thus, completing the “last mile” in socio-economic development requires accelerated growth in the lagging regions.

Ethnic minorities and those living in poor, remote, and mountainous provinces have substantially worse health service access and outcomes. In 2016, the child mortality rate in rural areas (26.0 per 1,000 live births) was more than double that in urban areas (12.7). The gap between majority and ethnic minorities in access to improved water and toilets is 36 and 44 percentage points, respectively. Relatedly, the national under-five stunting prevalence was 24.2 percent in 2017, it reached over 35 percent in some remote mountainous provinces. The proportion of births assisted by a trained staff was 68.3 percent among ethnic minority women and 73.4 percent among the poorest quintile, compared to over 95 percent among women in the remaining quintiles.

105 Vietnam Labor and Employment Survey 2018 (quarter 2).
108 There are 53 ethnic groups in Vietnam with distinct culture and language, with 75 percent living in 13 provinces in the northern mountain and central highlands regions. Ethnic groups can be divided into the five language families of Southeast Asia: Austroasiatic, Austronesian, Thai-Kadai, Sino-Tibetan, and Hmong-Dao. The largest group is Kinh, who account for 86 percent of the population. The Tay, Thai, Muong, Khmer (ethnic Cambodian), Hoa (ethnic Chinese), and Hmong constitute 10 percent of the population, and the remaining smaller groups make up roughly 4 percent. Dang, H.A. 2012. “Vietnam: A Widening Poverty Gap for Ethnic Minorities”. In Indigenous Peoples, Poverty and Development, edited by G.H. Hall and H.A. Patrinos, 304-43. New York: Cambridge University Press.
111 Ibid.
of pregnant women having four or more prenatal care visits was only 32.7 percent among ethnic minorities and 38.6 percent among the poorest quintile but rose to 67 percent in the second poorest quintile and to 96 percent in the richest quintile.\textsuperscript{114} The high rates of consanguineous marriages among some ethnic minority groups—as high as 40 percent among Ma, Mang, and Mnông—are also linked to negative health outcomes\textsuperscript{115}. Finally, the sex ratio at birth worsened to 115 in 2018,\textsuperscript{116} up from 112 the previous year, and is now, together with China, the highest in the world.

\textbf{Similar patterns of ethnic and gender disparities are observed in access to skills development opportunities and good jobs.} While there is little gap in enrollment by ethnic group at the pre-primary and primary levels, a gap appears in lower secondary (27 percentage points) and widens in upper secondary (48.5 to 57.6 percentage points) and this is also mirrored in learning outcomes. Access to quality post-secondary education and training is severely limited for ethnic minorities and disadvantaged populations. Only 7 percent of ethnic minority working age adults have a post-secondary education compared with one-third among the majority. This, in turn, hampers their ability to take advantage of emerging new jobs because of their location in remote communities, low skill levels, and language barriers. An ethnic wage gap persists at around 6.5 percent, with women from ethnic minorities bearing the brunt of both gender and ethnic discrimination\textsuperscript{117}. Women, especially ethnic minority women or those who live in rural areas, take on an additional 35-hour per week “second” job in household care\textsuperscript{118}. This may partially explain why women are crowded into lower paid jobs despite having higher professional aspirations than boys in lower-secondary school.

\textbf{Productive human capital is increasingly important as the nature of work has evolved in response to global megatrends, including technological change.} Establishing or maintaining a national competitive edge in the global market requires workers with high levels of human capital, including physical and mental well-being and advanced cognitive, technical, and socio-behavioral skills. This is borne out in Vietnam, where workers able to perform non-routine analytical work earn nearly 25 percent more than those who cannot\textsuperscript{119}. In the context of an aging country context, the dependency ratio is expected to increase and thereby requiring greater individual productivity to ensure sufficient tax revenue to support older people through social programs.

\textbf{The government’s key strategy to address rural development with a focus on ethnic minorities and poor families since 2011 has been through the National Targeted Programs (NTPs).} The first wave of NTPs included 16 programs that focused on specific sectors through different line ministries, which resulted in fragmentation. In 2015, the government consolidated the NTPs to two programs: (i) NTP for New Rural Development (NTP-NRD) implemented by the Ministry of Agriculture and Rural Development (MARD) and (ii) NTP for Sustainable Poverty Reduction Program (NTP-SPR)

\textsuperscript{114} Ibid.
\textsuperscript{115} UN Women. 2015. \textit{Figures on Ethnic Minority Women and Men in Viet Nam 2015}.
implemented by the Ministry of Labor, Invalids and Social Affairs (MOLISA). While both NTPs have ambitious targets for poverty reduction and income growth, the focus on meeting the NRD criteria (50% of communes by 2020) can bias budget allocation towards the communes already close to meeting the target. There is also a tendency for provinces to allocate more spending to infrastructure. Thus, there is a need to rebalance allocation for human capital interventions under the NTPs. The government is considered a new Ethnic Minority Master Plan and relatedly, the Committee for Ethnic Minority Affairs (CEMA) has been requested to propose a new NTP focused on ethnic minorities. This may serve as the window of opportunity to improve program design, budget allocation, and monitoring and evaluation of these targeted programs.

**Looking ahead, Vietnam faces a two-pronged challenge to promote inclusive growth:** (i) closing the gaps in human capital disparities and (ii) strengthening workforce development for a changing economy. The disparities along ethnicity, income, and geographic groups need to be addressed, taking special care to address gender dimensions that compound inequitable outcomes in human capital formation. In particular, the OECD found that ethnicity is the dimension that presents the highest gap in terms of social cohesion. Closing such disparities is indeed completing the last mile of human capital formation, considering the remarkable achievements to date in Vietnam. At the same time, expectations of the population for quality public services and good jobs are on the rise because of increasing incomes, access to information, and more spatial integration. A stronger and better prepared workforce with relevant and agile skills is needed to make a full transition to a knowledge-based economy. Vietnam’s short and medium-term development goals will need to address both prongs of human capital challenges. Such efforts are also fully aligned with Vietnam’s ability to achieve the UN Sustainable Development Goals 3-6 by 2030.

**Investing in human capital: Lifecycle approach and windows of opportunity**

Human capital consists of the knowledge, skills, and health that people accumulate over their lives, enabling them to realize their potential as productive members of society. The rationale for investing in human capital is to ensure that all children arrive at school well-nourished and ready to learn, their classrooms are place that facilitate real learning, and they are given a chance to grow up to live and work as healthy, skilled, and productive adults.

Making growth inclusive requires investing in and protecting human capital from birth to adulthood, following each person's life trajectory. Proper nutrition in utero and in early childhood improves children’s physical and mental well-being, and early interventions reinforce lifelong advantages. Children and adolescents need good health, a safe environment, and access to quality education. This, in turn, results in skilled and productive workers, who are also resilient to shocks or unanticipated life events. The cumulative effect of lifelong human capital development is the ability to remain productive and age in a dignified manner in the golden years.

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Underinvesting or investing inefficiently in human capital is a missed opportunity, considering the large payoffs for individuals, societies, and across generations. While there is broad agreement on the importance of human capital, governments tend to underinvest or invest inefficiently. Governments can also skew towards constructing schools and hospitals and underinvest in quality improvements such as strengthening governance mechanisms, implementing results-based budget allocation and monitoring, or enhancing the competence of teachers and health workers.

The economic case for investing in education and health is strong in Vietnam. The overall private returns to schooling in Vietnam are 9-10 percent, which is comparable to the global average but higher than in most countries in the region. The returns to primary and secondary education have declined over time, but the returns to tertiary education have increased and are about 18-21 percent. In an increasingly automated economy, a higher premium is put on human capabilities that cannot be fully mimicked by machines, including creative intelligence, teamwork, empathy, and conflict resolution. People are also more productive when they are healthier. Private returns to human capital investments add up to large benefits at the societal level, and can have intergenerational impact, especially when targeting girls and women.

Vietnam has rapidly increased its public expenditure on human capital, reaching a level comparable to wealthier neighboring countries. Between 2009-2012, spending on education and health grew significantly above average (4.4 percent per year), at 11.1 and 12.6 percent per year, respectively. During the same time period, spending on human capital increased from 23 percent to 28 percent of the total national budget. Public spending on education increased from

FIGURE 4.2. Lifelong accumulation of human capital

125 Ibid.
3.3 percent of GDP and 15.1 percent of total government expenditure (TGE) in 2000, to 5.7 percent of GDP and 18.6 percent of TGE in 2013 (Table 4.1)\textsuperscript{126}. Vietnam is close to meeting its target to allocate at least 20 percent of total government expenditure to education (Circular No 127/2009/TT-BTC). In health, the government has committed to keep the annual rate of increase of public spending higher than the rate of increase of the general government budget (National Assembly Resolution 18/2008/NQ-QH12). Public spending on health was 2.8 percent of GDP and 9.3 percent of TGE in 2016\textsuperscript{127} (Table 4.2). The short to medium term challenge in human capital investment in Vietnam is about making existing expenditures on health and education more efficient and equitable, rather than about spending more money.

### TABLE 4.1. Public expenditure on education

<table>
<thead>
<tr>
<th>Country</th>
<th>GDP per capita (current US$)</th>
<th>Total public education expenditure per capita (current US$)</th>
<th>Public expenditure on education as % of total government expenditure (%)</th>
<th>Government expenditure on education as % of GDP (%)</th>
<th>Year (latest)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vietnam</td>
<td>1,871</td>
<td>106</td>
<td>18.5</td>
<td>5.7</td>
<td>2013</td>
</tr>
<tr>
<td>Myanmar</td>
<td>1,257</td>
<td>27</td>
<td>10.2</td>
<td>2.2</td>
<td>2017</td>
</tr>
<tr>
<td>Lao PDR</td>
<td>2,018</td>
<td>59</td>
<td>12.8</td>
<td>2.9</td>
<td>2014</td>
</tr>
<tr>
<td>Thailand</td>
<td>6,168</td>
<td>254</td>
<td>19.1</td>
<td>4.1</td>
<td>2013</td>
</tr>
<tr>
<td>LMICs (average)</td>
<td>4,543</td>
<td>198</td>
<td>15.6</td>
<td>4.4</td>
<td>2013</td>
</tr>
<tr>
<td>EAP LMICs (average)</td>
<td>5,905</td>
<td>268</td>
<td>15.2</td>
<td>4.5</td>
<td>2013</td>
</tr>
</tbody>
</table>

### TABLE 4.2. Expenditure on health

<table>
<thead>
<tr>
<th>Country/region</th>
<th>GDP per capita (current US$)</th>
<th>Total health expenditure per capita (current US$)</th>
<th>Total health expenditure as a share of GDP (%)</th>
<th>Public share of total health expenditure (%)</th>
<th>Public spending on health as a share of government spending (%)</th>
<th>Public spending on health as a share of GDP (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vietnam</td>
<td>2,171</td>
<td>128.9</td>
<td>5.9</td>
<td>47</td>
<td>9.3</td>
<td>2.8</td>
</tr>
<tr>
<td>Myanmar</td>
<td>1,221</td>
<td>70.2</td>
<td>5.7</td>
<td>18.7</td>
<td>5</td>
<td>1.1</td>
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<tr>
<td>Cambodia</td>
<td>1,277</td>
<td>78.4</td>
<td>6.1</td>
<td>24.4</td>
<td>7</td>
<td>1.5</td>
</tr>
<tr>
<td>Lao PDR</td>
<td>2,339</td>
<td>56.9</td>
<td>2.4</td>
<td>37</td>
<td>4.4</td>
<td>0.9</td>
</tr>
<tr>
<td>Thailand</td>
<td>5,979</td>
<td>221.9</td>
<td>3.7</td>
<td>78.3</td>
<td>15.3</td>
<td>2.9</td>
</tr>
<tr>
<td>LMICs (average)</td>
<td>2,312</td>
<td>136.1</td>
<td>5.7</td>
<td>46.2</td>
<td>8</td>
<td>2.7</td>
</tr>
<tr>
<td>EAP LMICs (average)</td>
<td>2,438</td>
<td>135</td>
<td>5.8</td>
<td>54.2</td>
<td>8</td>
<td>3.4</td>
</tr>
</tbody>
</table>

Source: World Bank 2018a; WHO 2018a. (Most recent Vietnam data are from 2016).

\textsuperscript{126} Ibid. This is higher than public spending on education as a share of GDP and as a share of TGE for OECD countries (5.6 and 12.9 percent, respectively), Republic of Korea (4.9 percent), and Indonesia (3.6 and 18.1 percent, respectively).

More targeted and smarter investments will be critical to address the two-pronged challenge of closing the gaps in human capital disparities and strengthening workforce development for a changing economy. Vietnam’s increased investments in health and education have paid off and are reflected in recent marked improvements in human capital outcomes. However, the remaining challenges will require a shift away from business as usual and tackling more directly vested interests and inertia of existing institutions, policies, and programs. A more targeted approach is needed to address disparities across ethnicity, income, geography and gender. It will also require more efficient and smarter investments to respond to the growing demands of an economy that continues to transform.

Completing the last mile: closing the gaps in human capital disparities

Vietnam’s impressive performance in HCI also highlights remaining challenges. An overall HCI score of 0.67 means that a child born in Vietnam today will be 67 percent as productive when she grows up and enters the world of work, compared with a child who enjoys complete education and full health. Vietnam’s HCI exceeds the global, regional, and even upper middle-income country averages. Vietnam’s overall education achievements come out especially strong, particularly a score of 519 for the harmonized test scores which puts Vietnam in the top quartile of countries. The learning adjusted years of school is 10.2 years, compared against 12.3 years of school that a child who starts school at age 4 can expect to complete by her 18th birthday, or 2.1 years of learning gap. To put this in perspective, top-ranked Singapore has a learning gap of 1 year when taking quality of learning into account. On the other hand, some weaknesses are also observed. Specifically, the probability of survival to age 5 and share of children who are stunted are in the lower second quartile of the distribution among 157 comparator countries.

The lifecycle accumulation of disadvantage in human capital formation puts pockets of the populations on a more vulnerable life trajectory. As previously noted, the vulnerable population in Vietnam is predominantly comprised of people who are ethnic minority, poor and living

in rural areas, and there are important gender dynamics that compound their disadvantages. Figure 4.4 illustrates how disadvantage can accumulate across the lifecycle by comparing ethnic minority outcomes with those of Kinh at different points in life. For example, the average ethnic minority child’s height-for-age Z score is equivalent to the 32nd percentile of those for Kinh children. The average ethnic minority child is behind 68 percent of Kinh children in terms of height-for-age. By age 5, the average ethnic minority child’s school readiness—measured by cognitive, socio-emotional and physical development—is equivalent to the 20th percentile Kinh children’s school readiness. At early adulthood, the average learning adjusted years of schooling acquired by ethnic minorities is equivalent to a Kinh adult at the 17th percentile. Finally, in rural areas, average measures of household wealth of ethnic minorities are equivalent to the 5th percentile of the Kinh population. Early-age disparities in human capital accumulation among ethnic minorities accumulate into their substantially lagging the Kinh majority in terms of wealth and well-being.

**A disaggregation of HCI data reveals the lifetime accumulation of human capital disadvantages for ethnic minorities.** Table 4.3 presents estimated HCI for Kinh and ethnic minorities based on estimates of child mortality rates, expected years of schooling, harmonized test scores and stunting rates using various household surveys or learning assessments (see Annex 4.2 for further details). The results reveal that ethnic minorities can expect to have about 13 percentage points less future productivity than Kinh. This is the cumulative effect of persistent disparities in probability of survival to age 5 (1 percentage point), schooling with respect to both access and learning outcomes (resulting in a quality adjusted years of schooling gap of 1.6 years), and stunting (16 percentage points). The only disaggregated HCI indicator with no ethnic disparity is adult survival.

129 This is an age-standardized measure of linear height attainment.
rate. Stunting rates and access to quality schooling and subsequently good jobs emerge as the main
drivers of disparate human capital formation between ethnic minorities and Kinh children; these two
sources are discussed in further detail below.

**TABLE 4.3. HCI disaggregated by ethnicity**

<table>
<thead>
<tr>
<th></th>
<th>HCP</th>
<th>Authors’ estimates</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Vietnam</td>
<td>Kinh</td>
</tr>
<tr>
<td>HCI score</td>
<td>0.67</td>
<td>0.73</td>
</tr>
<tr>
<td>Survival: Prob. of Survival to Age 5</td>
<td>0.98</td>
<td>0.98</td>
</tr>
<tr>
<td>Quality of Learning</td>
<td>0.74</td>
<td>0.79</td>
</tr>
<tr>
<td>Expected years of schooling</td>
<td>12.3</td>
<td>12.1</td>
</tr>
<tr>
<td>Harmonized test score</td>
<td>519</td>
<td>519</td>
</tr>
<tr>
<td>Quality adjusted years of schooling</td>
<td>10.2</td>
<td>10.0</td>
</tr>
<tr>
<td>Health</td>
<td>0.92</td>
<td>0.94</td>
</tr>
<tr>
<td>Fraction of Kids Under 5 Not Stunted</td>
<td>0.75</td>
<td>0.81</td>
</tr>
<tr>
<td>Adult Survival Rate</td>
<td>0.88</td>
<td>0.88</td>
</tr>
</tbody>
</table>

Note: The source of data under the HCP column is the HCI dataset published by the World Bank in October 2018. All others are estimated using noted sources or are authors’ calculations based on these estimates (see Kray 2018 for HCI methodology. Details for these calculations are available from the authors upon request).

**Human capital disparities in urban settings**

While understanding human capital disparities for ethnic minorities accounts for most of
the poor, another important consideration is vulnerable populations in urban settings. The
critical element here is access to quality services for migrant and poor communities. People often
migrate to primary or secondary cities because they can access better services or earn money more
easily. Another subgroup of people may temporarily visit cities to access better services, with no
intention of permanently relocating.

For health services, overcrowding of services in urban setting is a challenge. Migrants often seek
better availability and quality of services in the cities, especially higher-level, more technical hospital
services. While there are policies in place to reduce hospital overcrowding and make services available
closer to the people, including strengthening of primary care and establishment of satellite facilities,
there are also policies that may exacerbate overcrowding. For example, the current provider payment
arrangements do not provide the appropriate incentives to the commune health station (CHS) workers
to make more effort to keep patients healthy or manage diseases effectively. Staff are paid by salary,
drugs are provided in kind from the district hospital, and health insurance reimbursement at the CHS
level is only for a small set of medical services and paid on a fee-for-service basis.

In terms of access to schooling, urban Vietnam does better than rural areas across all
levels, particularly at secondary education, with respect to enrollment rates. For instance,
net enrolment rates (NER) from VHLSS2016 are as follows: primary (Vietnam: 97 percent, Urban: 98
percent, Rural: 97 percent); lower secondary (90 percent; 94 percent; 89 percent); and upper secondary
Background Paper 4 – Skilled workers and opportunities for all

(69 percent; 80 percent; 65 percent). VHLSS data may not be representative at specific urban centers such as Hanoi or HCMC and more importantly, VHLSS does not adequately capture households that are not registered in that locality (most migrant workers in the city areas or those residing in urban slum areas). And given how public services, including public schools, are not prioritized to children from unregistered households, incidence of out of children are expected to be higher in urban areas. UNICEF’s Out-of-School Children Study using 2009 Census data suggests that children from migrant households were two-to-three times more likely be out of school. A more recent study is not available. Thus, a knowledge gap could be filled through a comprehensive survey on the demand-side (households and their children, including migrant, unregistered, slum-residing households) to make sure supply side inputs (schools, teachers) are aligned with needs of the urban poor.

While access is one challenge, a more pressing issue is urban school overcrowding. Both in Hanoi and Ho Chi Minh City, the problem continues to worsen. Student to classroom ratio is 50 to 60 on average. Supply of schools, classrooms or teachers have not kept up with the growing demand for schooling. Extracurricular activities are getting cut, large class sizes impede innovation in teaching-learning which is critical to prepare students with 21st Century Skills, and instead of moving towards student-centered active learning, schools have to do more of the lecture-based teaching. Options could be explored to respond to this issue of overcrowded schools. Private public partnership would be one option. The Ho Chi Minh City Department of Education and Training and potential investors are exploring options.

Stunting

Stunting\(^{130}\) in early life significantly affects the physical and mental development of children and has broader implications for economies. The first 1,000 days between pregnancy and a child’s second birthday is a critical window of opportunity that sets the lifelong foundation for human capital. This is a period when stature and brain development increase rapidly, but also when a developing fetus or child is most vulnerable to inadequacies in nutrition. Impaired development during the first 1,000 days means their future health, education, and productivity are at risk. As the prevalence and severity of malnutrition increases, individual losses in productivity may run as high as 10 percent of lifetime earnings and as much as 2-3 percent of GDP can be lost\(^{131}\).

Vietnam has witnessed a significant improvement in national malnutrition indicators, but prevalence of stunting among ethnic minorities has remained stubbornly high. The biggest drop in national malnutrition indicators occurred between 2000 and 2010, but then a plateau is observed between 2010-15 (Figure 4.5). This is a curious pattern, and one which requires further examination to understand why earlier rates of improvement in combating malnutrition have not been sustained in

\(^{130}\) Stunting measures the share of children who are unusually small for their age. It is broadly accepted as a proxy for parental, infant, and early childhood health environment, and it summarizes the risks to good health that children are likely to experience in their early years – with important consequences for health and well-being in adulthood. From http://www.worldbank.org/en/publication/human-capital.

more recent years. Most importantly, the national average masks the widening gap in stunting rates in 2010-15 between majority Kinh (7.1 percentage point drop) and ethnic minorities (5 percentage point drop; Figure 4.6). As a comparison, the most recent stunting rate for majority Kinh (15 percent) is akin to the level of Eastern European countries while for ethnic minorities (31.4 percent), the rate is worse than poorer countries in Sub-Saharan Africa. Another stark observation is that stunting prevalence is now more than twice as high among ethnic minorities than among the Kinh.

**FIGURE 4.5. Malnutrition indicators, national average (2000-15)**

Source: NIN/MOH.

**FIGURE 4.6. Stunting rates by ethnicity (2010-15)**

Source: NIN/MOH.

Stunting among ethnic minorities is a result of multisectoral determinants, both nutrition-specific and nutrition-sensitive. Nutritional status is ultimately determined by the availability of nutrients to the body to meet its requirements and the status of illness, but many factors can complicate this process. There are immediate or nutrition-specific causes, as well as indirect or nutrition-sensitive causes of stunting. Of the immediate causes (adequate food and nutrient intake; feeding, caregiving, and parenting practices; and low burden of infectious diseases), a set of bivariate analyses showed a statistically significant association between the prevalence of stunting and low birthweight, vitamin A supplementation of children, and age of under 2 (p<.0001; Annex 4.3). The association with low birthweight links the child’s health and nutrition with those of the mother during pregnancy. Indeed, of the immediate maternal factors, poor nutritional status of the mother and younger age were strongly statistically associated with stunting (p<.0001). Maternal education, rural residence, and occupation as a farmer (p<.0001) were indirect or nutrition-sensitive causes of stunting.

132 For example, South Sudan (31 percent), Zimbabwe (27.6 percent), Namibia (23 percent), Senegal (19 percent), and Ghana (19 percent).

The quality of the diet consumed by ethnic minority toddlers is poorer than that of the Kinh. Although food security is not a problem in Vietnam, ethnic toddlers between 6-23 months of age are less likely to have the minimum dietary diversity and acceptable diet compared with Kinh toddlers (Figure 4.7). For ethnic minority children, these figures might indicate tremendous vulnerability and a lack of food security in a country that is categorized as food secure. The probable underlying causes of such disparities range from food supply and storage, lack of caregivers’ knowledge about optimal toddler feeding practices, sociocultural beliefs related to child feeding, to lack of parental/caregiver time for optimal child care.

Access to clean water, sanitation, and hygiene (WASH) is a disparity with striking implications for stunting. Chronic and recurrent diseases that result from an unhealthy environment can affect growth in the first two years of life. The gap in access to improved toilets between poor and nonpoor households widened by 13 percentage points between 2010 and 2016, and by 2016 access among nonpoor households were nearly three times higher than access among poor households. A disparity of approximately 25 percentage points is observed in access to hygienic handwashing conditions between ethnic minorities and Kinh/Hoa. Access to hygienic toilet facilities also reveals a gap of 30 percentage points, with the conditions particularly dire for the Hmong people with only 3 percent using hygienic facilities and up to 79 percent without toilet facilities (Table 4.4). Poor WASH conditions can result in chronic diarrhea, which prevents children from getting nutrients even from the food that they do consume.

Source: GSO and UNICEF.

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Source: GSO and UNICEF.
Despite strong and high-level commitment, adequate funding and a whole-of-government approach to combat stunting have been elusive. Nutrition is one of ten national priorities in the Socio-Economic Development Plan 2016-20, Vietnam joined the Scaling Up Nutrition (SUN) Movement in 2014, and there is a conducive regulatory framework with respect to nutrition-specific and nutrition-sensitive policies (National Nutrition Strategy 2011-20, National Plan of Action for Nutrition 2020, Prime Minister’s 2018 Decision 712 to end hunger by 2025, and 2019 Decree to mandate food fortification). Yet nutrition programs remain inadequately financed due to the devolvement of resources to the provinces that are then insufficiently tracked, lack of specific budget line at the central level or in Provincial Plans of Action, and a two-thirds cut to the budget for the project for maternal and child malnutrition control since 2014. Tackling stunting will require the collaboration of multiple sectors (line ministries) and between central and lower levels of government, as well as channels to amplify the voice and ownership of ethnic minority communities.

**Access to quality secondary education and good jobs**

While relative parity is observed in access to primary and lower secondary education between ethnic groups, a sharp divergence occurs in upper secondary and tertiary education enrollment. As depicted in Figure 4.8, enrollment rates based on 2014 household survey data diverged noticeably after age 15 corresponding to the upper secondary and post-secondary age ranges. Among primary-aged children, enrollment rates were 98 and 96 percent for Kinh and ethnic minority children, respectively. Among children aged 11 to 14, enrollment in lower secondary was 91 and 78 percent for Kinh and ethnic minority children, respectively;
however, a larger proportion of ethnic minority children in this age group were attending primary. On-age lower secondary enrollment was particularly low for Xtiêng, Brâu, and Gia Rai ethnic minority groups. Among older children, the difference in the proportion of youth enrolled in upper-secondary and post-secondary education differs much more substantially; for example, among Kinh youth, 74 percent of aged 15 to 17 year-olds were attending upper-secondary school and 33 percent of youth aged 18 to 22 were attending post-secondary. Among ethnic minority youth, the enrollment rates were 44 and 9.0 percent, respectively.

Despite impressive national achievements in international student assessments, ethnic minority students who advance to secondary education lag behind their Kinh counterparts in learning outcomes. Vietnam’s performance in the OECD Programme for International Student Assessment (PISA) is a positive anomaly among countries with similar levels of economic development, so much so that education policymakers around the world marvel at its success. Vietnamese students outperform students in OECD countries on average and in 2015, it ranked 8th in science, 22nd in mathematics, and 32nd in reading out of 72 countries. Vietnam’s average score for science was 32 points higher than the OECD average—equivalent to about one year of schooling. The PISA results put Vietnam among the best performers when it comes to “resilient” students, or those from the lowest quartile of disadvantage who are in the highest quartile of performance. Girls also outperformed boys in 2012 and 2015. While Vietnam has one of the lowest participation rates, with only about 50 percent of 15-year-olds in the sample because of lower enrollments at this age, analyses show that Vietnam would remain an outlier relative to its GDP per capita even when taking into account the low enrollment. Despite Vietnam’s high level of performance in PISA, ethnic minority children lag Kinh children. As shown in Figure 4.9, ethnic minority children (defined as those speaking languages other than Vietnamese at home) were less likely to attain minimum proficiency in PISA in each of the three subjects, ranging from 4.6 to 11.5 percentage points.

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137 PISA tests 15-eye-old students every three years in reading, mathematics, and science. Vietnam participated in PISA 2012, 2015, and 2018 (results have not been publicly disclosed for the most recent round).
Both demand and supply side constraints explain why ethnic minorities drop out at higher rates than Kinh during the transition from lower to upper secondary education. Young Lives\textsuperscript{139}, a research project which has been following two cohorts of children and collecting data on their education and well-being, included a small number of ethnic minority children. Analysis\textsuperscript{139} of this data provides some insights into how dropout rates and their determinants between lower and upper-secondary school among ethnic minority children differ from those of Kinh children. For example, in terms of reported reasons for not being in school, ethnic minority children who dropped out after the age of 15 were more likely to report being needed for agricultural work than Kinh children. Ethnic minority 15 year-olds tended to lag behind in terms of grade level than Kinh 15 year-olds. Econometric modelling suggests that this lag in grade level as well as the quality of schooling available to ethnic minorities after age 15 explain a large portion of the difference in dropout rates. This analysis of the Young Lives data indicates, on the demand side, that dropouts are perpetuated by the opportunity cost of agricultural work, and on the supply side, that dropouts are perpetuated by low quality of educational services available to ethnic minorities. A separate study highlighted barriers for girls, including lack of safety and privacy at boarding schools and lack of toilets and clean water. H’Mong parents also voiced a perception that lower secondary education was not a good investment for girls, given their limited job opportunities\textsuperscript{140}. That ethnic minority youth tend to lag behind in grade may be the result of either demand side or supply side factors earlier in life.

The lack of education reduces access to good jobs, resulting in low earnings. Nearly all adults in poor households had secondary education or less in 2014 and only 1 out of 4 workers with that level of education had a wage job\textsuperscript{141}. This is a stark contrast with 85 percent of all workers with a college or university degree who had a wage job. Those with a university degree have a 50 percent chance of working in a wage job compared to people with only secondary education (even when controlling for age, gender, ethnicity, and geography). Among wage workers in 2014, those with a college or university degree earned 43 to 66 percent more than workers with lower secondary education.

A massive structural transformation of the rural labor market is underway, with rural households now earning most of their income outside the agriculture sector, but ethnic minorities have not benefited equally. Wages, remittances, and household businesses now contribute 57 percent of income in rural households\textsuperscript{142}. Yet there remains a large non-agriculture wage income gap between ethnic minorities and Kinh/Hoa majority. A statistical decomposition to better understand the disparities in access to non-agricultural jobs shows that market potential, reflected in population density (62 percent of the difference) and distance to urban hubs (13 percent), and lack of secondary or tertiary education (24 percent) account for the variation.

\textsuperscript{138} The Young Lives study is an ongoing longitudinal survey which began in 2002 and has sampled the same children four times subsequently (in 2006, 2009, 2013 and 2016).

\textsuperscript{139} Background note available from the authors upon request.


\textsuperscript{142} World Bank. 2019. Better Opportunities for All: Vietnam Poverty and Shared Prosperity Update. Unless otherwise noted, all statistics in this and the next paragraph are from this source.
Gender and culture

Gender and cultural norms are both interrelated and fundamental to improving human capital and employment outcomes for ethnic minorities. Ethnic minorities’ cultural norms are essential to their identity, and recognition and preservation of those norms and identity is crucial to improving development outcomes for ethnic minorities more generally. At the same time, cultural norms that are gendered and disempower girls and women inhibit their human capital formation, employment outcomes, and other measures of well-being. Vietnam’s ethnic minority girls lag in terms of aspirations; their educational outcomes are threatened by a high prevalence of early marriage and child bearing, and ethnic minority women are subsequently more likely to be excluded from more lucrative, non-agricultural employment. How can the protection and recognition of cultural norms and unique identity be reconciled with promoting gender equity and women’s empowerment among ethnic minorities? First, it is important for policymakers to differentiate between cultural norms that are unique to ethnic minority identity and those that are a product of socioeconomic conditions. For example, there is little evidence that the cultural norms that perpetuate early marriage and child bearing are any more unique to ethnic minorities than the Kinh majority when accounting for differences in socioeconomic conditions. Second, policies and programs that have been effective at empowering girls and women globally have leveraged rather than diminished cultural norms and identity of minority populations. As a result, gender equity and the recognition and respect for cultural identity should not be viewed as substitutes in policymaking but rather as two interdependent and fundamental aspects of ethnic minority development policy and programs.

Female and older ethnic minorities face distinct hurdles from accessing non-agricultural jobs. Women, especially those with young children, are less likely to engage in non-farm work. They are also more likely to shift to agriculture in response to marginal increases in crop prices. Ethnic minority women who do hold wage-earning jobs earn 17 percent less than ethnic minority men, 35 percent less than Kinh or Hoa women, and 50 percent less than Kinh or Hoa men. While rural households have diversified their income streams into non-agricultural sources, most of them have held onto their farms. The older generation who tend to be less educated and thus unable to tap into non-agricultural lines of work, are usually assigned to continue working on the farm. Consequently, agriculture will remain the only source of employment for older members of ethnic minority groups, despite the structural transformations observed more generally.

Lower educational and career aspirations for girls among ethnic minorities compared to non-ethnic minorities have been found in qualitative research and survey data. Qualitative research among ethnic minority Thai and Hmong women in the Dien Bien Province found that strong gender norms may impede educational opportunities for girls; for example, girls are expected to remain close to home both for their security but also to help with housework. In addition, interviewed

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parents found little value in girls receiving secondary education or having career aspirations as farm work is increasingly becoming the responsibility of women. Among 15 year-olds sampled in the 2016 Young Lives Study, girls in ethnic minority areas were less likely than boys to believe they would be able to attain their desired jobs or level of education, and the gender gap was wider among children in ethnic minority areas than those not in ethnic minority areas. However, no evidence was found that the difference in caregiver’s aspirations between boys and girls was any larger for those living in ethnic minority areas versus non-ethnic minority areas.

**Early marriage and childbearing among ethnic minority girls increase the prevalence of stunting, reduce educational outcomes, and increase the risk of domestic violence.** Adolescents and women of reproductive age from ethnic minorities have a higher total fertility rate than women from the Kinh majority. The fertility rate for some ethnic minority groups is as high as 5.0, and 18.3 percent of ethnic minority adolescent girls aged 15-19 years had begun childbearing compared with only 3.9 percent of Kinh and Hoa adolescent girls. Ethnic minority adolescent girls are giving birth before they have completed their own full development into adulthood, which then puts both their own development and that of the fetus at risk as well as its growth outcomes as a child. In 2014, 23.1 percent of ethnic minority women aged 20-49 years-old were married before the age of 18. Adolescent girls who marry early achieve less education and subsequently less earning capacity. They are also at risk of higher incidences of intimate partner violence.

**Evidence suggests that cultural norms unique to ethnic minorities do not explain their higher prevalence of early marriage and childbearing.** To what extent does ethnic minority culture contribute to early marriage and child bearing? Higher fertility has been attributed to higher rates of early marriage and the lack of access to contraception; this includes cultural beliefs opposing contraception use as well as fear of potential side-effects of contraceptives. Higher prevalence of child marriage among ethnic minorities has also been attributed to cultural norms. However, attributing higher prevalence of early childbearing and marriage to ethnic minorities’ cultural norms has been criticized for promoting notions of cultural inferiority, cultural racism, and potentially motivating assimilation policies. By characterizing early childbearing and marriage as inherent to ethnic minority culture, their culture may be viewed as backward or inferior which may subsequently justify policies that do not protect cultural identity or try to assimilate ethnic minorities. Analysis of the 2014 MICS data reveals that ethnic minority girls aged 15 to 19 were 18.8 percentage points more likely to have begun childbearing than those in the majority Kinh population; however, when

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controlling for whether a girl had been married prior to becoming pregnant, there is virtually no difference (Figure 4.10). The difference between ethnic minority and Kinh majority in the percent of women aged 20 to 34 who were married before age 18 was 10.6 percentage points; when controlling for differences in socioeconomic characteristics, the differences was -2.7 percentage points. In both cases, the differences were statistically insignificant and had narrow confidence bounds. The findings suggest that factors unique to ethnic minorities, including unique cultural norms, play at most a very limited role in explaining the differences in early childbearing and marriage. In conclusion, cultural norms resulting from lower socioeconomic conditions may explain early childbearing and marriage but not cultural norms inherent to ethnic minorities.

Combating stunting and improving upper secondary participation among ethnic minorities requires interventions that are not just targeted at poor areas but able to overcome cultural barriers. Analysis of UNICEF MICS 2011 and 2014 data reveal that just under half of ethnic minority children live in localities that are mixed ethnically. In ethnically mixed communities, ethnic minority children have higher prevalence of stunting and diarrhea and lower participation in upper secondary school than Kinh children. The differences in stunting and diarrhea prevalence persist even when controlling for differences in other targetable characteristics including child’s age, gender, household wealth and mother’s education. These findings have important implications for

FIGURE 4.10. Explaining ethnicity differences in early childbearing and marriage

<table>
<thead>
<tr>
<th>Difference between ethnic minorities and Kinh</th>
<th>Difference controlling for whether a girl was married before childbearing</th>
<th>Difference between ethnic minorities and Kinh</th>
<th>Difference controlling for socioeconomic characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent of girls 15 to 19 who have begun childbearing</td>
<td>Percent of women aged 20 to 34 married before age 18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18.8*</td>
<td>0.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.6*</td>
<td>2.7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Statistically significant

154 Background note available from the authors upon request.
targeting policy. First, only targeting ethnic minority areas would miss the significant proportion of ethnic minority children living in ethnically mixed areas who are at risk of stunting and dropping out of school. Second, because ethnic minority health and schooling outcomes lag behind those of Kinh within the same localities, targeting mixed ethnicity localities may not necessarily reduce ethnic minorities’ disadvantage. That nutrition and schooling outcomes of ethnic minority children lag those of Kinh children in the same localities after accounting for differences in demographics and well-being suggest that ethnic minority children may not benefit from local services and opportunities the same way as their Kinh peers. Programs designed to benefit particular localities (e.g.: schools, health clinics, parent education programs) would likely need to be tailored to ensure that they are inclusive of ethnic minorities. In Vietnam, this tailoring may require addressing geographic isolation and removing linguistic and cultural barriers from education and health facilities and service delivery.

International evidence suggests that reaching ethnic minorities requires a different approach to service delivery, including strong partnership and ownership by ethnic minorities for both program design and implementation. For example, a meta-analysis of evaluations of programs serving indigenous children in North America and Australia found that successful programs shared long-term partnership between program providers and communities, strong community engagement and capacity building, and extensive community consultation and ownership to ensure program priorities reflected community priorities (Black 2007). Interventions that rely on motivation, knowledge, resources, and access to services of the individual, and are more likely to depend on voluntary involvement and participation, tend to favor already advantaged groups. Disadvantaged ethnic minorities are more likely to encounter barriers, such as lack of flexibility to take time off from work, transportation and child care challenges, alienation, and fatalism, which minimize possible benefits from the interventions. A large body of literature has established the importance of mother-tongue instruction including improved reading outcomes in national languages later in school when reading is first learned in mother-tongue languages. Negative ethnic stereotypes codified in textbooks or reinforced by teachers detrimentally impact the experiences of ethnic minorities in schools. Many post-secondary institutions, including Canada, encourage applications by indigenous peoples through specialized application programs while maintaining the same admissions standards between indigenous peoples and others.

Strengthening workforce development for a changing economy

Making Vietnam’s future jobs better and more inclusive requires seizing opportunities while minimizing emerging risks. Complementary efforts include attracting higher value-added foreign direct investment while fostering a dynamic domestic firm sector, incorporating traditional sectors and largely excluded populations into the economy, and generating a lean

156 For a review, see Ball, J. (2010). Enhancing learning of children from diverse language backgrounds: Mother tongue-based bilingual or multilingual education in the early years. UNESCO.
and smart labor force to create and work in higher value-added jobs. This section will focus on the last element, strengthening the supply and quality of the labor force that can serve as the engine of growth for knowledge-intensive exports, the service industry, and innovative and well-managed automation.

Vietnam’s labor force is low-skilled, and employers have taken notice. According to the 2017 Vietnam Labor Force Survey, two of every three workers in Vietnam today have no more than a lower secondary education. Even more troubling, only 30 percent of today’s youth, who should have competed tertiary education by age 25, have done so (Figure 4.11). Furthermore, slightly less than half of employers who responded to an Enterprise Survey in 2015 identified “skills” as an obstacle to firm performance, compared to 31 percent of firms in the rest of developing East Asia and Pacific. Exporting firms in Vietnam are three times more likely than non-exporters to identify these skills constraint.

**FIGURE 4.11. Distribution of education across the working population, by cohort and total**

Even though Vietnam’s education system is rapidly improving, it will only slowly increase the skills level of the labor force. If educational attainment continues to improve at its current rates, the average years of education of the labor force will increase from 8 years today to 9.3 years of education by the year 2050. At current growth rates, the share of the labor force with tertiary education will only increase from 11 percent today to 15 percent by 2050 (Figure 4.12). Despite some improvements, Vietnam’s persistently and relatively low tertiary gross enrollment rate contributes to the low projection (Figure 4.13).

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159 Ibid.
The skills profile of jobs and skills development modalities are already becoming more sophisticated. The 2014 and 2017 labor force surveys show a reduction in jobs that require very simple skills. For example, subsistence farmers and street vendors are the fastest shrinking occupations, and are comprised predominantly of women. In contrast, eight of 10 of the fastest growing occupations require higher level knowledge and a broader range of skills. Table 4.5 illustrates the anticipated shift in skills demanded by the labor market as countries transition from traditional to digital economies, as well as education and training modalities best suited for those emerging skills development needs.

Note: to generate the projections for the education level, the share of the labor force with each level of education (LFS, 2015) was used as the base. A 3-year average was used to generate an estimated “rate of change” over a five year period. This was assumed to be constant over time. The projections for years of education was derived by extrapolating the average level of education for future 5-year cohorts based on the growth rate in educational attainment over the period 2005-2010 (Barro-Lee tables). The average level of education for each cohort was multiplied by that cohort’s share of the labor force (derived from LFS 2015 and assumed constant) to generate an average mean years of education for the labor force.
Building worker skills for today’s and tomorrow’s jobs will require radical reforms to the education and training systems. A world class tertiary education system, comprised of vocational and education and training (VET) institutions and universities, will require a renewed commitment to improving quality and relevance, a credible autonomy and accountability mechanism, the ability to leverage technology to leapfrog learning and research, and sustainable financing that is results-based. Tertiary education institutions will need to focus not only on the skills development of the pipeline of workers, but also upskilling of the current workforce. With rapid technological development, job transitions throughout working lives will become the norm. The labor market is expected to become more dynamic with more frequent job transitions, requiring workers to learn new skills. A system of lifelong learning can prepare workers, notably adult workers, for the expected impact of technology changes on the labor market. Adult workers will need to quickly learn job-related skills, which means higher demand for modular competencies-based training. Training providers will need to be more responsive to the diverse age and experience profiles of workers experiencing job transitions. Importantly, the public tertiary education system cannot solve this problem alone, instead they will need to crowd-in industry to address the workforce skills challenges. As of 2015, only 22 percent of firms reported that they provide formal training to their employees. This is in spite of nearly half of the respondents saying that skills shortages negatively affect their businesses. The respondents report that when they do train, most instruction is limited to job-specific technical skills. Yet informal on-the-job learning appears to already be a significant source of skills development. A 2011 survey of workers found that 35 percent of low-skilled workers learned something new in their jobs in the last 3 months and more than 90 percent of high skilled workers reported learning.

The private sector can also contribute by providing guidance to tertiary education system reforms, transferring technologies, and funding interventions.

While Vietnam’s spending on education overall is comparable to wealthier comparator countries, its contribution to tertiary education is insufficient for a country with ambitious

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goals. In 2015, excluding tuition fees, higher education received only 0.25 percent of GDP, 0.8 percent of total government spending, and 5 percent of total government spending on education\textsuperscript{163}. The allocation to tertiary education is low because the government allocates a large proportion of its budget to lower levels. As a result, Vietnam’s public funding of tertiary education as a share of GDP is low while tuition fees (private contributions) as a share of unit cost in public institutions is high (Table 4.6). The high level of total spending (public and private) on tertiary education reflects the government’s socialization policy that encourages cost-sharing as a student progresses through the education system.

\begin{table}[h]
\centering
\caption{Breakdown of public and private funding for tertiary education}
\begin{tabular}{|c|c|c|c|}
\hline
Tuition Fees as share of unit cost in public institutions (%) & Public Funding as a share of GDP (%) & <0.5 & 0.5-1 & >1 \\
\hline
>40 & Vietnam, Mongolia & & & \\
\hline
20-40 & South Korea, Thailand & & & \\
\hline
<20 & Peru & Argentina, Brazil, Colombia, Mexico & & \\
\hline
\end{tabular}
\end{table}


Recommendations

Making growth inclusive requires a targeted, multidimensional, and results-based approach. The poor are predominantly comprised of ethnic minorities who reside in rural areas, especially in the lagging regions of the Northern Mountains and Central Highlands provinces. They also experience multiple challenges, including poorer human capital outcomes in maternal and child health service delivery, nutrition, skills development, and social protection; lack of access to public services like clean water and sanitation; inadequate access to good jobs and financial capital; and isolation due to the sparsely populated nature of their communities. At the same time, Vietnam’s changing economy requires a better quality and more relevant tertiary education system, as well as pathways to good jobs for all. The recommendations below therefore take a holistic approach to addressing the two main human capital challenges discussed: (i) reducing ethnic disparities in stunting, access to quality secondary schooling and beyond, and transitions to good jobs and (ii) improving overall workforce development for a changing economy.

1. Closing the gaps in human capital disparities for ethnic minorities require reforming the Nationally Targeted Programs, investing in cost-effective human capital interventions, and facilitating transitions away from low productivity farm work. Vietnam’s impressive record on human capital outcomes shows that strong commitment and sustained investments over the years have yielded positive results. The government remains committed to ensuring that no one is left behind in the overall socio-economic development of the country. Reducing stunting and expanding access to quality secondary education for all citizens is a feasible goal to achieve in the next ten, if not five years. In the medium term, is

\textsuperscript{163} Authors’ estimates based on MOF/Treasury data.
it also possible to expand access to tertiary education for ethnic minorities and support their transition away from low productivity farm work to good jobs. These challenges require a whole-of-government approach with cross-sectoral coordination and high-level champions to incentivize convergence across ministries and stakeholders.

1.1. Reform the National Targeted Programs (NTPs) to ensure the inclusion of smart human capital investments, results-based funding mechanisms, and effective monitoring. Evidence suggests that smart human capital investments for ethnic minorities would focus on improving nutrition, access to quality secondary education and beyond, and transitions to good jobs. Under the current NTPs, provinces tend to allocate more spending to infrastructure. The next generation of NTPs can address this shortfall by ring fencing budget for human capital interventions, while deepening synergies with infrastructure investments.

To improve the efficiency of human capital investments for ethnic minorities, high level champions and coordination across programs at different levels of government and pooling or integrating resources across line ministries and agencies should be encouraged. There are currently 23 policies to support development of education and training and seven policies on healthcare provision for ethnic minorities. Policy and program fragmentation can lead to inefficiently scattered resources. One specific recommendation to improve nutrition programming is to reconvene the high-level national intersectoral nutrition steering committee with appropriate representation by provinces with high stunting rates and/or designate specific agencies to monitor and evaluate nutrition-specific and nutrition-sensitive outcomes vis-a-vis allocated resources.

Strengthening the incentive mechanisms for local decision makers to prioritize investments in poorer communes is important. Currently, provinces must meet the target of “no communes achieving less than 5 criteria” which is not a very ambitious minimum achievement target. Instead, the budgeting process should account for higher unit costs as well as lower capacity in remote and poorer communes and ensure that provinces that target the poorest communes are rewarded with adequate financing. The worse performing ethnic minority groups and the 16 very small minority groups comprising of less than 10,000 people will require more resources to help them catch up.

A results-based funding mechanism, paired with more effective monitoring, would ensure a closer linkage between allocated budget and outcomes. Budget reporting and accounting requirements at the local level can be strengthened to ensure equitable distribution of resources and assess efficiency and effectiveness in achieving household level outcomes. Stronger mechanisms are needed to ensure consistent reporting of expenditures and program outputs across provinces, districts and communes, for example, by linking disbursements to reporting. Over time, budget allocation should incentivize provinces to improve utilization of nutrition-specific and nutrition-sensitive interventions, enroll more students, offer full day schooling to more children, rationalize the teacher/health workforce, and initiate administrative reforms to achieve human resource efficiency gains. This would enhance both autonomy and accountability at the provincial level and below, and link budget allocation to outcomes.
Besides including poverty and income targets, the monitoring and evaluation framework for the NTPs should be strengthened by using more rigorous mechanisms for measuring not only outputs but the impact of outcomes as well. This can be done by adopting external mechanisms for measuring such outcome impacts, for example, through surveys by the Government Statistics Office (GSO). The frequency and availability of representative (survey) data and lack of sufficient sampling of ethnic minorities in data sets was a chronic constraint to the analysis presented. Critically, the MICS survey on which three of the sub-components of the HCI rely was last conducted in 2013/14 and, currently, more than five years later, there are still no plans to implement another MICS survey (or Demographic and Health Survey, which could collect similar information). Despite robust methodologies, in most nationally-representative surveys the small sample size of ethnic minorities limited the conclusions that could be drawn to explain the differences in human capital outcomes between ethnic groups. An immediate opportunity is the upcoming National Nutrition Survey 2019 (conducted every 10 years), which currently lacks funding to oversample ethnic minorities. A more reliable, comprehensive, and up-to-date tertiary education management information system is also needed. Data should allow for disaggregation not only by ethnicity, but also income, geography, and gender to ensure different dynamics can be analyzed.

1.2. **Invest in human capital building interventions with strong evidence of cost-effectiveness.**

Nutrition interventions are most effective during the first 1,000 days of life from the first day of pregnancy until the child’s second birthday. Undernutrition during this period could lead to extensive and largely irreversible damage to physical and cognitive development. Improving nutrition for ethnic minorities requires a multisectoral approach, involving access to a high-quality diet, effective maternal and child care services, and access to water and sanitation and personal hygiene. Vietnam already has a good set of policies but stronger enforcement could make a difference, for example: (i) Decree 100/2014/ND-CP on ban of advertising of breast milk substitutes for children up to 24 months and (ii) Decree 09/2016/ND-CP on food fortification regulating mandatory food fortification with micronutrients.

One of the disparities in general between ethnic minorities and the Kinh majority is access to full-day schooling\(^{164}\). Vietnam should continue the drive to extend school hours, or the number of schools that offer full-day schooling while taking care to do so in a way that improves school quality as well. The proportion of household spending on general education has been high relative to public spending, and highest for upper secondary at 34.4 percent\(^{165}\). Access to full-day schooling depends to a high degree on parents’ ability to pay school fees (to finance additional sessions, lunch and other extracurricular activities), which widens the gap.

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To stimulate demand for more and better human capital services, the government could provide conditional cash transfers (CCTs) and behavioral change counseling to mothers/families. Vietnam has already committed to improving grassroots health service delivery, including maternal and child health services. Commune health stations are being renovated, equipment provided and health workers trained in order to ensure that health facilities have the “supply-side readiness” to educate and support parents in tracking a child’s growth, health, and nutrition, as well as provide counseling to foster behavioral changes. CCTs could be a complementary measure to help stimulate the “demand-side”, incentivizing households to make use of these services and providing them with sufficient income to invest in the health of their children. Providing cash to targeted, vulnerable families while requiring them to enroll their children in school is likely to increase demand for better quality education services. Demand-stimulating programs such as conditional cash transfers must work hand-in-hand with improving the supply and quality of services which could be financed through a reformed NTP as discussed above.

Registration and enrollment for social assistance transfers that include education and health remain relatively low among ethnic minorities, while payments are not conditional and often irregular. A pilot is underway using e-payment mechanisms, which should improve the transparency, accuracy, and timeliness of payments.

1.3. Facilitate diversification into more stable jobs. Supporting ethnic minorities’ transition into household enterprises and wage employment is key to the country’s long-term prosperity, a challenge that is complicated by the physical remoteness of ethnic minority communities. Jobs prospects tend to be scarce, and lack of market potential is a constraint to improve access to non-farm work. At the same time, higher fertility rate among ethnic minorities means that their share within the overall population is likely to grow in the context of an aging demographic. Thus, reducing the “economic distance” for ethnic minorities is critical to enhance their access to good jobs.

There are three key entry points to reduce the economic distance: (i) integrate lagging areas into the network economy to expand their market potential, (ii) create a secondary economy supporting industries based on the regional absolute advantages, and (iii) reduce the cost of migration to increase long-distance migration domestically. In this context, leveraging technology is key, and the government could do more to align the innovation and digital transformation agenda to improve rural development.

Rural jobs upgradation requires helping workers move up the value chain and into the knowledge-economy. The growing consumer class and urbanization, the emergence of regional value chains, and Vietnam’s reputation as a solid link in global value chains, is expected to increase better jobs. This can be facilitated through more efficient linkages of current jobs to value chains – such as is occurring for family farms that sell to retailers – or the creation of new jobs in assembly, logistics or other services. As Vietnam’s

workforce becomes more sophisticated, it has the potential to move into more lucrative value chains but will require skill development.

To promote improved skills development of ethnic minorities, VET institutions and universities in areas with large populations of ethnic minorities will need to undertake broader tertiary education system reforms. Private sector support in the form of guidance, technology transfer, and funding may be weak for these tertiary education institutions, thus there is a strong rationale for government support. Targeted support to institutions should go hand-in-hand with results-based accountability.

Improving access to better jobs for ethnic minorities requires a broad range of interventions that are complementary to skills development. One way is to create a Labor Market Information System by collecting special surveys to identify labor demand, and produce and disseminate user-oriented, regionally-specific, gender-disaggregated information. Another would be to design an integrated job search strategy that builds on private initiatives, directing public resources to incentivize employment of hard-to-employ populations, including ethnic minorities. Incentives to food processing industries, for example, to invest close to the agricultural production base could generate more jobs for Vietnam’s ethnic minorities.

Encouraging long distance migration domestically will be important to increase access to off-farm opportunities, especially for ethnic minorities and people in low density economies. In Vietnam, housing issues was the most cited challenge faced by migrants (43 percent), followed by no income (38 percent) and inability to find a job (34 percent) among migrants surveyed in 2015\(^{167}\). One set of interventions could be aimed at addressing the social barriers to people’s movement, namely unequal access to public services for temporary residents and improving elderly care services in rural areas\(^ {168}\).

Complementary infrastructure improvements include better connectivity, both broadband and transport. Transportation vouchers could facilitate seasonal wage work in other provinces. Regulatory reforms should be undertaken to facilitate online commerce and transactions and equalize access to services for temporary residents. Finally, given the strong culture of strong social cohesion within some ethnic minority groups, support that relies on social networks – such as business development loans to a group of individuals with joint repayment responsibilities – may be appropriate.

1.4. **Reducing early childbearing and marriage and increasing employment opportunities requires policy changes, increased services and leveraging of social capital to change gender norms.** Early child bearing and marriage result from variety of factors including gendered cultural norms that disempower girls; however, these cultural norms are not unique to ethnic minorities. Little difference in the prevalence of early


\(^{168}\) The need to take care of the elderly discourages migration for both men and women and contributes to reverse migration. Adult children with elderly parents in rural Vietnam are less likely to migrate (Jiles and Huang, 2018).
childbearing and marriage is found between ethnic minorities and Kinh when differences in socioeconomic conditions are considered. As a result, the culture of ethnic minorities should not be viewed as an obstacle for improving early childbearing and marriage but rather as a point of leverage for policy and programmes. For example, sources of traditional influence in communities including village leaders can help communities respond to girls’ needs and offer motivation, and group-based approaches including participatory girls’ clubs have been proposed to help reduce pressure for early marriage. These interventions aim to affect social norms by leveraging social capital which, in turn, relies on recognition of cultural identity and respect for cultural practices.

Removing barriers to non-agricultural employment is fundamental to realizing the full potential of ethnic minority women and is expected to improve human capital accumulation and reduce early childbearing and marriage. In order to promote better jobs for women, an important area of focus is to reduce the burden of child and elderly care and increase the availability and returns from opportunities offering flexible working arrangements. These objectives can be achieved by: (i) expanding childcare facilities, (ii) promoting participation in the digital marketplace, including peer to peer accommodation offering and niche, home produced goods such as handcrafts and embroidery, and (iii) ensuring that women are named on both agricultural and residential land use right certificate (LURC). For the elderly, who will continue to rely on agriculture as a main source of income, overarching land reform will also be particularly important. Such reforms should include strengthening land security, reducing agriculture land use restriction, and broadening land consolidation beyond rice farming.

1.5. Policies and programs targeting ethnic minorities must adapt to cultural norms and respect cultural identity to be effective. Cultural is what fundamentally differentiates ethnic minority policies and programs from those targeting Kinh. International evidence highlights the importance of ownership and consultation of interventions targeting culturally and linguistically distinct minorities. As in many countries with ethnic minority populations, qualitative work in Vietnam has identified a lack of trust that existing state agencies and programs could serve their needs. This is a common barrier for national government’s attempting to improve outcomes for ethnic minority populations. To overcome these barriers, ethnic minority communities should be consulted to ensure that programs are culturally and linguistically sensitive to their needs. Involving ethnic minorities in the design of interventions and including mechanisms for incorporating feedback during implementation increases the chances of success. In order for interventions to reach ethnic minorities, literacy constraints, language preferences, gender norms, and cultural values should be considered.

managers and service delivery staff in health, education and social assistance provision will need capacity building in cultural competencies to better serve the needs of ethnic minorities.

2. **Improving overall workforce development for a changing economy requires undertaking systemic tertiary education reforms—including both VET and higher education—while more effectively leveraging the private sector.** To counterbalance an aging labor force that will begin to shrink by 2040 in an economic context where the majority of jobs are in low- and semi-skilled occupations, and with “Industry Revolution 4.0” on the horizon, today’s and tomorrow’s workers will need more and different skills to continue to compete in the global economy. Vietnam’s path toward prosperity by 2035 requires continuous increases in productivity, which require greater use of higher quality human capital. To produce more and better human capital, a labor force with a thoughtful balance between VET and university graduates will be needed.

A reformed tertiary education system will be results-driven, expand coverage while promoting equity, and leverage the private sector. Setting clear results-based targets for the next ten years is critical. Results-based aspirations that move beyond the usual inputs-based approach could include: (i) improvements in access and equity: overall gross enrollment rate and equity index (educational attainment of highest versus lowest income quintiles; also ensuring that different demographic groups have access to tertiary education in the context of an aging society), (ii) quality: proportion of accredited programs internationally and nationally, student satisfaction, (iii) relevance: student employability, employer satisfaction, availability of shorter, module-based training programs that respond to reskilling needs, (iv) research: volume and impact of publications, and (v) innovation technology transfer: volume of patents and start-ups.

To increase coverage of overall tertiary education in an equitable way, more diversification is needed. This includes developing more cost-effective, non-university options (VET institutions); promoting good quality private tertiary education institutions by allowing equal access to compete for government funded service and/or research contracts; scaling up cost-effective alternative modalities including open university and massive open online courses (MOOCs); promoting closer linkages with the world of work; undertaking administrative reforms to access the current incentives that are provided by law for better tertiary education-private sector engagement; and articulating policies to build bridges and pathways to allow for transfer between VET institutions and universities.

Vietnam can continue to expand post-secondary education given the high returns to tertiary education. Considering the relatively high private and social returns to tertiary education, and in accordance with the government’s socialization agenda, some level of cost-recovery is warranted while ensuring that tertiary education is expanded equitably, sustainably, and with quality. Tertiary education financing reform requires a transition from input-based to output/outcome-based (especially income-contingent student loans) and finally to voucher-based mechanisms (Figure 4.14). Income diversification in the form of continuing education modules, research and consultancy contracts, production of goods and services, and fund-raising with alumni, firms, and philanthropists should be considered.
Building a demand-driven system will require establishing the institutional conditions for a well-regulated market of private and public providers that deliver training services with close involvement of employers. Successful systems require a high degree of coordination and partnership between government agencies and the private sector, as well as giving the businesses a strong voice in determining training policy. The government provides the oversight by monitoring data on program quality, encouraging autonomy and accountability, and ensuring efficiency and a results-orientation in government financing. Building demand-side buy-in from employers is a key challenge. The UK and some other European countries provide useful insights for setting up sector employer councils, while East Asian countries have established independent apex training authorities, such as Singapore’s Institute for Technical Education, with strong partnerships with employers and other stakeholders. The government can contract private providers to deliver training services to workers in transition.

Closer cooperation with the private sector can also incentivize technology transfer, by providing more dedicated funding for applied research (e.g. matching grants), capacity building to set up technology transfer and enterprise linkage promotion offices within tertiary education institutions (and/or within relevant line ministries), and clear definition of intellectual property and distribution of revenues. Technology can also be harnessed to improve skills development itself, for example using more sophisticated adaptive learning using big data to move towards personalized learning that meets students where they are in the learning process and then progresses with them as they gain more competencies.
Annex 4.1. Vietnam and East Asia and Pacific Countries’ Rankings on Domains of Human Capital Index (HCI)

Child survival rate (per 1000) - EAP countries

Expected years of schooling - EAP countries

Harmonized learning outcomes - EAP countries
Annex 4.2. Data and methodology for estimating HCI by ethnicity

The HCI requires data on (1) stunting prevalence, (2) child mortality, (3) quality adjusted years of schooling, and (4) adult survival. Data on stunting and child mortality disaggregated by ethnicity is generally available from a variety of sources including UNICEF MICS and previous work by the World Bank on nutrition. Adult survival rates are not available by ethnicity to our knowledge. As a result, this note primarily focuses on the computation of quality adjusted years of schooling by ethnicity.

Two data sources can provide the necessary data for calculating the quality adjusted expected years of schooling. The first is the latest version of the UNICEF MICS survey from which total net enrollment by age—that is, the percent of children for each age level that is enrolled in school regardless of level of schooling—as well as repetition rates can be estimated. The second data source is the 2015 PISA data in which language at home is included in the background questionnaire.

In MICS and PISA, ethnicity and language are defined as either Kinh or non-Kinh; however, non-Kinh is generally regarded as being EM. For example, while the ethnicity 2012 MICS data are coded as Kinh and non-Kinh, stunting rates are presented as Kinh and EM. The caveat is that there may be some non-EM children included as non-Kinh.

Discussion on methodology is limited to the estimates of the quality adjusted expected years of schooling; the other components of the HCI are obtained from previously published sources except for the adult survival rate which is not available. Following Kraay (2018), the quality adjusted expected years of schooling (QYS) is defined as

\[ QYS = EYS \times \frac{HLO}{625} \]

where EYS is the expected years of schooling and HLO is the measure of harmonized learning outcomes. The EYS is defined as

\[ EYS = \sum_{a=4}^{17} ENR_a \]

where \( ENR_a \) denotes the enrollment rate at age \( a \). The preferred measure of ENR for age \( a \) is the total net enrollment rate (TENR) which the proportion of children for a given age that are enrolled in any age of schooling (Kraay 2018: 25). The MICS household survey data provides estimates of the proportion of children for a given age that are enrolled in any level of school. Finally, Kray (2018) notes that the enrollment rates would need to be adjusted by repetition rates; for this, the repetition rates for each age are estimated using data on children’s enrollment and grade in the previous school year in MICS and subtracted from the TENRs for each age.
The second component of the quality adjusted expected years of schooling is the harmonized learning outcomes measure. Here, the average PISA score for all three subjects is calculated for Kinh and EM populations. Each subject is adjusted to harmonized (see Table 2 notes).

Finally, the HCI is derived from the following formulas from the following excerpt from Kraay (2018):

\[
HCl = \text{Survival} \times \text{School} \times \text{Health}
\]

Using the notation from Equation (3), the three components of the index are formally defined as:

\[
\text{Survival} \equiv \frac{P}{P^*} = \frac{1 - \text{Under 5 Mortality Rate}}{1}
\]

\[
\text{School} \equiv e^{\Phi(\text{Expected Years of School} \times \frac{\text{Harmonized Test Score}}{625} - 14)}
\]

\[
\text{Health} \equiv e^{Y^\text{ARS}(\text{Adult Survival Rate-1}) + Y^\text{Stunting}(\text{Not Stunted Rate-1})/2}
\]

where \( \Phi \) is 0.08, \( Y^\text{ARS} \) is 0.65 and \( Y^\text{Stunting} = 0.35 \).
Annex 4.3. Prevalence of undernutrition in children (0-59 months) in 2013 from Vietnam nutrition surveillance data

Prevalence of undernutrition in children (0-59 months) in 2013 from Vietnam nutrition surveillance data (n=90,425); bivariate analysis

<table>
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<tr>
<th>Characteristic</th>
<th>Prevalence (%)</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Child factors</strong></td>
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<tr>
<td>Age (years)</td>
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</tr>
<tr>
<td>&lt;2</td>
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<td>2-5</td>
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<td>Sex</td>
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<tr>
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<tr>
<td>Diarrhea in last two weeks (missing = 521)</td>
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<tr>
<td>Fever in last two weeks (missing = 521)</td>
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<tr>
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<td>College and higher</td>
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<td>Characteristic</td>
<td>Prevalence (%)</td>
<td>p Value</td>
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<tr>
<td>Maternal height (centimeters)</td>
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<td>≤152</td>
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<td>&gt;152</td>
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<td>Residence</td>
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<td>&gt;30</td>
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</table>


Note: n = number of observations; p = level of significance.
BACKGROUND

PAPER 5

Green Economy

173 This is a supporting paper prepared for the report Vibrant Vietnam: Forging the Foundation of a High-Income Economy. The paper was written by Diji Chandrasekharan Behr and Uwe Deichmann with inputs from Binh Thang Cao, Hardwick Tchale, Stephen Ling, Katelijn Van den Berg, Thu Thi Le Nguyen, Lan Thi Thu Nguyen, Thi Ba Chu, Rahul Kitchlu, Abedalrazq F. Khalil, Poonam Pillai, Dzung Nguyen, Katherine Kelm, Hoa Thi Mong Pham, Dang Hung Vo, and Farah Imrana Hussain, and draws on the literature and work done by the World Bank on agriculture, climate change, disaster risk management, energy, fisheries, forestry, land, the Mekong Delta, solid waste, tourism, and water.
Summary Note

In Vietnam, growth and industrialization have been rapid and successful but often associated with environmental degradation and depletion of the country’s natural assets. The limited investment in clean growth to date has resulted in air pollution becoming the sixth leading cause of death in Vietnam. As one of the world’s largest producers and exporters of seafood (with seafood exports ranking fifth in value for the country), continued unsustainable exploitation of fisheries could compromise Vietnam’s access to important export markets like the European Union. Moreover, unless measures are taken to enhance climate resilience, the projected increase in heat stress could, by 2045, result in a 12 percent decline in labor capacity in Vietnam.

It is increasingly urgent that Vietnam incentivize and invest in greener growth to avoid irreversible impacts (for example, depletion of some groundwater aquifers, land subsidence, loss of productive land, and health impacts). Under a business-as-usual scenario, between 9 million and 31 million people in Vietnam are expected to be threatened with saltwater flooding at least once per year from 2050 onward, and 11 percent of the population will be living within 1 meter of mean sea level. The latter is a concern considering projections that by 2100, Vietnam will experience a sea level rise of 57 to 73 centimeters. Historical and cumulative pollution has already caused “dead rivers” in and around major cities. Unless risks from water pollution are duly addressed, water pollution could become extreme and its impacts on human health, the economy, and the environment could cost close to 6 percent of GDP by 2035.

Global and national evidence reveals that cleaner and resilient growth—that is, “green growth”—could have a positive impact on human and physical capital and needs political commitment. The Government of Vietnam recognizes the potential benefits of clean and resilient growth and reflects this in its green growth strategy, marine economy strategy, climate change strategy, and several policy measures. The government, however, could boost effective implementation of these strategies and polices.

Vietnam could achieve cleaner and more resilient growth by embracing four key shifts in its upcoming Socio-Economic Development Strategy (2021–2030) and Socio-Economic Development Plan (2021–2025):

(a) Recognizing natural assets as a productive asset, that is, as a form of capital. This would involve accounting for natural assets like land, fisheries, and water in a growth model to support the efficient use and sustainable management of natural capital and incentivize increasing productivity.
(b) **Optimizing interactions among natural capital, human capital, and physical capital to enhance natural capital productivity.** For example, infrastructure and natural assets can mutually reinforce outcomes in investments in nature-based solutions for resilience. In addition, climate-smart infrastructure, like appropriately designed irrigation infrastructure, increases the productivity of natural capital.

(c) **Making smart use of natural capital to generate climate co-benefits.** This could include promoting energy sources that also reduce greenhouse gas emissions or restoring coastal forests while also reducing the impact of sea level rise.

(d) **Adopting a “whole-economy” approach.** Incentivize the commitments of governments, firms, and individuals to use innovative and efficient approaches when implementing Vietnam’s green and climate-smart strategies, such as adopting a circular economy approach.

**To transform these four shifts into practice, Vietnam should consider:**

(a) **Using sharper policy instruments including price instruments** such as taxes, fees, or subsidies; regulations such as emission standards; spending resources on information and technology transfer programs; or transfers to compensate those affected by other policies. Prices should internalize positive and negative externalities to inform optimal allocation of natural assets. Vietnam already applies taxes on natural resources and for environmental protection, but several are low relative to other countries. Appropriate fees and taxes would stimulate efficient resource use and lower waste generation. Pricing based on principles of full cost recovery can be effective for water management. Carbon pricing, using a carbon tax or emission trading system, is also an important tool for promoting cost-effective greenhouse gas mitigation. In the energy sector, to achieve its ambitious targets for renewable energy, Vietnam will have to go beyond the current feed-in tariff and move to a system of reverse auctions. Concomitantly, energy efficiency standards will be the most effective way to reduce industrial emissions.

(b) **Aligning objectives of cleaner and more resilient growth with sector policies.** For example, greening Vietnam’s industrial policy using a circular economy approach could help meet both the growth and greening objectives (for example, through eco-industrial parks, co-incineration, reuse of wastewater, and material management). Aligning sectoral goals for increased productivity with promotion of innovative uses of disruptive technology and the Internet of Things can also support greening growth in sectors such as agriculture, fisheries, land, water, and urban. For sectoral and innovation alignments, the Government of Vietnam would need to increase sectoral research and development expenditures or support innovation and technology transfer.

(c) **Improving data and information to effectively monitor progress and establish partnerships with diverse stakeholders.** The optimal and sustainable use of Vietnam’s natural terrestrial and marine assets requires robust data and information for plans, policies,
and investment decisions. Data systems, such as the System of Economic and Environmental Accounts, will help make better decisions regarding the use of natural assets. There is also a need to invest in sector-specific information systems, such as a system for land administration information, which is a critical element for good land governance. The Government of Vietnam could consider strengthening environmental education to promote cleaner and more resilient habits while creating opportunities to promote partnerships and research and development on key topics such as green and climate-smart technology.
Policy Note

Introduction

In Vietnam, growth and industrialization have been rapid and successful but often associated with environmental degradation and depletion of natural assets of the country. According to the 2018 Environmental Performance Index\(^{175}\) (EPI), Vietnam ranked 132 out of 180 economies in overall environmental performance. For air quality and CO2 Emissions Intensity, Vietnam ranked 159 and 141 out of 180 respectively. While for environmental health, Vietnam ranked 129. Vietnam’s 2018 environmental performance also lags its regional peers (see Figure 5.1). The environmental impact of rapid growth has become increasingly evident in cities like Hanoi and Ho Chi Minh, and in rural areas around the country. For example, during the dry season of 2019, Hanoi has experienced one of the most hazardous levels of air pollution, ranking third globally in terms of bad air quality on some days. Rural areas are also bearing the environmental and health consequences of solid waste discharge from craft villages, and increased pollution from expansion of manufacturing at poorly regulated industrial parks and clusters.

FIGURE 5.1. Vietnam’s environmental performance lags its regional peers

\(^{175}\) The Environmental Performance Index (EPI) is produced jointly by Yale University and Columbia University in collaboration with the World Economic Forum. The EPI ranks 180 countries on 24 performance indicators across ten issue categories covering environmental health (composed of air quality, water and sanitation, heavy metals) and ecosystem vitality (composed of biodiversity and habitat, forests, fisheries, climate and energy, air pollution, water resources, agriculture). https://epi.envirocenter.yale.edu/
The Vietnam 2035 study describes the causes that explain the decline in natural capital – both in terms of natural and environmental assets. The key causes are Vietnam’s growth model to date, which has relied on unsustainable use of natural resources in its industrialization and manufacturing centered growth. For Vietnam, this is resulting in several of the same environmental and natural resource challenges China faced, including high carbon intensity of production. Inefficient management of the natural assets and use of lagging technologies explain the low productivity and wasteful use of resources. Compounding these causes are exogenous factors such as rapid demographic growth, urbanization, growing income and market demand, and climate change.

Looking ahead, emissions from Vietnam’s growth model are forecasted to increase dramatically by 2030. Between 2010 and 2030, Vietnam’s overall GHG emissions is expected to increase fivefold, per capita emissions fourfold, and the carbon intensity of GDP by 20 percent. Besides the global impacts of these rising emissions, a high carbon content of manufacturing products could jeopardize Vietnam’s rising manufacturing exports. This is the case, if major importers such as the European Union introduce border tax adjustments based on embedded emissions. Continued urbanization and industrialization that is not based on regional coordination or more efficient use of land, will also cause more environmental degradation (including in terms of waste and pollution). Agglomeration and regional integration need to be prioritized to avoid continued extensive expansion of urban and industrial land use, which grew about fifteen-fold in the last 20 years, and to minimize the associated environmental impacts.

Climate change is expected to continue to compound the impact of environmental and natural asset degradation in Vietnam. Much of Vietnam’s population and economy is highly vulnerable to climate impacts. Vietnam ranks fourth in number of people affected by floods each year. World Bank estimates reveal that VND 30 trillion of losses per year are due to floods and typhoons. Two thirds of these losses are of residential assets. Similarly, increased frequency of droughts will amplify water scarcity and pollution. Droughts can also lead to a shortfall in energy supply from hydropower. During years with extreme weather events, such as a 1-in-100 year events, losses can reach close to seven percent of GDP. These extreme events are forecast to occur with greater frequency, compounding the impact if affected areas require more recovery time because of the degraded natural conditions.

Vietnam is at an important crossroad, and needs to determine whether future growth should continue along the current pathway or shift towards greener, cleaner and climate resilient growth. The current pathway imposes considerable hidden costs that can have negative impacts for future generations. These include the impact of environmental pollution and degradation of natural assets on human and natural capital. Vietnam has several strategies and plans that are oriented towards a green growth pathway, including the existing National Climate Change Strategy, the Vietnam Green Growth Strategy, Vietnam’s Nationally Determined Contribution (NDC), and the

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178 For purposes of this chapter, while green growth extends beyond low-carbon, all aspects of low-carbon growth are embedded in the discussions on green growth.
Plan for Implementation of the Paris Agreement. Each of these include priorities oriented towards low-carbon growth, climate resilience, and sustainable use of natural assets. For this upcoming planning period, it will be important to increase the commitment to implement these strategies and to use them to inform key policy decisions related to natural and human capital and infrastructure. This would also influence Vietnam’s achievement of its targets to deliver the 2030 Agenda and the Sustainable Development Goals (SDGs).

There are many ways to move towards implementing greener, cleaner and climate resilient growth that are well suited for Vietnam. Countries have, to different degrees, deployed green measures such as environmental taxation, removal of fuel subsidies, environmental technologies and innovations, increased material productivity, and integrating environmental and climate considerations into all sector policies at all levels. Several countries also deployed financial instruments (e.g., green bonds in France) and adopted the principles of a circular economy (e.g., China and Netherlands) to achieve green and quality growth objectives. Applying such approaches requires alignment of industrial and environmental policy objectives.

This chapter presents some key shifts in thinking for the upcoming SEDP and SEDS. The chapter is not a comprehensive presentation of all actions and measures that would be important for greening growth and making growth climate resilient. It focuses on key shifts in mindset and approach are needed, and provides the rationale for these changes.

Think of natural resources as a productive asset – a form of capital

Quality growth will require smarter use and better management of Vietnam’s natural assets and the environment, and due consideration of climate change. This includes better management of natural capital such as fossil fuel energy (oil, gas, hard and soft coal) and minerals, agricultural land, forests, and terrestrial protected areas. To date growth models have focused on private capital (firms), public capital (infrastructure) and human capital (people). Renewable natural resources have seldom been adequately accounted for in the growth models of middle- or high-income countries even though they have been instrumental for quality growth. Quality growth requires more efficient use of natural capital (and more sustainable management in the case of renewable natural capital), together with strong institutions and policies that make investment attractive and enforce regulations. Sustaining quality growth requires increasing productivity of natural capital.

The World Bank’s recent global analysis of the Changing Wealth of Nations found a strong relationship between development and the composition of national wealth. While the share of natural capital gradually declines as countries graduate from low- to middle- and high-income status – this is not a result of reducing the amount of natural capital but of adding more produced capital, especially human capital. Greater wealth per person is not a function of liquidating natural capital.
capital as is evidenced by the fact that, in 2014, natural capital per person in high-income countries was three times that in low-income countries (USD19,525 versus USD6,421), even though the share of natural capital in high-income countries is only three percent.

More efficient use of natural capital can contribute significantly to growth. Renewable natural resources (like forests, water, fisheries) can yield returns in perpetuity if they are properly managed. Non-renewable resources provide a one-time windfall. Strong institutions and good governance can ensure that this windfall promotes development by financing the creation of other types of capital, for example through spending on infrastructure or education. For renewable natural capital, it is important to improve the productivity of natural assets that contribute directly to growth in key sectors. An example is water in Vietnam. As water development intensifies, there will be competition between needs from agriculture, aquaculture, industry and cities. This underscores the importance of maximizing the productivity of water for Vietnam to generate far greater economic benefit from its water than at present. Currently, Vietnam produces just USD2.37 of GDP per cubic meter of water against a global average of USD19.42 (see graph above on water productivity). Taking actions to move towards the levels or productivity found in Thailand would result in doubling water productivity. In the medium term, Vietnam could even move towards other countries in the region, like Malaysia, or developed countries. It is important to set these ambitious targets of more value per drop and make investments and allocate resources to enable implementation.

Optimize interactions between natural capital and other forms of capital

Quality growth will also require optimizing the interaction between natural capital and the other forms of capital. Currently many interactions are negative between natural capital and other forms of capital. For example, the economic losses incurred by Vietnam because of air pollution alone (from PM 2.5) between 1995-2015 increased annually by about 3 percent (see graph on Average Annual Change in Losses from Ambient PM2.5). Among lower middle-income countries, this is one of 182 Economic losses capture discounted foregone loss in income due to mortality and human health. Air pollution affects the economy in a myriad of other ways, for example, by reducing crop yields and depressing real estate prices.
the highest rates of increase in losses from air pollution. Similarly, pollution is affecting surface water. Historical and cumulative pollution has resulted in “dead rivers” in and around major cities. Risks from water pollution are becoming extreme with impacts on human health, the economy, and the environment, and could impose a cost that is close to six percent of GDP by 2035 if nothing changes. Unless measures are taken to ensure that clean air and water enhance the productivity of human capital, pollution will continue to impose a hidden drag on growth.

**FIGURE 5.3. Average annual change in losses from ambient pm 2.5 (1995-2015) versus income Level in 2015**

Source: Data from IHME 2016.
Note: Kuwait and Equatorial Guinea are not show. GNI = gross national income; OECD = Organisation for Economic Co-operation and Development; PM2.5 = particulated matter with a diameter of less than 2.5 microns.

**Natural capital also contributes to produced private capital by being an input into production processes.** Globally, sand and gravel (aggregates) are the second largest natural resource extracted. In Vietnam, sand and gravel are an important input to construction of domestic infrastructure and are also exported. Vietnam uses about 100 million cubic meters of sand a year to make concrete. Disregard for controlling unsustainable exploitation of sand and gravel and of rocks, could mean that the domestic supply of natural sand will soon be fully consumed. There are similar considerations for other forms of natural capital that are necessary for production processes, such as water and timber. Water is an input to industry and helps to reduce industrial pollution. Lack of concern for water

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183 Only 10 percent of municipal and industrial wastewater is treated, and countrywide most sewage, industrial effluent, and solid waste find their way into waterways. While water quality remains fair upstream, the downstream and estuary zones tend to be heavily polluted.
pollution can result in water scarcity in otherwise water rich areas, negatively impacting industry. Similarly, timber is an essential input for construction material, furniture manufacturing, paper, etc.

**Natural capital are also an input to production of services such as tourism.** Recent analysis on tourism revealed that Vietnam, with its diverse natural and cultural tourism assets, is especially poised to benefit from the growing tourism demand. According to the World Economic Forum’s (WEF) latest 2017 Tourism Competitiveness Index, Vietnam ranks 32nd globally (out of 120 countries) in terms of the volume and attractiveness of its natural and cultural resources, and 3rd within the Southeast Asia region (behind Indonesia and Thailand). Vietnam’s relative weaknesses are especially pronounced with regards to air pollution (i.e. levels of particulate matter), wastewater treatment, and the overall stringency of environmental regulations. As increasing numbers of tourists continue to enter Vietnam, stress on these three weak points will only grow. This is also the case for other key environmental threats not captured in the WEF index, such as the accumulation of plastic waste in the waterways. Plastic waste in Vietnam is already among the highest in the world (as is the general insufficient management of solid waste) and a significant threat to land and marine ecosystems.

**FIGURE 5.4. Vietnam lags the region in multiple dimensions of environmental sustainability**

![Diagram showing environmental sustainability rankings](image)

Source: WEF.

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185 According to Jambeck, J.R., et. al (2015), Vietnam is the fourth worst country globally in terms of its plastic waste problem, based on indicators measuring, among other things, the levels of plastic waste generated, the share of this waste that is mismanaged, and the degree to which the waste flows as debris into the marine environment.
In Vietnam, there is still a strong link between the primary sector\textsuperscript{186} and other sectors, including low and high-tech sectors (see figure 5.5). The Asian Development Bank’s (ADB) Patterns of Interindustry Transactions Based on the Domestic Consumption Matrix, 2017\textsuperscript{187} captures the linkage between natural capital and other forms of capital. The findings confirm that natural capital-based sectors need investment and high-quality human resources as well as policy support to ensure they are developed in a sustainable manner.

**FIGURE 5.5. Patterns of interindustry transactions based on the domestic consumption matrix for Vietnam, 2017**

Source: ADB

Industrial expansion also hinges on having effective green growth. A recent survey of industries in Vietnam indicated that water supply is highly reliable for most firms, with only 8 percent of firms experiencing water outages in the past year. In contrast, in some regions, such as in the Mekong River Delta, this number can reach 27 percent. Shortage of water can have big impacts, costing firms on average VND 104 million (USD4,459) per year. A more concerning issue than water reliability is poor water quality with 14 percent of firms reporting that poor water quality is a major or very severe obstacle to business. This is particularly problematic in the Red River Delta and Mekong Delta regions,

\textsuperscript{186} Primary sector includes agriculture and hunting, forestry and fishing products, and mining and quarrying.

where a confluence of over-extraction, industrial wastewater, pollution from agricultural runoff, and seawater intrusion are all leading to serious water pollution. For some firms, poor water quality is impacting sales by almost 50 percent.

**Measures to improve energy efficiency and promote renewable resources can contribute to meeting Vietnam’s energy demand while promoting greener growth.** Today’s biggest energy challenge is to provide customers with reliable electricity services and meet future demand. Current demand projections show a dramatic increase from 47.9 GW of installed capacity in 2018 to 60 GW in 2020 to 129.5 GW in 2030. Vietnam has limited domestic energy sources remaining. Most of the larger hydropower projects are developed, and Vietnam will need to improve the regulatory and pricing framework to further develop smaller hydro and largely unexploited solar and wind potential. There is large potential to bring more gas into the market from domestic fields and LNG.

**Natural capital can also extend the resilience and efficiency of investments in public capital.** If infrastructure is to contribute to achieving Vietnam’s development goals – including growth, food and water security, clean air, disaster risk reduction and resilience to climate change – traditional approach to infrastructure development will be insufficient. Going forward, it will be essential to recognize that climate change and unregulated growth patterns can increase the exposure of investments to risks such as floods. The next generation of infrastructure investments must be cost-effective, enhance infrastructure service provision, show resilience in a changing climate, and contribute to social and environmental goals. There is growing evidence that natural systems, when combined with traditional gray infrastructure, provide lower-cost and more resilient services. For example, in Vietnam the Mangrove Plantation and Disaster Risk Reduction Project enhanced existing gray infrastructure (100 km of dikes) by restoring large tracts of mangroves along the shores of 166 communes. The investment reduced the cost of damages to the dikes by USD80,000 to USD295,000 and saved an additional USD15 million in avoided damages to private property and other public infrastructure.

**Make smarter use natural capital to generate climate co-benefits**

Natural assets like forests play an important role in mitigating carbon emissions by sequestering CO2. Investments to plant or restore production forests (e.g., forests used to produce sawn wood or wood chips for energy generation) can have climate change mitigation co-benefits. Similarly, restoration of coastal forests for nature-based tourism can also provide flood protection services while sequestering carbon. These co-benefits, however, are often not internalized in decisions regarding natural asset management.

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188 Per capita electricity consumption remains relatively low (that is, one-third of China), and it is anticipated that electricity demand will continue to grow fast for the next two decades.

189 The estimated technical potential for the development of wind power across Viet Nam would add up to 24 GW of installed capacity at average wind speeds above 6m/s. For solar, the resource is equally strong, in particular in the Centre and South of Viet Nam, with irradiations of 4-5 kWh/m2/day. Biomass from agricultural products and residues could generate the equivalent of 10 million tons of oil per year. The annual potential for energy from biogas is approximately 10 billion m3, with resources which can be collected from landfills, animal excrements and agricultural residues.

Smarter use of water can also contribute to reduced GHG emissions. Sustainable irrigation approaches coupled with the widespread use of water-saving technologies (including sensors) will invariably cut costs. At the same time, lower water use in systems like rice production will reduce other negative environmental issues, including reducing GHG emission. Smarter management of water can also lower the negative impacts of water pollution.

Sequestering carbon in soil through better soil management is a natural way of removing carbon dioxide from the atmosphere at lower costs. Optimizing this soil “service” would require better land management and agricultural practices. Columbia University estimates that the earth’s soils contain about 2,500 gigatons of carbon, about four times the amount stored in all living plants and animals. Identifying ways, through better management, to increase soil carbon storage is an important tool for combatting climate change.

Improved air quality can also generate substantial climate co-benefits. Many measures to green industry, such as imposing a tariff on air pollution sources and halt agricultural and waste burning, equally benefit air quality and reduce greenhouse gas emissions.

Adopt a whole-economy approach

Past evidence shows that growth can occur by increasing all factor inputs including natural assets (e.g., by increasing timber harvesting). To grow beyond lower middle income, however, it is necessary to raise the productivity of inputs including the productivity of natural asset inputs which is often overlooked (e.g., improve cost-effectiveness of silvicultural systems or developing more-efficient, environmentally friendly harvesting systems).

Equally important for stimulating greener growth are the interactions among productive assets – human, physical and natural. This includes the two-way interaction between natural assets and infrastructure (e.g., how investments in nature-based solutions can enhance the resilience service of infrastructure, and how climate-smart infrastructure increases the productivity of natural capital). Similarly, there is an important two-way interaction between natural and human capital, stemming from the impact of pollution on human health and productivity and the impact of human behavior and choices on waste and pollution. There are also opportunities to strengthen the interaction between competitive and innovative firms and greener growth, especially if incentives for innovation also recognize the importance of private sector innovations for greening growth. These interactions need to be explicitly accounted for when investing in productive assets to avoid countervailing investment impacts.

The breakthroughs in the 2021-2030 SEDS and 2021-2025 SEDP planning periods should put into practice government’s, firms’, and individuals’ commitment to implement Vietnam’s green growth, climate change and sustainable development strategies using innovative and efficient approaches. As part of this commitment, Vietnam must recognize and use natural resources as productive assets, optimize how natural capital interacts with other forms of capital, and embrace a whole-economy approach. Vietnam can learn from other countries’ experiences.
and challenges when charting its pathway to greener, sustained and quality growth. Measuring progress not just in terms of current income, but also by measuring the value of the country’s assets (its capital), including natural assets, will give a more complete picture of whether progress can be sustained.

BOX 5.1.  The sustainability transition requires a whole-economy approach

Environmental deterioration and the impacts of climate change in Vietnam impose high and rising costs that will increasingly compromise economic and social gains. While there is wide awareness of these problems, addressing them will require stronger efforts across government, the private sector and households. What is needed is a “whole-economy” approach to promoting the transition to sustainable and inclusive growth.

This shift is complex because of the nature of the problem. Economic and environmental objectives often seem in conflict, in large part due to the time dimension of the problem and the distribution of costs and benefits of action. Addressing degradation and climate change imposes costs in the short term, while some of the benefits will only accrue in the longer term. And those who benefit from unsustainable actions today may not be those who will pay for the cost of damages tomorrow.

Overcoming these problems will require strong commitment and leadership starting from the national government all the way to local levels. Such commitment should be directed towards effective coordination across all levels of government and sectors encompassing the whole of government. It is through effective coordination that sharp policy instruments can help internalize the cost of environmental damages; and improved information collection and management can help refine policies and support accountability and performance management. Such instruments and information and accountability systems need to be directed to also incentivize the private sector and citizens to join in making it a whole-of-economy effort. Effective technical and economic measures are well known. Their implementation, at scale, has been, in most countries, hampered by political economy.

Several EU countries are leaders in sustainability rankings. Denmark, for instance, has a comprehensive sustainable development strategy focused on sustainable consumption and production, eco-innovation, basing policies on sound environmental economics, strategic sector coordination and global cooperation. Bhutan has initiated a “3G” strategy for inclusive green growth, integrating the national goals of social welfare (Gross National Happiness), reduction of climate pollution (Greenhouse Gases), and economic growth (GDP).

Achieving greener growth will require the involvement of all sectors and all stakeholders (firms, government, people) in the economy. It will also require innovative application of existing and emergent technology to facilitate necessary changes in production and consumption.

Outline of chapter

The remainder of the chapter is divided into two parts. The next section briefly describes how natural capital is used, its impact on growth, and projections for future consumption. The final section presents measures for greener and climate resilient growth. As part of the latter, there are examples of how specific measures have been applied in other countries. The chapter also includes annexes that provide brief information on key areas for greener and resilient growth.
Unsustainable use of natural capital creates a drag on growth

Incorporating environmental sustainability considerations in policy making is too often seen as a pure tax on competing economic activities. This is a short-sighted perspective because environmental degradation has real economic costs. These costs are usually hidden and those who cause the damage typically do not bear the costs. Reducing these costs would benefit the entire population. Environmental protection should, therefore, be a national investment. This section discusses some of the costs of poor environmental management and their causes. First, economic activities in Vietnam that rely on natural resources—like agriculture, forestry, fisheries, mining of sand and other minerals—tend to show low productivity compared to other countries. This leads to the consumption of far more resources than would be required to produce the same output. Second, pollution from economic activities, waste generation more generally, and poor sanitation create severe health problems that not only reduce well-being, but also have very high and hidden economic costs. And finally, climate change will likely impose new costs, so investments in resilience and mitigation, will have to be a priority to mitigate welfare and economic losses in the future.

Low productivity in natural resource use contributes to resource degradation

Vietnam is rich in renewable natural assets but needs to use them more efficiently. Despite a challenging geography, the country can feed its population and export surplus production of food and other natural resource products. But degradation of the natural base on which agriculture, forestry, fisheries, sand mining depends will increasingly compromise production. Part of the reason is that production in natural resource-based sectors is relatively wasteful. Compared to its peers, Vietnam often uses more land, water, forests and other inputs to produce a given amount of output. Intensification of production can pose its own problems, for example, if it is achieved by over-using such inputs as fertilizers or pesticides. Productivity increases, done appropriately, can, however, free up resources for other purposes such as conservation, recreation, or innovative or experimental new production approaches. This section considers productivity challenges in land, water, forests, and fisheries. While the sectors share the overall problem of low productivity encouraging overexploitation and degradation of natural resources, the specific issues in each sector differ.

In Vietnam, the land use planning system does not yet fully ensure efficient and sustainable scenarios of land use for the future. Land use planning is currently undergoing many changes based on the decisions of the National Assembly and the Government of Vietnam regarding the fundamental change in planning. The new system of land use planning has many innovations compared to the previous concept of land use planning, and has principles, procedures and authorization to be consistent with the Planning Law of 2017. However, there are hardly any provisions for land use planning based on spatial planning.

True reform of land use planning requires a shift away from the current approach of prescribing in detail the land use purpose for each land plot. The current approach doesn’t align

192 The National Assembly adopted the Planning Law in 2017 and the Law on Amendments and Supplements of several Articles of 37 Laws Related to Planning in 2018, including the revised Chapter of Land Use Planning that was stipulated in the 2013 Land Law.
with market demand and results in frequent changes of plans, or the plan not being implemented according to spatial planning or land use zoning. It is necessary to add new principles including: (i) cost-benefit analyses regarding the economic, social and environmental aspects for each plan when considering a change from the current use of land to a development zone; (ii) evaluating the effectiveness and efficiency of planned land use and its economic, social and environmental impacts; (iii) identifying beneficiary groups and disadvantaged groups who will be impacted by the land use plan, as well as determining potential solutions for benefit sharing among the groups.

**Current agricultural land use patterns in Vietnam contribute to low productivity and require reforms.** Agricultural land holdings have traditionally been very small. Most farmers did not even reach the limits to holdings imposed by the government of two to three hectares (ha). Even after reforms in 2013 that increased these limits to between 20 and 30 ha, average landholding size remained largely unchanged. Today there are more farms with less than 0.2 ha than before. Restrictions were meant to prevent land speculation and protect vulnerable farming households. But small sizes also prevent consolidation that would yield economies of scale, expand the scope for mechanization and generally encourage more investment in the sector. Forest conversion has been mostly due to demand from agriculture which has relied on land expansion rather than enhanced productivity to increase output.

**Consolidation would give a boost to agricultural production by shifting land from low-to high-productivity farmers and would raise incomes of the average farmer.** Whether consolidation could also yield environmental benefits and whether it would enhance resilience to climate change is a question that has received less attention in the current land debates. Small, traditionally cultivated plots may have a small environmental footprint compared to larger, input-intensive operations. But larger farms can also afford to acquire advanced know-how and production techniques that have a lower environmental footprint. What is clear is that as land consolidation in Vietnam is encouraged for economic reasons, measures to promote it should also include efforts to provide landowners with early warning systems related to disasters and extreme weather events, and evidence-based information campaigns and targeted supports that help enlarged farms become more environmentally sustainable and resilient to future climate shocks.

**Vietnam has become a major exporter of food commodities, but often of lower quality products.** Fruits and vegetables, coffee and cashew nuts are among the main export products by value. Export volumes of all major food products almost doubled between 2010 and 2017 to about USD33 billion. Vietnam is the leading rice producer in East Asia and a large exporter, but most production is of low-quality rice varieties that get blended with varieties from other producers. The prices achieved for rice are therefore relatively low, depressing the value of output per unit of land used for rice production. Instead, production increases rely on using more and more land and other inputs such as agro-chemicals causing forest and biodiversity loss, land degradation, water pollution, and increasing saltwater intrusion in the Mekong Delta and other low-lying areas. Growth rates of agricultural productivity have been slowing compared to those among regional peer countries. The

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As primary forest resources are shrinking, there is the need for stronger forest management. Vietnam is a major exporter of wood and timber products with an export value of USD9.4 billion in 2018 (Figure 5.6). The sector ranks fifth among Vietnamese exporters after electronics, textiles, footwear and machinery. Most of the export value comes from furniture sales. The wood and timber products sectors represent nearly 4 percent of GDP with woodchips for particle boards or paper being another major component. There are more than 8,000 wood processing and furniture manufacturing enterprises (World Bank, 2019). Compared to other export-oriented industries, the domestic added value of the industry is quite high and stable. With the plan of planting and developing material forests, in the future the value-added structure of the industry could continue to increase the domestic value-added. However, currently a notable amount of the raw material for the industry is imported rather than from improved management of Vietnam’s plantations.

Vietnam’s plantation forests need to become far more productive to serve a growing wood products industry. The reasons for low productivity include technical issues such as site suitability or silvicultural practices; lack of capacity, equipment and access to knowledge; low-quality products; and insufficient processing capacity. As a result, the competitiveness of Vietnam’s wood products sector has stalled over the last 10 years and is lower than in many other forest-rich emerging and newly industrialized economies (Figure 5.7). Better management of plantation forests would yield higher quality/higher value products for domestic industries such as furniture making and reduce the need for future conversion of natural forest or other high-value land uses.
Another sector facing the threat of exploitation that also needs to improve productivity is fisheries. With the capture fisheries approaching its maximum production capacity, aquaculture needs to become more productive to maintain Vietnam’s important position in the world’s fish and seafood market. Vietnam ranks third in the world in value of seafood exports (at USD8.3 billion of which shrimp are USD3.9 billion) and the sector accounts for about 4 percent of total exports and five million jobs. The capture fisheries subsector is unlikely to expand despite a very large number of 110,000 fishing vessels. The European Union, the second biggest import market for Vietnamese seafood, has voiced concern about Illegal Unregulated Unreported (IUU) fisheries which will require stronger management and control. Growth therefore needs to come from the aquaculture sector. Total output of aquaculture and fishery products was 7,225 thousand tons 2017 with 53 percent from aquaculture production and the remainder from capture fishery. The Government’s aim is to have the fisheries sector contribute 30 to 35 percent of the GDP of the agriculture-forestry-fishery sectors by 2020.\textsuperscript{194}

The aquaculture sector is expanding but achieves very low productivity compared to nearby countries. For shrimp production, Vietnam produces just over 100 kg/ha on average—far less than China, the Philippines or Thailand (see Table below).\textsuperscript{195} Moreover, the subsector faces high risks of environmental pollution and disease outbreaks if inadequate management practices persist. Currently, there are low adoption rates of good agricultural practice certification (less than 10 percent); of wastewater treatment (less than 10 percent); and of high-quality seed stock (less than 30 percent). And there is a heavy reliance on sources from the wild for inputs like feed or tiger shrimp broodstock supplies. Recent analysis done by the World Bank on aquaculture underscored the importance of change in the sector with a goal of more than doubling export values from USD4 billion to USD10 billion in 2025. Under a business as usual scenario, based on historical production increase, the shrimp export value would only reach approximately USD4.8 billion by 2025.

<table>
<thead>
<tr>
<th>Country</th>
<th>Pond area (ha)</th>
<th>Extensive Production area (ha)</th>
<th>'000 tons (2016)</th>
<th>Average productivity (kg/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vietnam</td>
<td>619,000</td>
<td>562,000</td>
<td>641</td>
<td>103.6</td>
</tr>
<tr>
<td>Indonesia</td>
<td>180,000</td>
<td>50,000</td>
<td>637</td>
<td>353.9</td>
</tr>
<tr>
<td>India</td>
<td>141,000</td>
<td>2,000</td>
<td>531</td>
<td>376.6</td>
</tr>
<tr>
<td>China</td>
<td>421,000</td>
<td>35,000</td>
<td>2,451</td>
<td>582.2</td>
</tr>
<tr>
<td>Philippines</td>
<td>6,260</td>
<td>3,500</td>
<td>61</td>
<td>974.4</td>
</tr>
<tr>
<td>Thailand</td>
<td>32,440</td>
<td>10,000</td>
<td>342</td>
<td>1,054.3</td>
</tr>
</tbody>
</table>

\textsuperscript{194} In 2017 the fisheries sector contributed 21.2% or USD34.3 billion of the GDP of the agriculture-forestry-fisheries sector, achieving a total fishery output of 6.5-7 million tons and an export turnover of USD 9-11 billion, creating 5 million jobs with income of 2.5 times higher than that of 2010.

Demand for water will continue to rapidly increase, so each drop must be used more productively. Most water consumption relies on surface water, although groundwater withdrawals provide water for much of the municipal uses. Competition for water is likely to rise as the growing needs of a growing urban population compete with those in agriculture. Currently agriculture accounts for more than 90 percent of total water consumption and employs almost half the labor force and contributes 18 percent to GDP. As shown above, water productivity in Vietnam is only about 12 percent of global benchmarks. Insufficient cost recovery for water use or irrigation services contributes to overconsumption and low water productivity. Low productivity water consumption aggravates closely related problems including seasonal or geographically defined water scarcity, climate change and extreme events, pollution and unchecked development of settlements or infrastructure.

Major water related threats put up to six percent of GDP at risk. Besides low productivity, Vietnam faces several other water related threats. An economic analysis shows possible impacts from water related risks by 2035 including flooding, water scarcity or untreated pollution (Table 5.2). The agricultural sector tends to be most affected and the highest impacts across sectors come from the health effects of untreated water.\(^{196}\)

<table>
<thead>
<tr>
<th>No</th>
<th>Threat</th>
<th>Change by sector</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Agriculture</td>
<td>Industry</td>
</tr>
<tr>
<td>A</td>
<td>Flooding of the Red River</td>
<td>0.64%</td>
<td>0.23%</td>
</tr>
<tr>
<td>B</td>
<td>Sea level rise and subsidence</td>
<td>1.67%</td>
<td>0.06%</td>
</tr>
<tr>
<td>C</td>
<td>(a) Development on water stress</td>
<td>5.37%</td>
<td>0.33%</td>
</tr>
<tr>
<td></td>
<td>(b) Temperature on rice yields</td>
<td>0.90%</td>
<td>0.00%</td>
</tr>
<tr>
<td>D</td>
<td>Pollution into Red and Mekong</td>
<td>3.60%</td>
<td>0.10%</td>
</tr>
<tr>
<td>E</td>
<td>Untreated water on health</td>
<td>5.80%</td>
<td>2.80%</td>
</tr>
<tr>
<td>F</td>
<td>Upstream Mekong development</td>
<td>3.28%</td>
<td>-0.18%</td>
</tr>
<tr>
<td>G</td>
<td>Combined Threat (includes all of above except Threat A: Flooding)</td>
<td>19.34%</td>
<td>2.67%</td>
</tr>
</tbody>
</table>

Vietnam’s environmental footprint imposes hidden costs

Vietnam’s rapid economic growth is associated with a significant increase in pollution. Poor air quality, pollution of rivers and coastal waters, and inadequate sanitation have an impact on human health, tourism, environmental degradation and cost of clean-up. Three concerning issues are: Vietnam’s high energy intensity and the rise in air pollution from sources such as electricity generation, motor vehicles, agricultural and solid waste burning and industrial production; increasing waste generation that exceeds waste management capacity and increasing plastic mismanagement; and the need to address gaps in proper water supply and sanitation. All these problems impose real costs on Vietnam’s population—both in terms of welfare reductions due to health problems and in terms of monetary costs, most importantly from diminished human capital and productivity.

Vietnam is one of the most energy-intensive countries in East Asia. Final energy consumption tripled over the past decade, growing faster than output. Energy intensity of GDP has thus been steadily increasing. For each unit of GDP, Vietnam requires about twice as much energy as most other countries. Industrial growth has been a main driver accounting for 48 percent of final energy use. Vietnam Energy Statistics (2014) shows that cement and constructional materials and food processing industries consumed the most energy. Electricity demand has also grown at a compound annual rate of 13 percent since 2000 and is projected to continue at eight percent through 2030. Ninety-eight percent of households now have electricity, but average consumption is still relatively low (e.g., one-third of China’s) and will likely rise sharply. Current demand projections show a dramatic increase from 47.9 GW of installed capacity in 2018 to 60 GW in 2020 to 130 GW in 2030. High energy demand will worsen resource constraints jeopardizing energy security. Addressing energy needs will require large financing volumes. Furthermore, current energy use also causes increased air pollution and climate change which has severe and costly long-term impacts.

In 2017, air pollution was the sixth leading cause of death in Vietnam according to a global study of disease burdens (Cohen et al. 2017, World Bank and IHME 2016 (Figure 5.8)). Vietnam is now among the ten countries worldwide that are most affected by air pollution. Major cities show significant increases in concentrations of fine particulates between 2000 and 2015. Short term levels are likely far higher. A value of 10 μg/m^3 annual mean is considered a safe guideline by the World Health Organization. In 2016, air pollution was estimated to cause more than 66,000 premature deaths in Vietnam and cause a total welfare loss of USD23,823 million (2011, PPP), up from USD4,758 million in 1990. Other estimates put the losses at five to seven percent of Vietnam’s GDP.
Pollution of natural systems on which life depends—including air pollution—imposes high costs. These costs may be in the form of direct impacts on health as pollutants lead to a higher incidence of disease and premature mortality. The GBD dataset from 1990 to 2017 gives an indication of the level of risk from air pollution for death and functional health in the Vietnamese population, and the development of those risk factors over time (see Figure 5.8, GBD 2017). Besides these direct health costs, air pollution is also known to affect productivity of office and factory workers. There have been no studies on Vietnam, but significant productivity losses due to bad air quality have been documented for Chinese call center employees and for Indian factory workers.197

Rapid growth is also drawing down Vietnam’s non-renewable natural assets. The mining industry has been the fourth biggest contributor to GDP. Coal is one of the primary energy sources for the domestic market. In 2016, Vietnam switched from a net coal exporter to net importer, showing signs of drawing down of suitable domestic coal supplies and, at the same time, experiencing a rapid increase in energy demand. Preliminary estimates for 2017 show that Vietnam produced around 38.2 million tons of coal and imported 14.5 million tons, mainly to supply the cement and power industry. Similarly, the growth in the construction sector has increased demand for construction material (using aggregates), and is expected to stay high. The regulation of aggregates needs to be strengthened.

Opportunities to lower the environmental footprint of non-renewable resource extraction and for using revenues from mining to, indirectly, build other forms of capital must be more closely examined. Vietnam has the legal frameworks in place for ensuring non-renewable resources

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197 programme.g et al. (2016) and Achyuta et al. (2014).
198 Vietnam’s key mineral endowments include coal, bauxite, rare earths, tungsten, titanium, phosphate rocks and iron ore, and aggregates (stone, sand, gravel).
199 GSO website (viewed August, 2019).
(e.g., minerals) are managed, protected, exploited, and used rationally, economically, efficiently and with adequate environmental protections to meet the requirements of industrialization and modernization of the country. However, the implementation of these relevant policies, which are adopted at the national level and implemented at the regional and local levels, is lagging. Furthermore, the use of the taxes and fees that mining companies pay after obtaining a mining license, to address pollution is not transparent. This makes it difficult to ensure the revenue is reinvested in human, infrastructure and natural capital.

**Urbanization and strong economic and population growth are causing rapidly increasing domestic waste volumes, with waste generation in Vietnam doubling in less than 15 years.**

The total amount of waste generated is estimated currently at over 27 million tons per year. With a forecasted growth rate in domestic solid waste generation of 8.4 percent per year for urban areas and a total growth rate of about five percent annually, the amount of waste is expected to grow to 54 million tons nationally in 2030.²⁰⁰ Linked to this is the issue of marine plastics. Ninety percent of global marine plastic pollution is estimated to come from just 10 in-land rivers.²⁰¹ Eight of these 10 rivers are in Asia, and the Mekong river is one of the top 10 most polluting rivers. One study estimates that four ASEAN countries, (Indonesia, the Philippines, Thailand and Vietnam) and China contribute to about half of the world’s marine plastic litter generation.²⁰² Reportedly, in February 2017 alone, 200 tons of solid waste washed ashore in Central Vietnam’s Quang Nam Province, close to the tourist city of Hoi An.²⁰³ Rising marine plastic pollution could jeopardize Vietnam’s growing beach tourism industry.

**Of all sanitation-related diseases in Vietnam, diarrhea accounts for the most cases (at seven million per year) and is also the leading cause of death from poor sanitation and hygiene** (World Bank 2016 as cited in CGE water study, World Bank, 2018). The World Bank’s Water and Sanitation Program concluded that poor sanitation reduces GDP nationally by approximately 1.3 percent under current conditions due to untreated human waste alone (i.e., no industrial waste considered). In addition to days lost due to illness, reduced health can place a higher burden on the health system (World Bank, 2016, as cited in CGE water study, 2018).²⁰⁴ An economic analysis suggests that if 90 percent of wastewater remains untreated (the current baseline), labor productivity would be seven percent lower in 2035 than in 2012 and GDP would be 3.5 percent lower. If actions are taken to treat all the untreated wastewater, labor productivity would be 4.7 percent higher in 2035 than in 2012 and GDP would increase by 2.3 percent between the two years. By 2035 the additional health expenditures due to inaction would add some 0.7 percent to government expenditure.

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²⁰⁰ World Bank, Solid and Industrial Hazardous Waste Management: Options and action areas to implement the national strategy, 2018. It should be noted, however, that actual amount of waste generated by households and industry is not known. There is no regular waste sampling and analysis carried out and there is insufficient information on the exact waste generation, collection coverage and waste disposal in the different geographical areas.


²⁰⁴ Pollutants from agriculture (nitrogen, phosphorus, pesticides, among others) and pollutants from industrial waste, which include metals, arsenic, and a variety of other toxins, are also a major threat but due to a lack of information on the treatment and exposure of these pollutants.
The direct health costs from mortality or severe health impacts are only a part of the overall social and economic impacts. Pollution also has more subtle impacts. Since the consequences of exposure to toxic substances can be severe, people may invest or change behavior to avoid them. People respond to pollution by investing in protection, such as costly air filters or home insulation. Or they may change behavior such as avoiding being outside during times of high pollution. In the longer term, pollution can have more persistent impacts, including the effects from early life experience or the impacts of mothers’ health at birth. By affecting cognitive development—for instance, during early-childhood development—poor environmental health affects long term performance, labor supply and other outcomes. Given the growing importance of human capital in modern economies, even relatively small reductions in performance due to excessive pollution can add up to significantly shape a national economy’s fortunes.

Addressing pollution requires costly adaptation or abatement such as increased water treatment costs or expensive soil decontamination. Estimating these costs of pollution is complex. It is difficult to distinguish the impacts of pollution from other factors, the time lag between exposure and impact can be long, and measurement and monitoring is expensive and thus rare outside high-income countries. Nevertheless, one area in which there has been a considerable effort in determining the costs of environmental degradation in low- and middle-income countries is air pollution, as primarily measured by the concentration of very fine particles (PM2.5).

Increasing Climate Risk Could Impose Large Future Costs

According to the 2018 IPCC Special Report on Global Warming Vietnam is among nine countries where at least 50 million people will be exposed to impacts of rising sea levels and more powerful storms, among other dangers. The impacts of climate change on Vietnam are both chronic and extreme. Chronic impacts include saltwater intrusion in low lying areas of the country, such as the Mekong Delta, which is affecting crop cultivation and groundwater. The increase in temperature is also starting to show correlation with forest fire frequency. It is expected that persistently high temperature will have a significant effect on productivity as has been shown in other countries (Heal and Park 2016). Such effects have been demonstrated among agricultural workers and, where air conditioning is scarce, would also affect industrial or service sector workers.

There is a critical need to improve resilience of cities and rural areas in the face of external shocks such as natural hazards and the broader impacts of climate change. Because development funds are linked with urban expansion and cities graduating to a higher urban tier, there are incentives for rapid but not necessarily well-planned growth. For some cities, especially coastal cities, which are highly prone to disaster and climate risks, rapid urbanization must be balanced with climate resilience considerations. For example, promotion of economic activities and development in marginal areas such as delta floodplains, coastal zones, river banks or other natural buffers should be suitable to the local conditions and not encourage people to live in disaster-prone

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205 In a study for the United States, where pollution levels have tended to be lower than in many developing countries, one study finds that a one percent increase in pollution decreases the human capital stock by 0.1 percent through a combination of cognitive impacts and increased school absences (Sapci and Shogren 2017).
areas. There is evidence from the Mekong Delta that development in parts of the floodplain are causing significant land subsidence (sinking of land). Recent analysis of satellite imagery (see figure 5.9) revealed that infrastructure investment in Can Tho city and surrounding areas, which is rapidly expanding, is occurring where there is also land subsidence. Preliminary results revealed that in some areas, land subsidence has been as severe as five centimeters per year. The sinking of the Delta has other consequences. It increases the probability of flooding and saltwater intrusion. Combined with sea level rise and reduced sediment deposition the effects of continuing subsidence could be grave and require urgent intervention.

**FIGURE 5.9. Land Subsidence (sinking) in Can Tho city (cm/year)**

Climate considerations should further motivate changes in Vietnam’s agricultural growth model with its large dependence on low quality rice production. As discussed previously, intensive use of land and other natural resources, including inefficient water use and relatively heavy use of fertilizer and other agro-chemicals, is resulting in increasing environmental costs. The system of rice intensification in Vietnam is also associated with high levels of greenhouse gas emissions. On the impact side, the increasing saltwater intrusion is affecting large areas of rice production in the Mekong Delta and other low-lying areas, putting into question the sustainability of Vietnam’s agricultural growth model. Already, it is evident that agricultural GDP and total factor productivity growth rates have been slowing down compared to the rates achieved in the previous decade from 2000 – 2010. Droughts are another concern. Evidence from Latin America that could also be relevant to Vietnam shows that large rainfall related shocks—particularly droughts—reduce worker’s wages and incomes overall even in non-agricultural sectors (Damania et al. 2017). Water shortages affect firm performance including through reduced demand, power outages where power generation depends on hydro-electric plants or water cooling, as well as health effects. Impacts appear highest among the most vulnerable workers with estimated losses of about ten percent of mean monthly income. Vietnam should proactively ensure its measures for economic growth and development are based on a robust understanding of climate change.

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Policies for greener growth

An ambitious shift in growth towards greener growth will allow Vietnam to achieve economic and environmental sustainability objectives. The urgent need for such a shift to green growth is confirmed by the global consensus that sustainable development must be anchored in green solutions if it is to limit how much development exceeds planetary boundaries\(^{207}\) and avoid global warming exceeding a maximum of 1.5°C. The urgency is also reflected in the 2030 Agenda for Sustainable Development, the Sustainable Development Goals (SDGs), and the Paris Agreement on climate change. A shift to a green economy involves more than marginal improvements. It requires rethinking how technologies, products and services, management practices, rules and regulations, partnerships and business models are developed and implemented. New pathways for greener growth can tap into the emerging and established markets of key green economy sectors - renewable energy, energy conservation, clean water provision, sustainable forestry and fisheries, plastic and solid waste recycling, green infrastructure, and sustainable cities – making them a source of high-tech, added-value growth, and job creation. When policy objectives and commercial opportunities reinforce each other, the transition to greener growth can be rapid.

The government recognized the importance of green growth and passed the Vietnam Green Growth Strategy (VGGS) for the period 2011–2020 with vision to 2050. This strategy aims to restructure and improve economic institutions toward more efficient use of natural resources and improved competitiveness of the economy. This will be achieved through increased investments in technological innovation, natural capital, and economic instruments. One of the important strategic objectives is to encourage energy efficiency, with a 2020 target to reduce the intensity of greenhouse gas (GHG) emissions by 8–10 percent as compared to 2010 and reduce emissions from energy activities by 10–20 percent compared to business-as-usual.

Government efforts to implement the VGGS has made progress in developing policy instruments. Seven ministries and 34 provinces had issued their Green Growth Action Plans. There also are ongoing efforts to reduce the intensity of GHG emissions from industry, agriculture, transportation, construction, and to develop clean and renewable energy sources through the issuance of policies to promote the investments in renewables. The latter includes Vietnam Renewable Energy Development Strategy till 2030, with a vision to 2050, and preferential policies on the purchase price from wind, small hydro, biomass, solar power producers and waste treatment facilities. There have also been efforts to green production by reviewing and adjusting existing sectoral plans, and supporting increased productivity and pollution abatement, and investments in development of natural capital. In parallel there are also efforts to promote green cities and sustainable consumption. These are promoted through the Vietnam Urban Green Growth Development Plan to 2030. 24 out of 59 cities have issued documents to direct and implement urban green growth. GoV has allocated some budget for green growth projects, including public transport investment programs, and the State Bank of Vietnam has integrated and developed credit solutions and programs in order to create

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\(^{207}\) "Planetary boundaries" are based on scientific evidence that shows how the planet is a complex interconnected system that depends on several key processes to be stable to provide the basis for human development. Exceeding each of these planetary boundaries creates a ‘zone of uncertainty’, where there is an increased risk of outcomes that are damaging to human wellbeing.
favorable conditions for organizations and individuals to implement projects that contribute to environmental protection, support green growth and sustainable development.\textsuperscript{208}

For Vietnam, an economy-wide approach is the optimal way to shift towards greener growth. A whole-economy approach involves: (i) using sharper policy instruments; (ii) aligning green objectives with sector policies to effectively and efficiently implement the green and climate change commitments ratified in various sectoral and multi-sectoral strategies, plans and programs; and (iii) improving monitoring of progress and establishing partnerships with diverse stakeholders. It will be vital to prioritize measures to promote more sustainable use and management of natural capital and reduce the environmental footprint of rapid growth. Equally necessary will be optimizing the positive interaction between human, infrastructure and financial capital and natural capital. This section highlights how a whole-economy approach could be operationalized and provides illustrations from other countries with relevant insights for Vietnam (Table 5.3 summarizes key priority actions for Vietnam).

TABLE 5.3. Summary of priority actions in key sectors to promote greener growth

<table>
<thead>
<tr>
<th>Using sharper policy instruments</th>
<th>Aligning green and climate objectives and sector priorities</th>
<th>Strengthening information generation and dissemination</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Agriculture</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revisit and revise, where necessary, the Agricultural Restructuring Plan aimed at increasing sector efficiency and sustainability with the goal of significantly scaling up implementation</td>
<td>Integrate social, industrial and health policies to make agriculture more inclusive, encourage greater technology use and improve food-safety management</td>
<td>Strengthen information collection and dissemination, as well as extension services to encourage a greater shift to more efficient and environmentally friendly agricultural practices</td>
</tr>
<tr>
<td><strong>Land</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Establish land valuation systems to support land tax policies and encourage more effective land uses</td>
<td>Guide land use planning through much better consideration of economic, social and environmental costs and benefits</td>
<td>Strengthen electronic land information systems and ensure stakeholder access to such information</td>
</tr>
<tr>
<td><strong>Forestry</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revise fiscal and financial incentives to discourage excessive agricultural expansion into forested areas and to promote more efficient and productive forestry practices</td>
<td>Use more collaborative forest management approaches and support land rights of poorer population groups</td>
<td>Develop better tracking and monitoring of the sustainability of timber and wood products to ensure access to major export markets</td>
</tr>
<tr>
<td><strong>Fisheries</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Targeted investments in climate-smart coastal infrastructure such as fishing ports and coastal shelters</td>
<td>Combat marine pollution, especially plastics from all industrial and residential sources</td>
<td>Better data collection and monitoring of fleets and catches to support more productive and sustainable fisheries management</td>
</tr>
</tbody>
</table>

\textsuperscript{208} Information in this paragraph is from a draft version of a report to the Prime Minister’s office (dated June 2019), and prepared by DESENRE within MPI.
Using sharper policy instruments

**Using sharper policy instruments**

**Aligning green and climate objectives and sector priorities**

**Strengthening information generation and dissemination**

<table>
<thead>
<tr>
<th>Water</th>
<th>Disaster Risk Management</th>
<th>Waste</th>
<th>Air quality management</th>
<th>Energy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price water realistically to encourage more efficient use and help finance public investments in water infrastructure</td>
<td>Shift focus from emergency response to ex-ante risk management, expand insurance schemes and develop cost-effective mechanisms to finance the national DRM strategy</td>
<td>Use prices and regulations to encourage reduction, reuse and recycling of plastics and other materials ending up in the waste stream</td>
<td>Explore market-based regulation of industrial emissions such as sulfur dioxide and nitrogen oxide</td>
<td>Develop price and regulatory instruments to encourage renewable energy, such as a solar energy auction roadmap, and energy efficiency</td>
</tr>
<tr>
<td>Better integrate water management with overall basin-wide planning</td>
<td>Clarify responsibilities and coordination mechanism between DRM and other sectors, including capacity, legal frameworks and decision-making authority</td>
<td>Improve waste management along the entire waste stream and across all sectors</td>
<td>Work across all sectors to identify and reduce air pollution sources including transport, energy, industrial and residential sources</td>
<td>Work across regions and sectors to identify clean energy and energy savings options and use, for instance, regional mandates and strong monitoring to promote implementation</td>
</tr>
<tr>
<td>Develop comprehensive water information systems to support water allocation and water infrastructure investment decisions</td>
<td>Enhance monitoring, forecasting and early warning systems and disseminate DRM related information widely</td>
<td>Develop a better information base including types, sources and impacts of pollution</td>
<td>Move towards a comprehensive AQM approach involving monitoring, modeling and evaluation of abatement options</td>
<td>Carry out a comprehensive upstream study and analysis of solar and wind power development options</td>
</tr>
</tbody>
</table>

**Using sharper policy instruments**

There are well tested policy instruments for moving to greener growth - price instruments such as taxes, fees, or subsidies; regulations such emission standards; spending resources on information and technology transfer programs, or transfers to compensate those affected by other policies. The use of price instruments should help bring the fees for waste removal, energy and water closer to cost of service provision. For greener growth it will also be important to align prices with the social costs of carbon emissions, air pollution and other negative externalities. To use market pricing effectively requires the removal of subsidies or other price distortions that result in prices that do not reflect both provisioning cost and the cost of externalities such as damages to human health or environmental resources. Market pricing is more effective when complemented with ambitious targets, enhanced
monitoring and strong regulations, as well as accountability for the targets and enforcement of the regulations. Using more market-based policy instruments also allows for more flexible and market-based approaches to meet targets—e.g., through trading. Integrated and coordinated spatial planning is another policy instrument that is important for inducing sustainable natural resource management and use, pollution reduction and climate-smart investments.

**Greening growth is not just a technical task relegated to specialized ministries and agencies; financing strategies and fiscal policies will also determine whether a transition to a more sustainable economy will succeed.** Although the cost difference between conventional and green technologies is rapidly shrinking—as in renewable energy—this transition will likely incur additional costs. But relative to overall investment needs in developing and emerging economies, the incremental funding needs are small. And investments in greening and greater resilience will avoid future costs in damages from natural disasters or from pollution impacts on public health.

**Even though green investments pay large future dividends, additional resources will be needed in the short term to finance the shift toward greener public and private investment.** One way to increase public resources is by moving towards full cost of providing goods and services, especially those that relate to the use of natural resources. Reducing or eliminating explicit or implicit subsidies that encourage unsustainable resource use can free up funds, makes greener solutions more competitive and also removes barriers to greener investment in the private sector. But subsidy reform can be politically difficult. Attempts at fuel price reform in Indonesia, which spent between one and four percent of GDP annually on energy subsidies in the past 20 years, shows that such reforms need to be embedded in a long-term process that builds political support and buffers the social consequences of price hikes. Vietnam’s fossil fuel subsidies are far lower than those in some countries at about USD600 million in 2018 or 0.3% of GDP (according to IEA estimates). But they have risen again recently. There are other areas where prices do not reflect costs, from parking fees to waste removal charges.

**Environmental taxes and fees are a suitable instrument for internalizing the future cost of fossil fuel use on climate change or air and water pollution on health costs.** These make up about 2.5 percent of GDP in OECD countries and as much as five percent in some EU countries. In Vietnam they are about one percent of GDP, lower than in South Korea, China or Turkey. Few countries have systematically reformed their fiscal systems to tax the “bads” (like pollution) rather than the “goods” (like labor or investments). But more and more countries are shifting to greater use of environmental taxation while finding ways to manage possible social impacts of such transitions. Market-based instruments like taxes can help incentivize the lowest-cost system for reducing pollution and unsustainable natural resource exploitation. Taxes also help raise revenue.

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211 In OECD countries, the average revenue for environmental taxes is 2.5 percent of GDP while in European Union countries environmental taxes can generate up to four percent of GDP. As a percent of GDP, Vietnam’s environmental tax revenue is about equal to one percent of GDP—less than any European country; less than South Korea, Turkey or China; about the same as India.
suitability of applying taxes depends on the existing levels of taxation and how the revenue from the environmental taxes would be used.

**Vietnam already applies taxes on natural resources and for environmental protection but some of are low relative to other countries.** This suggests that the tax rate is set lower than the marginal environmental damage associated with the commodity or activity. Increasing these could have positive environmental effects, depending on how the revenues are used, without a significant impact on welfare. Vietnam could draw insights from countries like Spain which has adopted a broad tax on fluorinated greenhouse gases in which the tax rate for each gas is indexed to the global warming potential of the individual gases. Currently, Vietnam has a tax that is narrowly focused on HCFCs. This could be broadened to include other fluorinated greenhouse gases, even though the country is not yet compelled to do so under the Montreal Protocol. Equally insightful are the decisions of cities and countries to impose environmental charges that not only generate revenue but also motivate behavioral change. For example, in 2017, Chicago replaced its ban of lightweight plastic shopping bags with a tax of USD 0.07 per bag, which generated revenue and imposed a cost on the consumer, changing their behavior. Vietnam currently has an environmental tax, although low, on importers and producers of bags. This tax generates revenue but is yet to stimulate much needed behavior change.

**Carbon pricing, such as a carbon tax or emission trading system, is also an important tool for the government to promote cost-effective GHG mitigation.** Explicitly pricing carbon helps internalize the societal costs of GHG emissions while leveling the playing field between polluters and non-polluters. Firms with low-carbon technologies or measures benefit from past and current mitigation investments while high-emitters are incentivized to efficiently reduce emissions for the avoidance of carbon payments, such as carbon tax, and penalty under the emission trading system. And like taxes, carbon pricing can be a source of revenue. By April 2019, 40 governments worldwide had adopted some form of carbon pricing, either through direct taxes on fossil fuels or through cap-and-trade programs. In the United Kingdom, coal use dropped significantly after the introduction of a carbon tax in 2013. In Colombia, the carbon tax came into force in 2017 and applies to the sales and imports of all fossil fuels except for coal. The tax covers the 16 percent of Colombia’s total emissions and 50 percent of the emissions from the fossil fuels. The revenues from the tax are used to support the Sustainable Colombia Fund. In Mexico, a carbon tax is imposed on fossil fuels (gasoline, petroleum coke, carbon coke, propane, butane, kerosene and other jet fuels, fuel oil, and coal) and covers 40 percent of Mexico’s emissions. Pricing initiatives can also serve multiple environmental and social objectives, such as reducing air pollution, raising awareness among companies on the impact of GHG emissions and consequently facilitating their internal carbon pricing, and stimulating low-carbon innovation.

**Carbon pricing is being used in innovative ways by the private sector to identify greater opportunities for GHG mitigation and reduce climate-related financial risks.** Traditionally, companies have used internal carbon pricing in their investment decisions to evaluate risks from

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Some of the activities and materials under current environmental taxes in Vietnam include natural resources such as metallic minerals, coal, peat, oil, natural gas and natural minerals and for environmental protection related to petroleum products, coal, HCFC, plastic bags, herbicides, pesticides, forest product preservatives, disinfectants.
mandatory carbon pricing initiatives. New ways of using internal carbon pricing are being developed to manage long-term climate risks and align private sector’s investments with climate objectives. A successful carbon pricing instrument can force actors to mitigate emissions, stimulate clean innovation, create wider economic benefits through raised revenues and investments, and reduce technology costs as firms allocate its various assets and resources to optimize their investment to mitigate emissions.

Often the most effective way to stimulate efficient resource use and lower waste generation is through fees and taxes. Currently the fees paid by households for solid waste services is very low (less than 0.5% of spendable income while international practice is 1-1.5%). However, increasing these to reflect real cost can be politically challenging, and meeting the international benchmark in terms of user fees would still mean that there is likely to be a financing gap. Vietnam would, therefore, need to consider approaches for cross-subsidizing waste management, whereby fees for collection of industrial and commercial waste may subsidize the collection of domestic waste specifically for poorer parts of the population and help fill the financing gap that Vietnam is likely to face for domestic waste collection even after meeting the international benchmark.

In the energy sector, there is room to use market instruments to generate more positive environmental and social outcomes. Current tariffs\textsuperscript{213} cover the current cost of supply but may not be adequate to cover the future investment of EVN and do not reflect social costs (e.g., from pollution). Improved energy efficiency (discussed below), however, could help reduce emissions which would have positive social benefits. The promotion of renewable energy, such as solar\textsuperscript{214}, would also have positive environmental and social outcomes. For Vietnam to achieve its ambitious targets for renewable energy it will have to go beyond the feed-in tariff (FiT) deployed to attract private developers’ investment. For example, in the solar power sector Vietnam needs to develop a clear deployment strategy that builds experience, lowers costs, and maximizes the economic benefits for the country. This could be done by moving to a system of reverse auctions\textsuperscript{215}. The feed-in-tariff regime and piloting of solar auctions can be operated in parallel if necessary to avoid creating a period

\textsuperscript{213} The reason for low energy tariffs in Vietnam is that the country still benefits of cheap fuel sources of hydropower and existing domestic gas. In the future, these cheap fuel sources will be depleted or fully used, and the energy sector will depend heavily on the global energy market (imported coal and LNG).

\textsuperscript{214} In Vietnam, solar power is becoming increasingly attractive because of recent cost reductions and quick construction rates.

\textsuperscript{215} Auctions, with a fair risk allocation present in the power purchase agreement, are a good way to foster competition in the market and decrease the cost of solar generation. Two types of auction should be piloted in parallel, and then rolled out according to the lessons learned and following consultation with the Provinces and developers - standard auctions and solar park auctions. The Government should also develop and announce a solar auction roadmap that includes regular repetition of auctions, starting with a series of initial pilots, and scaling up in future years. 500 MW could be auctioned through the pilot standard and solar park auctions for commercial operation date (COD) by 2022.
of uncertainty. The Government should also start work on a comprehensive strategy for integrating variable renewable energy into the grid. There is a need to consider the longer-term potential of solar and wind (onshore and offshore) to provide least-cost power alongside other options and plans for the required grid upgrades and flexibility enhancements. This will help inform the location of future solar parks and the guidance or incentives provided to developers under future standard auctions.

**In the case of water, pricing based on principles of full cost recovery and ‘whole of water cycle management’ can be effective.** The challenge of implementing these principles has revealed that a successful system for cost-recovery and resource management will mix technology, management, policy, and institutional arrangements that facilitate transparent and efficient service delivery. Improved service delivery helps increase farmer’s willingness to pay and to use limited water resources more efficiently. In 2017, the Law on Hydraulic Works in Vietnam reintroduced irrigation service fees to be paid by users. The irrigation prices are expected to comply with the provision in the Law on Prices, which requires that the price factors in management costs, O&M expenses, depreciation charges, and other reasonable actual expenses. The state will determine the price for irrigation services and consider affordability when setting it.

**FIGURE 5.11.** PFES revenue

<table>
<thead>
<tr>
<th>Year</th>
<th>PFES Revenue (VND Billion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>282.93</td>
</tr>
<tr>
<td>2012</td>
<td>1,183.92</td>
</tr>
<tr>
<td>2013</td>
<td>1,906.39</td>
</tr>
<tr>
<td>2014</td>
<td>1,335.01</td>
</tr>
<tr>
<td>2015</td>
<td>1,327.78</td>
</tr>
<tr>
<td>2016</td>
<td>1,284.66</td>
</tr>
<tr>
<td>2017</td>
<td>1,709.12</td>
</tr>
<tr>
<td>10 months</td>
<td>2,557.00</td>
</tr>
</tbody>
</table>

Prices need to also internalize externalities (both positive and negative) to inform optimal allocation of natural assets between production of goods and services. In specific areas like the ecosystem services provided by forests for agriculture or water management, Government of Vietnam should further expand its payments for forest ecosystem services (PFES). Currently, the PFES program has annual revenue collected from users of forest environmental services over the period 2011–17 was about USD383 million.\(^\text{216}\) PFES revenue increased considerably in 2018, thanks to the application

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of a new rate, as set out in Decree 147. Total payments over 2018 had been estimated at about 2,500 billion Vietnamese dong (about USD108 million), but were actually much higher: 2,938 billion Vietnamese dong. The opportunities to expand such payments to the services recognized within the law are significant. Investments in technology to enhance the transparency of the monitoring and payments would strengthen the system. It is also important to identify how to effectively reinvest the revenue to, at a minimum, maintain the services provided by the forest assets.

**Prices are most effective when complemented with regulations where necessary.** Price signals do not always trigger a rational response, for instance in household energy efficiency investments where consumers are more influenced by high initial costs, ignoring significant long-term savings due to lower operating costs. Regulations that are based on scientific evidence and economic basis and are tailored to the local conditions can reinforce the intended impact of price instruments. For example, regulation on labelling and information campaigns, which if implemented, can supplement incentive-based measures. Labels with information on energy efficiency of appliance, cars, buildings or organic food are common in OECD countries. Countries like Australia, Israel and the Netherlands have also introduced labels on water-using devices, indicating their efficiency. When deploying these policy instruments, it is important to consider the interaction between prices, regulations and also investments. For instance, when individual motor vehicle transport is made more expensive or difficult through fuel taxes or regulations, viable alternatives must be available in the form of an efficient public transit system.

**Land valuation is not yet based on effective market mechanisms.** The 2013 Land Law introduced several improvements to land price management and land valuation. However, these improvements have not fully satisfied the principle of an independent and impartial land valuation at the market rate. The land valuation procedure is still based on administrative, rather than market relations. This is resulting in the loss of land levy/rental for land value capture scenarios or fair compensation to land users subjected to land recovered by the State. The land valuation question has become more urgent in connection with the use of mechanisms for land capitalization, such Build-Transfer (BT) projects that exchange land for infrastructure and privatization of state-owned enterprises (SOEs) to avoid losses to the State and abuses in the land management system. For reform, the solutions to be considered are: (i) the use of independent land valuation service providers to improve the quality of land valuation and to ensure an impartial and independent assessment; and (ii) the composition of the Provincial Council for Land Appraisal. For the longer term, a national land valuation authority should be established; land value zones should be established and land price tables should be phased out and replaced with a parcel-based mass appraisal approach.

217 Decree 147/2016/ND-CP dated on November 2, 2016, on revising several articles of Decree 99/2010/ND-CP.
219 http://vnff.vn/tin-tuc/
220 The land prices list issued by Provincial People’s Committee is equal to about 30% of market price, causing the loss of budget revenue from land (about 70% of potential land revenue is lost).
221 Such land should be properly valued at market value for both direct sales as well as auctions.
222 This Council would review the land prices proposed by the land valuation service provider, and should be independent and professional. It should also have the administrative responsibility to settle disputes and complaints about land prices/values.
223 It would ensure land market prices/values are established consistently through out the whole country.
Non-agriculture land use tax must be reformed. The National Assembly of Vietnam has decided to completely exempt agricultural land use tax. This is an adequate decision to encourage development in rural areas, at least in the short term. However, for non-agricultural land, the current land use tax rate is too low at the basic tax rate of 0.03%. Total revenue from land only accounts for 10% of the total national budget revenue and about 5% of total local budget revenue, in which revenue from land use tax only accounts for 3% of total land revenue. This situation leads to many difficulties for the urbanization process, such as: (i) urban revenue is not enough to develop and upgrade assets; (ii) the tax on real estate is too low which facilitates speculation and results in difficulties on solving housing problems for people in urban areas; and (iii) urban costs are low, which has encouraged migration into urban areas, creating a heavy burden on infrastructure development and public utilities. The tax system of non-agricultural land use should be reformed to provide urban areas with revenue to carry out smart, green development.

BOX 5.2. Leveraging the private sector for financing Greener Growth

An increasingly important source of financing will be the private sector. Globally there is remarkable interest among the private sector to scale up investments dedicated to mitigate (or adapt to) climate change and other environmental hazards. The IFC, a part of the World Bank Group, estimated that, in Vietnam, there are opportunities for USD753 billion worth of climate-resilient business investments in Vietnam.\(^{225}\) In the Mekong Delta alone, there is huge untapped potential for investments in climate-smart agriculture and renewable energy, especially wind and solar.

Green Loans or sovereign/sub-sovereign Green Bonds could finance such projects. There is growing interest in the market\(^{226}\) in the use of innovative financing instruments like labeled Green Loans and Green Bonds\(^{227}\) for Vietnam. Philippines’ Ayala Corp, with support from the International Finance Corporation, recently issued green bonds to finance renewable energy investments in Vietnam.\(^{228}\)

The banking sector also has an important role in redirecting capital flows to activities that address natural capital and environmental challenges. Globally, banks are ratcheting up financing of and lending to such projects, including energy efficiency, renewable energy, low-carbon agriculture, low carbon transport, sustainable water and waste management, etc. Regulators, including central banks, are playing a key role in enabling green financial instruments through regulation, taxation, or incentives. This is happening among both established and emerging market regulators\(^{229}\) – who are advancing policies and regulations to encourage green credits. The results have been very positive. For example, in China Green, credits such as loans to projects offering energy savings or emission reductions currently make up approximately 10% of the portfolios of China’s top 21 banks\(^{230}\). The Government of Malaysia

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225 Climate Smart Investment Opportunities: https://www.ifc.org/wps/wcm/connect/59260145-ec2e-40de-97e6-3aa78b82b3c9/3503-IFC-Climate_Investment_Opportunity-Report-Dec-FINAL.pdf?MOD=AJPERES&CVID=1BLd6Xq

226 Since the World Bank issued the first labeled Green Bond in 2008, the market has surged, resulting in $175 bn of new issuances in 2018 and more than $152 bn of issuances in 2019 to date.

227 Green Bond is a fixed income instrument that finances environment-friendly projects and appeals in particular to an expanding pool of investors who are interested in making measurable, beneficial social and environmental impact at commercially appealing returns.


229 The China Banking Regulatory Commission (CBRC), for instance, has issued Green Credit Guidelines, and the People’s Bank of China (PBC) has launched guidelines to establish a green financial system. The Sustainable Banking Network (SBN) Global Progress Report reviewed the work of banks and their regulators in 34 developing nations: https://www.ifc.org/wps/wcm/connect/ae589874-6578-4ca9-9b3c-cae9f67ed52c/SBN-GlobalProgressReport.pdf?MOD=AJPERES&CVID=md0mvNh
Aligning green and climate resilient objectives with other sector priorities

In situations where sustainability transitions require triggering investments with long-term or uncertain payoffs price instruments may need to be complemented by more direct government actions. This is often the case for addressing issues related to unsustainable natural capital, poor environmental management and climate change. What is needed is to align sector priorities with greener and climate resilient growth across the entire range of government functions. Such alignment would require government to elevate considerations about climate change, greening growth and use of natural assets. The alignment can also be advanced by stimulating coordination across different sectors, knowledge sharing, addressing information asymmetries, and rectifying capital market imperfections.

Aligning green objectives and sector priorities can require shifts within and between sectors. Within sectors it involves unleashing the opportunities to transform production, distribution, and consumption systems through innovation, new technologies and new market opportunities. Greener policies, greener products, services, technologies, practices and markets; innovation for raising productivity; and incentives for decision-makers to implement such actions can increase efficiency of energy, water and other physical inputs, and lower operational costs. It can also reduce risks in supply chains, including risks of stranded assets and reputational risks.

231 GreenTech: https://gtfs.my/FAQ#n34751
There are several actions Vietnam could operationalize to strengthen the synergies of sector priorities and green objectives. They include: (i) mandating and conducting ex-ante policy reviews to ensure they are green, climate-resilient and low carbon (e.g., by extending the application of strategic environmental assessments (SEAs) to policies); (ii) integrating climate, natural resource and environmental considerations in sector policies (e.g., integrating use of waste products into industrial production processes; internalizing the true cost of business activities, such as carbon emissions, in the cost of capital; and accounting for climate risks in planning and zoning); (iii) fostering innovations that enhance productivity, including of natural assets, and lower waste (e.g., using the internet of things (IoT) to reduce water usage, or to facilitate coordinated operation of infrastructure); (iv) providing incentives to decision-makers at all levels of government (e.g., through ecological fiscal transfers); and assisting the transition of sectors that may lose out due to greening of growth. Below we elaborate on a few of these actions.

BOX 5.3. Green governance

| There are many practical, operational steps governments can take to move towards a greener economy. Many such actions are discussed in these paragraphs such as adjusting prices to discourage waste and pollution, issuing rules and regulations, and promoting a circular economy. But these actions will not have the desired outcome in the absence of effective multi-stakeholder green governance—strong institutions, incentives, and instruments that enable better environmental management.

Environmental and natural asset management capacity in Vietnam has room for significant strengthening. Most expertise is concentrated at the national level in the Ministry of Agriculture and Rural Development and Ministry of Natural Resources and Environment. Staff and financial resources at the local level are scarce for effective management of natural and environmental assets. Furthermore, the authority of such local officials is weak compared to those in other government agencies focused on growth. Consequently, concerns for greening growth almost always loses out to economic interests, making efforts to improve environmental and natural asset management a top-down process. While national institutions can help shift attention to broader green and climate resilient goals, local circumstances and priorities often differ.

Effective implementation of greener and climate smart policies requires bolstering capacity, strong incentives and greater authority for natural capital managers at all levels of governments:

- Invest in local environmental and natural resource management capacity, both in terms of quantity and quality. With greater capacity, more decision making can be devolved to local levels. This will not diminish the importance of national institutions that need to set broad guidelines, allocate resources, and promote information collection, research, and international coordination for effective management of natural and environmental assets. It, however, will encourage more locally appropriate solutions and a mechanism for innovation.

- Strengthen the authority of environmental and natural asset managers at all levels with respect to other government agencies. The objective should be to achieve more balanced cross-sectoral coordination among ministries, ensuring considerations economic, social, and environmental concerns receive similar attention. This also helps promote a whole-economy approach to green and climate smart policy making, involving all sectors. Better coordination will help avoid conflicting or overlapping national strategies that complicate decision making at lower levels.

- Increase the incentives for local authorities to achieve greener growth. The promotion and rewards system for public officials should give greater weight to green and climate-smart achievements. Ecological fiscal transfers as applied in Brazil, Portugal and other countries in the European Union are illustrations of effective local rewards.

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Lowering the energy intensity of Vietnam’s GDP can help achieve energy security while lowering the carbon footprint of the sector. In line with the Government’s efforts to implement an energy transition, change the current coal trajectory for power generation and improve the overall efficiency of the energy sector to meet the country’s energy savings, climate change and green growth targets, measures to improve industrial energy efficiency are a clear win-win solution. Policy measures for energy efficiency standards will be the most effective way to reduce industrial emissions. To scale up energy efficiency investments, the government should strengthen enforcement of the relevant policies and remove principal market barriers. Transparent energy efficiency target allocations to provinces and industries that are monitored and enforced to track the energy efficiency performance and implementation of Vietnam’s Nationally Determined Contribution could reduce current wasteful practices. Suitable business and financing models should also be developed, such as private Energy Service Companies (ESCOs), super ESCO, concessional credit lines, or guarantee facility which would promote access to much needed financing for industrial enterprises. Such actions could meet a sizable portion of the business-as-usual demand for increased energy services, at costs which are typically one-fourth the cost of additional energy supply. The Bank’s Low Carbon Study has demonstrated that Vietnam could save up to 11 GW of new generation capacity by 2030 if comprehensive demand-side energy efficiency investments are carried out.

Local stakeholders should be given greater voice in local planning processes. It is often ordinary citizens and civic institutions that encourage better management of natural assets and the environment because they are directly affected by pollution, resource degradation and the effects of climate change. In many countries, environmental courts have been an effective way, for instance, to hold polluters to account. For incentives for local authorities and stakeholder engagement mechanisms to be worthwhile, there needs to be much better collection and public disclosure of environmental information at all levels.

Vietnam is not alone in having to rebalance development objectives. In earlier stages of economic development, economic growth is a priority to finance poverty reduction and investment in productive assets. As incomes rise, aspirations change and include better health and a clean environment. Technical solutions are important, but they will not be implemented without stronger green governance.
**BOX 5.4. What is a circular economy**

A circular economy is about more than recycling

1. Using resources more efficiently by **changing the way we think** about products and production processes. Is the product the best way to meet the demand? Could we use fewer or different resources in its productions?

2. **Design differently:** for example, by considering reuse, repair and recycling options in advance of production.

3. **Product reuse.**

4. **Product repair, maintenance and revision.**

5. **Recycling**

6. **Processing and reuse of materials.**

7. **Disposal**

6. **Recover energy from materials.**

7. **Waste disposal and incineration without emergy recovery is avoided where possible.**


**Rapid industrialization that embraces a circular economy approach can help meet both growth and greening objectives in some sectors (e.g., through eco-industrial park, co-incineration, reuse of wastewater, material management).** Several countries have embraced the notion of a circular economy moving beyond a linear or reuse economy framework.\(^{235}\) In the circular economy, the raw materials used in the production processes are carefully selected to reduce any non-recyclable waste and where there is waste, energy is recovered from these, so that simple waste disposal is avoided where possible. This requires innovations regarding material production and processing and use of high tech to optimize extraction of reusable resources and waste.

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\(^{235}\) A linear or reuse economy framework involves using raw materials in production processes to generate goods that are used and from which the non-recyclable waste is discarded.
To move towards a full circular economy, Vietnam could start with policies and plans focused on waste management and boosting markets for secondary products. This would help tackle part of the environmental challenges related to plastic waste. Such measures would need to be quickly followed by policies and plans that promote ecological design and consider material flows, as well as policies focused on extended producer responsibility.\(^{236}\) Such a transition will require strong government leadership and commitment to move towards a greener growth pathway, promote collaboration with and among diverse groups (research, private sector, public sector), and foster innovation.

Innovations in disruptive technologies and IoT can extend beyond how products are made. By changing production methods, technologies such as 3-D printing can help promote the shift towards redistributed and regional manufacturing. Digital platforms can also make it easier to re-use, recycle, and remanufacture (linking with the circular economy approach mentioned above). Technologies and digital platforms also can inform how companies meet demand. Evidence from successful initiatives in the shared economy show the feasibility of using products as and when needed.

\(^{236}\) Extended Producer Responsibility (EPR) is a policy approach under which producers are given a significant responsibility – financial and physical – for the treatment and disposal of post-consumer waste products (source: OECD - https://www.oecd.org/env/tools-evaluation/extendedproducerresponsibility.htm)
for the service they provide rather than consumers owning them outright. Innovative materials can be developed using nano- or bio-technology and can promote more durable industrial products, reduce waste and improving sustainability and productivity.

Aligning sectoral goals for increased productivity with promotion of innovative uses of disruptive technology and of the Internet of Things (IoT) can also support greening growth. For example, in the agriculture sector, a priority is ‘high-tech’ precision agriculture. High-tech farming uses technology and information systems to carry out more efficient, environmentally friendly farming processes and produce better quality crops. High-tech farming, will over time result in higher returns for farmers and improvements in quality of food for consumers. Depending on the technology, high-tech farming can also result in better environmental conditions. For example, high-tech farming that uses IoT for water saving can reduce the water demand of a production system while bolstering its capacity to withstand adverse impacts of climate change.

For such sectoral and innovation alignments, Government of Vietnam would need to consider increasing the sectoral R&D expenditures or other means for supporting innovation and technology transfer. Keeping with the example from the agriculture sector, currently R&D expenditures have been equivalent to less than 0.2% of agricultural GDP. Many peer middle-income countries spend, proportionally, four or five times this amount. The issue isn’t only the level of spending, but its overall effectiveness. There is a need to develop an action plan for reinvestment and reforms to promote a more demand-responsive and multi-disciplinary R&D strategy to drive Vietnamese agricultural innovation, focusing on technologies that will spur resilience and increase productivity.

While Government of Vietnam strengthens the system for innovation, it will be vital to also stimulate more widespread diffusion of existing technological and Industry 4.0 innovations to accelerate greening growth. Green technology innovations, unlike internet startups, can require research and development. Significant resources can be required to develop frontier green technologies that are truly disruptive and have an impact on the clean tech space. There are, however, several policy measures that Government of Vietnam can take in parallel to facilitate more widespread diffusion of existing disruptive technologies and IoT such as promote ICT-related knowledge diffusion among large firms and SMEs. Similarly, developing policies that support pay-as-you-go models (as is done for cloud computing), which reduce the need to make heavy upfront investments in ICT, and competitive markets for the technologies, can all engender greater uptake of technologies that support greener growth.

Vietnam also has the option of optimizing the services natural capital can provide to rapidly growing sectors, like tourism. To do so, environmental and cultural asset preservation must be a key element of implementation in Vietnam’s tourism strategy. On the policy front, the designation of specific natural/cultural sites and attractions as protected, or heritage areas will need to be a key foundational measure. Complementing such policies should be monitoring measures

that entail identifying or establishing intuitions and systems to track key risks to destinations’ natural, cultural and social assets and identify growing pressure points (e.g. the proliferation of single-use plastics). Financial resources to support asset preservation protected area management and proper enforcement of regulations is key to maintaining and, where possible, optimizing the natural capital services. Charging visitor access fees is one approach for ensuring revenues for preservation grow commensurately with visitor demand, thus contributing to sustainability. Another approach is establishing partnerships with private foundations or enterprises to help co-manage and co-finance preservation efforts is another option in the package of possible solutions.

Many natural capital elements relevant for planning require context specific understanding while being combined with larger scale strategic regional planning and coordination. Such regional planning and coordination is an important step in addressing environmental degradation and optimal use of natural assets. There are three reasons for this: (i) some natural assets and forms of environmental degradation are not confined to administrative boundaries; (ii) the interconnection between upstream and downstream actions in the context of erosion, flooding, water management, emissions and air quality; and (iii) need for coordination across sectors to ensure that positive actions and policies in one sector are not cancelled out by unintended negative impacts of actions and policies in another sector. Regional planning, if spatially explicit, area-based, and integrated across sectors, can result in plans oriented towards outcomes rather than outputs. Vietnam’s new planning law (which came into effect in January 2019) gives greater emphasis and attention to regional planning. The operationalization of the new planning law, if accompanied by establishment of strong institutions focused on regional coordination and authorized to oversee and guide the implementation of the regional plan, could be an effective tool for greening growth and promoting climate resilience.

Despite the known benefits of green growth, stronger incentives for local leaders will be important to accelerate greener and climate resilient growth. Vietnam could adapt results-based or specific purpose fiscal transfers to incentivize local leaders to implement a public function - better manage and use natural assets and the environment. Performance-based transfers require robust and easy to monitor parameters that can be tracked, against which payments are made. Performance based fiscal transfers have been used in Brazil, Portugal, France, Germany and other European Union countries. In Brazil, where protection of the forests is an important public service, ecological fiscal transfers (EFTs) were made to municipalities to compensate them for the opportunity costs associated with a protected area (because it led to land use restrictions). As a response the first EFT scheme was implemented and five per cent of the value-added tax revenue was distributed among municipalities according to the location of protected areas.\textsuperscript{238} The scheme was initially to compensate municipalities and has evolved to incentivizing municipalities to establish protected areas.

\textsuperscript{238} Some of the innovative features (Droste, Ring, et al. 2018) include: 1. Redistribution of existing tax revenue according to newly introduced criteria and therefore does not require additional budgets; 2. does not have spending conditions attached and thus allows for sustaining local autonomy (Sauquet, Marchand, and Fères 2014 as cited in Droste, Ring et al., 2018); 3. the fiscal incentive may increase protected area coverage (Droste, Becker, et al. 2018; Droste, Lima, et al. 2017; May et al. 2002; Ring 2008a as cited in Droste, Ring et al., 2018); 4. transaction costs for implementing EFT schemes are relatively low, since it was not an entirely new policy but a modification of an existing fiscal transfer scheme (Ring 2008c as cited in Droste, Ring et al., 2018).
Policies on environment and natural assets should be efficient, effective, and fair. There can be occurrences whereby assistance to households, and sometimes even to firms, is necessary if a proposed policy (e.g., carbon or ecological taxes) imposes an undue burden on a specific group. In such circumstances, it is important that the compensation measures are targeted and do not reduce incentives for good environmental stewardship / behavior (e.g., using targeted cash transfers rather than preferential tariffs or generic subsidies). Such approaches have been applied, for example on energy, in several European countries. In Germany and Sweden, there is an energy support fee included in social security mechanisms. While in the UK and in France, social energy tariffs reduce energy prices for certain households.\(^{239}\) The water sector has several examples of tariff structures and subsidy forms to avoid undue burden on the vulnerable and the poor and ensure targeted subsidy. Singapore provides a credit line for poor households that can be used for water or wastewater bills.

**Strengthen information generation and dissemination**

**Greening growth will require collaboration among and engagement of many stakeholders.** Firms have a major role to play in providing solutions to greening growth. Firms can identify ways to control the costs of green development by innovating and adjusting their production processes. Greening growth will also require the engagement of citizens and non-government groups as behavioral change is a critical element of greening growth. These stakeholders can assist with collecting and disseminating information on actions for greening growth, help with tracking progress and measuring performance, and help ensure accountability for delivering green growth. Besides policy, regulatory and economic incentives, a critical task for the Government of Vietnam will be to support collaborations among all these stakeholders.\(^{240}\)

**The basic building block of robust plans, policies, and partnerships is data and information.** Efforts to green growth requires knowledge and information-sharing. Constraints to data and access to information will slow the transition to a sustainable economy. Decision-makers need access to modern, up-to-date data that is consistently used across sectors. Reliable information should include data on key parameters for greening growth.\(^{241}\) High quality and timely data and information must underpin plans, policies and investments. These systems should include processes for data collection, data management, data visualization and data sharing that are robust, transparent and cost-effective.

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240 There are several interesting collaborative initiatives that show the value of such efforts in accelerating achieving greener growth. Examples include RE100, a global, collaborative initiative of influential businesses committed to using 100 per cent renewable electricity. RE100 provides innovators with information on the size and direction of the market for renewables and helps speed up the innovation cycle by lowering the transaction cost of identifying likely customers. Similarly, Sustainable Energy for All has Energy Efficiency Accelerators that support different opportunities: appliances and equipment; industrial energy efficiency; lighting; building efficiency; district energy; and transport and motor vehicle fuel efficiency. Its aim is to double the rate of improvement in energy efficiency worldwide by 2030. The accelerators bring together companies and public actors and generate and disseminate information, encourage new business models or help develop new market segments. Source: file:///C:/Users/wb277499/Downloads/World%20Green%20Economy%20Report%202018.pdf (viewed August 2019).

241 The parameters should include measurements related to pollution, asset use, emissions of carbon dioxide or other greenhouse gases. Data on stocks and flows of natural assets, their economic value, and the potential impact of climate change on these assets are also important.
Data systems, such as the System of Economic and Environmental accounts (SEEA), will help make better decisions regarding the use of natural assets. The SEEA offers a set of objective data showing how natural resources contribute to the economy and how the economy affects natural resources. The SEEA is an extension of the System of National Accounts (SNA). Natural capital accounting looks at both the stocks and flows of natural assets, providing a broader picture of wealth and development progress than standard measures such as GDP. It is readily possible to extend the SNA to a SEEA that includes Natural Capital Accounts (NCA) for fisheries, forest, land, water. Several countries have set up NCAs and benefitted from this decision. For example, Australia uses its water accounts to inform suitable policy measures to tackle drought. Costa Rica has energy accounts which provide evidence for choosing efficiency strategies that have the largest impact on people, the economy, and the environment (i.e., largest gains from reducing energy intensity). Botswana reports macroeconomic indicators including on mineral revenues and public finance. This has supported Botswana’s efforts to invest its mineral revenues into physical and human capital assets.

There is also the need to invest in sector specific information systems to support policies, plans, investments, and implementation. For example, geospatial information which plays a very important role. Geospatial information allows for a real-world model on which people can easily perceive, manage the status quo and formulate development scenarios. A complete, accurate and updated spatial information system provides data for people to make good decisions. Secondly, spatial information is considered as the information infrastructure for integrating various types of information such as economic, social, environmental, cultural and human information. The international community recognizes the important role of spatial information and has created the technological capacity to acquire, manage, and share spatial data. Vietnam’s new Law on Survey and Mapping sets out the requirements to develop the National Spatial Data Infrastructure (NSDI) but it is still at the beginning steps and needs to be integrated with strategic policy priorities such as E-government and citizen services.

Ensuring stakeholder access to land administration information is a critical element for good land governance. It allows land users and other concerned stakeholders to exercise their rights and participate more effectively in land market and land management processes. Additionally, it helps to improve the provision of land administration services and state management of land resources. The revised Land Law should set up the development and operation of an e-land administration system in support of land data and information sharing both within the government and between the government, the private sector and citizens. The Land Law needs to establish clear institutional roles and responsibilities, specify datasets and rules for accessing them and regulate other relevant matters in this digital transformation. For reform, the national LIS should be focused on: (i) increase access to land parcel and land rights information, including the name of land holder, to increase transparency and good governance in the land sector; (ii) integrating the LIS with other strategic systems such as the e-government system, especially in regards to the current efforts to support the technological revolution Industry 4.0; (iii) integrate land and real estate data with other data such as land use, value, and zoning information for improved land use planning and land management.

242 The digital land information system (LIS) of Vietnam is not yet fully functional for E-Land Administration.
Open data initiatives can accelerate the usability of data to foster innovation, partnerships and greener growth. Open Data is data freely available online, in machine-readable format and covered by a legal license that allows anyone to use and re-use it for any purpose, including for commercial purposes. Governments, like Government of Vietnam, are collecting and storing large amounts of data, which, if opened to the public as Open Data, can bring significant economic and social benefits. Evidence has shown that Open Data can have the following benefits: a) direct and indirect benefits to the economy, b) improved efficiency and effectiveness of public services, c) government transparency and accountability, and d) better information sharing and decision making within governments. Vietnam could significantly strengthen planning and policy decision by accelerating the Open Data efforts that are currently underway and by prioritizing those initiatives that grant access to data on the environment, natural assets and climate changes. In the Philippines, the Department of Transport built an integrated transport database for Metro Manila, and leveraged the resulting open datasets to build a series of information apps, and prepare a transit efficiency plan that could reduce greenhouse gas emissions by 23 percent.

**Government of Vietnam should also consider strengthening environmental education to promote greener habits as well as create opportunities to promote research and development on topics such as green technology.** Education, at multiple levels, on subjects such as greener habits, green engineering, green technology will be important to increase the locally available competencies to assist with greening growth. Information on greener habits, can help increase the awareness of citizens regarding their right to clear air, water and soil, as well as their responsibility to maintaining these. Building up local constituencies can take time. Local constituencies, however, will outlast changes in administration and foster continuous environmental mainstreaming.

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244 Most readers of this chapter use open data platforms to get information on weather, fastest routing to avoid traffic, low costs for airfare, or pricing of property (e.g., Zillow.com).
Conclusions

Moving towards greener growth in Vietnam should be considered an urgent national investment that will pay ample dividends. Like many countries with a fast-growing population and economy, Vietnam is faced with significant environmental problems. Its low position in environmental performance rankings shows that the country’s success in managing for economic growth has not yet been matched by efforts to ensure environmental sustainability. There is, however, a strong economic rationale for transitioning to greener growth. Natural assets, which are under rising pressure from economic activities, represent a form of capital—well managed, they will yield economic and social returns in perpetuity; poorly managed, they will impose rising costs due to health burdens, diminishing economic potential, and a falling quality of life for Vietnam’s citizens.

This chapter has highlighted three main issues that should concern Vietnam’s policy makers. First, Vietnam uses its natural resources inefficiently. Productivity in such natural resource dependent sectors as agriculture, fisheries or forestry is low compared to what other countries achieve. Too much water is wasted, too much land is used for low value crops, and energy intensity is too high for a country at Vietnam’s level of income. This encourages overexploitation and degradation of the resource base. Second, economic activities and inadequate public services create large problems with waste and pollution. Air pollution is among the most visible examples, creating a health burden that is not only decreasing the well-being of many citizens but also incurs high costs to the economy. And third, tackling these problems will be further complicated by the rising impacts of climate change. Vietnam is one of the most affected countries, so adaptation is an urgent task that requires smart solution if it is to be effective and affordable. But Vietnam’s carbon emissions are also rapidly rising, so mitigation investments—many of which have important co-benefits in reducing energy costs or lowering health effects—will become an increasingly urgent priority as well.

The barriers to implementing greener growth are mostly institutional rather than technical. The technical measures to create a more sustainable economy are largely known and have been implemented in many countries. The greater difficulty is to create the incentives for firms, citizens and the public sector itself to deploy them by moving towards a “whole economy” approach to greening. One priority is to move from treating the environment as a separate sector to bringing sustainability considerations into everything the government, the private sector and individual households do. Sustainable sector practices, whether in industry, agriculture, waste management or water supply, are compatible with important social and economic growth objectives.

Increasing the effectiveness of sustainability-focused policy making is another important priority. Experience around the world has shown that top-down, “command-and-control” policies
are often more costly and less effective than market-based instruments. The basic principle is to rely on price instruments as much as possible, so firms and households find the most efficient way to achieve greener practices. This involves phasing out subsidies, raising prices for environmental goods initially to cost level, and eventually also pricing in the cost of externalities such as health impacts. Regulations will sometimes be necessary when prices alone do not have the desired effects. And in some cases, the government needs to invest more directly to achieve desired goals, including to buffer the effect of rising resource prices on the poorest.

Lastly, government action is also required to improve the information base for designing policies and monitoring their achievement. At the macro level, natural resources could be considered in national accounts, as many countries have done. This would emphasize the fact that natural capital is an economic asset on par with human or physical capital. It would also allow Vietnam to better monitor whether its natural asset base is being depleted, remains constant, or is increasing as is the case in many high-income countries. At the more operational level, specific information systems need to support sector planning and policy making. An example is a land information system that would not only support land consolidation which raises the efficiency of farm production but can also support decision making aimed at more sustainable land use. Similar data needs exist in many sectors. An important consideration must be to make these data available to a broad range of stakeholders, so the significant investment in their creation yields the highest possible return.

Vietnam’s past growth model has yielded impressive economic gains and rising standards of living for a large share of its population. Better protection of the natural assets and environment on which Vietnam’s people and economy depend and consideration of climate change will be important to secure and expand these gains under the future growth model.
Annex: Sustainable Sector Policies

Agriculture

Vietnam has become a major exporter of food commodities. Wood/wood products, shrimp, fruits and vegetables, coffee and cashew nuts are the main export products by value (see figure below). Exports of major food products grew from about USD18 billion to about USD33 billion between 2010 and 2017. The overall agricultural growth model has been dominated by rice production. Vietnam is the leading rice producer in East Asia and one of the largest global exporters. Most of the production is of low-quality, unbranded rice varieties. It relies on expansion of land and more input-intensive agriculture characterized by inefficient water use and heavy application of fertilizer and agrochemicals. Therefore, environmental problems related to agriculture have been increasing, including forest and biodiversity loss, land degradation, water pollution, and increasing saltwater intrusion in the Mekong Delta and other low-lying areas. Growth rates of agricultural productivity have been slowing compared to those among regional peer countries.

FIGURE 5.12. Vietnamese agricultural exports (US$ million)

The Government of Vietnam has responded to these problems in 2013 with a new vision for the sector, the Agricultural Restructuring Plan (ARP). It is intended to shift agricultural production towards more profitable commodities, encourage some consolidation to increase farm size and thus efficiency, improve agricultural value chains, and move towards more environmentally friendly agricultural practices and water use. As a result, more than 200,000 hectares previously devoted to low-quality rice production have been shifted to other crops and some 110,000 hectares of irrigated land shifted from rice monocultures to multi-product systems. Mechanization has increased as have more sustainable production practices including those employing water saving strategies.
So far, most of these initiatives have been implemented on a limited scale, often as pilots. The concepts reflected in the ARP need to be scaled up significantly to quickly increase the sustainability and resilience of the agricultural sector while at the same time raising productivity. Five priorities stand out:

1. **Promote policy and institutional reforms to encourage further shifts from low to high value agricultural production.** Developing land markets—e.g., through land leasing or rentals—would facilitate land consolidation and greater economies of scale. Allowing non-farm households access to agricultural land could bring fresh resources into the sector. Reducing land cultivated to rice to about 3 or 3.5 million hectares would still ensure self-sufficiency and export opportunities while freeing up land for higher value crops and for shifting to environmentally more resilient production systems.

2. **Scale-up environmentally friendly production practices.** Implementation of good agricultural practices (GAPs) allows reductions in the application of fertilizers and pesticides and encourages greater irrigation efficiency. Beyond rice, more sustainable production of coffee, shrimp and other aquaculture and seafood products, and of livestock has domestic benefits and also increases export competitiveness as demand for sustainably produced agricultural commodities grows globally.

3. **Ensure that the agricultural growth model is inclusive.** Reforms leading to greater efficiency and sustainability may also affect employment and livelihoods in the sector. Land consolidation facilitates mechanization which is labor saving. And poorer communities, often ethnic minorities, derive a major share of their income from staple commodities with few alternative opportunities. Public policies must ensure that such communities gain access to agricultural value chains and that negative impacts are buffered, for instance through National Targeted Programs (NTPs).

4. **Promote high-tech agriculture and more resilient agricultural systems.** Agriculture offers many opportunities for the introduction or development of innovative production methods. Yet, Vietnam’s expenditures on agricultural R&D have been far lower than those of its peers. To ensure effectiveness of R&D spending, GoV should develop a strategy for increasing demand-responsive R&D with a focus on resilience and sustainability, and to strengthen the mechanisms for rapid adoption of successful innovations.

5. **Develop a food systems approach and improve food-safety management.** As demand from Vietnam’s expanding middle class and international customers increases, there is a need to implement a food-systems approach that ensures high-quality food production, handling and distribution practices and a risk-based food safety management system.

**Land**

Vietnam is a country with a very low land area per capita, standing only higher than Singapore in ASEAN. Therefore, land is scarce and of high value. However, land use efficiency in Vietnam is assessed as low in terms of economy, society and environment. Economically, land users have little thought about finding a way to bring the highest benefits, the phenomenon of having land but not putting it into use is quite common. Socially, the situation of encroachment on public land often occurs and
There are key shifts necessary for increasing effectiveness of land use:

1. Land use planning requires shifting away from the current approach of prescribing land use purposes for each land plot, which often doesn’t align with market demand and results in frequent changes or non-compliance. Some new principles should be added like (i) Changes of a land use plan should be based on economic, social and environmental cost-benefit analyses; (ii) Land use plans should identify the effectiveness and efficiency of land use, as well as the associated economic, social and environmental impacts; and (iii) Land use plans should identify beneficiary groups and disadvantaged groups as well as potential solutions for benefit sharing between them. It is important that Land use planning should be based on land information system (to improve land use planning).

2. To facilitate efficient land use, land valuation mechanisms which reflect the real land market price should be a priority shift in land management policies. It is necessary to (i) use independent land valuation service providers in all land valuation cases, to improve the quality of land valuation and to ensure an impartial and independent assessment; (ii) revise regulations to ensure more than 50 percent of Provincial Land Appraisal Council members, who review the land prices proposed by the land valuation service provider, should be certified land appraisers/valuers. This Council should also have administrative responsibility to settle disputes and complaints about land prices. For the long term, a national land valuation authority should be established to ensure land market prices are established consistently throughout the country; land value zones should be established and land price tables should be phased out and replaced with a parcel-based mass appraisal approach.

3. Tax policies for non-agricultural land use should be revised to facilitate effective land use, better equality among land users and creating sustainable income sources for local authorities: VN 2035 stated about unsustainable revenues from land distort incentives and that Vietnam is foregoing an important source of revenue.

4. Ensuring stakeholder access to land administration information is a critical element for good land governance to increase efficiency of land use. In this respect, in addition to MONRE’s development of the Environment, Ocean, Mineral Resources, Water and Land Information System, the establishment of a broader National Spatial Data Infrastructure (NSDI)—including strategy, regulatory and institutional tools, with interoperability standards—should provide greater transparency and ensure the participation of all stakeholders.

5. The legal framework should set up the development and operation of an electronic land administration system (e-land administration) in support of land data and information sharing both within the government and between the government, private sector and citizens. The framework needs to establish clear institutional roles and responsibilities, specify datasets and rules for accessing them and regulate other relevant matters in this digital transformation. The land information system should be linked with the e-land administration system, to contribute to the e-Government system, especially in regards to the current efforts to support the technological revolution, Industry 4.0.
Forestry

Vietnam’s forest cover continues to expand and contribute to Vietnam’s development. Between 1943 and 1993, the country’s forest cover declined from 43 to 28 percent. Following major policy reforms in the 1980s, in 2017, total forest cover was 14,415,381 ha, covering 41.6 percent of the country. The forest sector contributes to the country’s economy through the export of wood and timber products (amounting to $8 billion in 2017, nearly 4 percent of GDP). Vietnam is also one of the world’s leading countries in operationalizing a payment for forest environmental services (PFES) system. Since 2008, its PFES program has generated nearly $400 million. The poorest, particularly the ethnic minority groups, are the most dependent on forest resources for their income and livelihood. Forest resources such as nontimber forest products often protect these people from falling in the poverty trap. Despite great economic progress and decreasing deforestation rates, the forest sector continues to face challenges from competing land uses, overexploitation of resources, mounting risks of supply shortages, and insufficient capacity for forest governance and management.

A major driver of deforestation and forest degradation in Vietnam is competing land uses. Agriculture, which is facilitated by the expansion of rural infrastructure, remains the country’s main direct cause of forest loss. When examining the impacts of commercial agriculture, it is also important to understand the indirect impact of displacement – although the expansion of commercial crops may happen in non-forested areas, this may still push poorer farmers into forested areas—as clearly seen in the case of export commodity crops such as coffee. Because of deforestation and forest degradation, the forest sector to be a major source of economic growth and poverty alleviation in the country (through the production of key exports such as furniture, particle boards, artificial wood boards, melamine-faced chipboards, and wood pellets) Vietnam relies heavily on the import of wood products (round wood, sawnwood, plywood, and veneer) to make the export products.

Key actions the Government should consider include:

1. Curbing further expansion of agriculture into forested areas by encouraging intensified and more sustainable farming methods. In addition, the constraints and opportunities for conversion created by current planning process as well as the fiscal and financial incentives driving production will need to be addressed.

2. Reducing displacement by supporting the poorest to strengthen their rights over land and forest areas through more collaborative forest management approaches. Poorer groups need greater incentives to manage and protect forests. The poorest households can only benefit if they are given the chance to access land and other productive resources. There is an ongoing program of forest land allocation (FLA) and issuance of more formal access rights to households. While such initiatives need continued support, access to finance for forestry and sustainable land use practices should also be facilitated, particularly for the poorest.

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246 Sawnwood is wood that has been produced either by sawing lengthways or by a profile-chipping process and, with a few exceptions, is greater than 6 millimeters (mm) in thickness.
(3) Closing the supply gap, at least partially, by increasing the domestic production of wood products. Doing so could also bring significant economic, ecological, and social benefits. While the land area for future expansion is limited, there is considerable potential for raising productivity and the economic value of existing plantations—provided good plantation business practices are applied—by investing in more efficient processing activities and diversifying the range of plantation products.

(4) Supporting small and medium-sized enterprises (SMEs) in the forest value chain to overcome the barriers they face to enhance their competitiveness.

**Fisheries**

Vietnam’s fisheries sector, including both capture fisheries and aquaculture, plays an important role in the national economy. Fisheries development contributes to food security, job creation, income generation, poverty reduction, and economic development of the country. The Fisheries Development Masterplan to 2020 with Vision to 2030 set the goal for the fisheries sector to become a commodity production sector with prestigious brands and high competitiveness at the international level. It is aimed that, by 2020, the fisheries sector will contribute to some 30-35 percent of the GDP of the agriculture-forestry-fishery sector (baseline: 21.2%; USD34.3 billion in 2017), achieving a total fishery output of 6.5-7 million tons, an export turnover of USD9-11 billion, creating 5 million jobs with income of 2.5 times higher than that of 2010. By 2030, total fishery output will reach 9 million tons, export turnover will amount to some USD20 billion, and an annual growth rate of 6-8 percent in value for the 2020-2030 period.

To achieve the Government objectives for the fisheries sector will require a concerted effort to shift the orientation in the fisheries sector from being quantity driven to being quality oriented (more from less). In the context of capture fisheries, shifting from quantity to quality (more from less) is urgent if Vietnam is to avoid irreversible consequences from overfishing. In the context of aquaculture, generating more from less will require overcoming low productivity and low value addition/quality for the shrimp subsector to meet this objective. Combating marine pollution from both capture fisheries and aquaculture will be critically important for sustainable sectoral development.

Key actions for optimizing the use of the fisheries asset of Vietnam could include:

(1) For capture fisheries, effective management, fleet and catch monitoring, losses reduction, products’ quality improvement. These are necessary for ensuring sustainable development, enhancing productivity, and augmenting value added.

(2) In the context of aquaculture, generating more from less will require overcoming low productivity and low value addition/quality for the shrimp subsector. Additional aquaculture productivity enhancement must be environmentally sustainable and disease free.

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Combating marine pollution from both capture fisheries and aquaculture will be critically important for sustainable sectoral development.

Increased investment in climate-smart infrastructure such as fishing ports and storm shelters. These are also justified from the environmental, economic and social sustainability perspective, and enhanced climate resilience.

Water

Vietnam has seemingly abundant water resources that have been a key input in its rapid economic growth. Yet, it also faces considerable water challenges. Some estimates suggest that water-related threats could reduce GDP by 6 percent by 2035. Several issues stand out.

Rapidly rising demand is leading to water scarcity and increased competition for water resources between urban, industrial, agricultural and ecological uses. By 2030, 11 out of Vietnam’s 16 water basins are projected to experience water stress. Further complicating water supply security, about two-thirds of Vietnam’s water resources originate in neighboring countries where water demand is also increasing rapidly.

Deteriorating water quality further reduces water availability and poses severe health and environmental risks. As of 2018, only about 71 percent of industrial wastewater from industrial zones was treated, only 46 percent of urban households have piped sewage, and only 12.5 percent of municipal wastewater was treated.

Climate change is leading to more erratic supply and causes severe economic impacts as more droughts occur in some areas and more floods in others. Historical peak flood levels that used to occur only once every century or even just once in five centuries are now expected to recur across half the country as frequently as every 20 years or less by the end of the next decade. Reduced river flow—likely due to a combination of over-extraction and climatic changes—in combination with sea-level rise and increased groundwater extraction lead to saltwater intrusion and land subsidence.

And low water productivity means that a lot of water resources are wasted, creating a drag on the economy. Each cubic meter of water produces just 2.37 US$ in Vietnam against a global average of 19.42 US$. Agriculture is a priority area for water efficiency improvements. The agriculture sector uses 81 percent and aquaculture uses 11 percent (total of 92 percent) of the nation’s water, employs almost half the labor force, but contributes only 18 percent to GDP.

Vietnam can take several steps to reduce water-related threats, which are detailed in a recent World Bank report

(1) Improve governance, management and financing of the water sector. Managing water resources at the basin scale would facilitate coordination, cooperation and the quality of public spending.

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(2) Increase value and incomes from water in agriculture.

(3) Reduce threats and risks related to the water sector. The focus needs to be on reducing the high pollution levels that reduce availability of clean water and increase treatment costs, and to strengthen risk management to reduce the impact of water-related natural disasters.

(4) Getting greater returns from water use. More efficient water use will reduce the need for costly investments to increase supply. In agriculture, shifts to higher value crops and more efficient irrigation can reduce demand from the largest water-using sector. Public investments and regulations will be important, but the most effective instrument to encourage greater efficiency is to charge realistic prices for water.

Disaster Risk Management

Vietnam is one of the most hazard-prone countries in the East Asia and Pacific region. A recent World Bank study of 84 coastal countries ranks Vietnam, unfortunately, in the top tier countries that are most at risk of sea level rise in terms of impact on population, GDP, urban extent and wetland area.\(^{249}\) Extreme weather events and disasters have high socio-economic impacts, which translate into substantial costs to the country, as noted earlier in the report. A risk assessment carried out by the Government with the technical support of the World Bank in 2017\(^{250}\) estimated that USD 1.3 trillion worth of assets are at risk but only about 5% of assets in the country are covered by insurance. Vietnam could see losses of over 4% of GDP in the case of a major disaster. In the next 50 years, Vietnam has a 40% chance of experiencing an event with economic losses exceeding VND141 trillion (USD 6.7 billion).

Uncontrolled urbanization and persistent poverty among minority populations are among the complex socio-economic trends driving increases in vulnerability. Vietnam is urbanizing at a rapid pace and by 2050, over half of the country’s population is expected to reside in cities. In many cases, urban expansion is taking place in flood plains or infrastructure investments do not sufficiently account for disaster and climate risks or address mitigation activities. This has long term implications for sustaining the quality and pace of economic growth and highlights the urgency of strengthening city resilience.

Despite significant investment in better planning, the government still faces a funding gap after disasters. The current financing capacity of Vietnam meets only about 21% of the estimated need just for emergency reconstruction and recovery.

The Government of Vietnam (GOV) has demonstrated a strong commitment towards addressing climate and disaster risks. The

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\(^{249}\) [Dasgupta et. al, 2007].
\(^{250}\) Vietnam Catastrophe Risk Assessment and Modeling, Country Risk Profile, the World Bank 2017.
National Strategy for Natural Disaster Prevention, Response and Mitigation to 2020 (DRM NS) and corresponding Action Plan, National Climate Change Strategy and National Action Plan on Climate Change forms the overarching policy frameworks for addressing disaster and climate risks. Implementing the investment plan associated with the DRM NS is estimated to require US$13 billion. US$11.5 billion are required for structural measures (e.g., building and rehabilitation of reservoirs, dams and river and sea dykes), and close to US$1.5 billion for non-structural measures including community-based disaster risk management, capacity building, and institutional strengthening activities. Investments in hydromet monitoring, forecasting, early warning systems and climate services are a key element of Vietnam’s strategy to strengthen preparedness and response. While the government has made tremendous efforts to improve monitoring, forecasting, and data integration, significant gaps remain especially in improving access to accurate early warnings in high risk areas and sector specific climate services. The strategy has been updated for the period of 2018-2030 and been submitted to the Prime Minister for approval.

Critical areas of reform include:

1. Delineation of institutional responsibility for key DRM function, with the Ministry of Agriculture and Rural Development (MARD) as lead coordinating agency.  
2. Shifting from the traditional focus on the emergency response (ex-post) to more proactive and robust disaster risk management and planning (ex-ante). A successful involvement of communities in risk management – this has enabled the most vulnerable population to be capable to carry out risk reduction measures and reduce their livelihood vulnerability to disasters. Improved institutional capacity, legal frameworks on DRM and set of decision-making tools have effectively supported the planning, implementation and M&E of the disaster resilience programs.
3. Enhancing monitoring, forecasting, early warning systems in high risk areas as well as strengthening sector specific climate services.

**Waste (incl. plastic waste)**

Vietnam generates about 27 million tons of solid waste per year, double the amount of ten years ago. At current rates, waste generation will double again by 2030. Waste management systems have not kept up with rising waste generation. There is insufficient collection—for instance, collection covers 85 percent of waste in cities but only 40 percent in rural areas, and most of what is collected is disposed in poorly designed landfills. Inadequate waste management also contributes to rising plastic pollution. Ninety percent of global marine plastic pollution is estimated to come from 10 major rivers, including the Mekong, and Vietnam is one of the major sources. The annual cost of plastic pollution to tourism, fishing and shipping in East Asia is estimated to be 1.3 billion US$.

Several national and regional initiatives aim to improve waste management including Vietnam’s Strategy for Sustainable Development of Vietnam’s Maritime Economy, a National Strategy on Inte-

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251 Department of Natural Disaster Prevention and Control, in MARD, serves as the standing office of the Central Committee for Flood and Storm Control.
To support these initiatives, a number of steps could be taken:

1. Improve the information base, specifically starting by identifying the major types and sources of plastic pollution ending up on Vietnam’s beaches.

2. Implement policies to reduce, reuse and recycle plastics and other materials typically ending up in the waste stream, including options such as Extended Producer Responsibility, phase-out of single-use plastic items, or promoting plastics that are easier and more profitable to recycle.

3. Determine key investments in waste management and improve funding mechanisms. Waste management has high marginal operating costs compared to other infrastructure services that have higher up-front fixed costs. Waste generators could pay a higher share of these costs and waste fees should be raised to the international benchmark of 1-1.5 percent of household income. In high income countries, households and firms typically pay the full cost of waste management.

4. Improve waste management procedures along the entire waste chain to reduce environmental impacts. This includes stricter regulation and control of waste disposal in land-fills and implement a landfill tax to stimulate other waste treatment options, integrate the siting of waste facilities into land use planning, and properly rehabilitate or close unsanitary landfills so long term environmental impacts are minimized and the land can be freed up for productive uses (one option being solar parks).

**Air quality**

Severe air pollution has accompanied rapid economic growth in many countries. Low air quality causes severe public health impacts as citizens are exposed to small particulates (PM2.5), ground-level ozone and other pollutants. Air pollution is now the 6th largest risk factor for death in Vietnam. There is no extensive monitoring of air quality in Vietnam – except for Hanoi, although studies suggest Vietnam is among the ten most affected countries. Measurements for Hanoi suggest PM2.5 levels that are often 4-6 times higher than the level considered safe by the World Health Organization.

Transportation is a major contributor to air pollution as freight and passenger transport have increased by 10-12 percent in recent years leading to higher concentrations of PM, NOx and SO2, as well as CO2 climate pollution. Power generation, domestic fuel consumption, construction and various industrial sectors also contribute significantly to air pollution. Agriculture is another, often overlooked, sector as fertilizer application and livestock production cause high emissions of ammonia and nitrous oxide.

Vietnam’s government has responded with several initiatives, including the 2014 Law on Environmental Protection and the National Action Plan on Air Quality Management in 2016. These actions move in the right direction but should be based on a comprehensive air quality management strategy.

One component of such a strategy is more comprehensive monitoring, including source apportionment analysis to identify the type and location of the largest emitters of air pollution and allow for the identification of most cost-effective measures to reach air quality and health targets. Such information forms the basis for advanced air quality modeling that identifies the most cost-effective intervention.
measures. International best practice relies on integrated, multi-pollutant approaches to air pollution management. As a basis, effective monitoring and dispersion modeling identifies the sources and destination of pollution. This feeds into estimation of exposed populations and damages. The model then allows evaluation of abatement options which identifies the most cost-effective measures to reduce air pollution. As with water resource management, air quality management should take a regional approach—in essence, cover an air shed—because pollution often travels large distances.

**Energy**

Vietnam has one of the most energy-intensive economies in East Asia. It uses about twice as much energy to produce a unit of GDP than most countries. Rapid industrialization focusing on energy-intensive industries is the main reason. This has led to a doubling of energy consumption over the last ten years. In terms of energy generation mix, hydropower accounts for 37 percent of installed capacity, followed by coal-fired 34 percent, gas-fired 17 percent, renewables and others at about 10 percent. Vietnam’s greenhouse gas emissions are expected to increase five-fold between 2010 and 2030. Under the UNFCC process, the government pledged to reduce GHG emissions relative to a business-as-usual scenario by 8 percent by 2030 with a further goal of 25 percent with assistance by the international community. These are challenging goals given projected annual growth in electricity demand of 8 percent. Vietnam achieved an impressive household electricity access rate of 98 percent. But per capita consumption is still relatively low. Rising household demand will thus likely add to increasing demand from industries.

Even under optimistic scenarios for efficiency gains, Vietnam will have to invest in additional supply while reducing the overall carbon and pollution intensity of electricity generation. Like most other countries, Vietnam needs to implement an energy transition—away from coal and other carbon intensive generation and towards much greater energy efficiency—and find innovative approaches to finance this transition. While private sector investment is being promoted in power generation segment, government support to large energy infrastructure projects and complementary public sector investment is also needed in transmission and distribution segment to support the energy transition. A comprehensive strategy must involve these elements:

**Promote renewable energy.** While hydropower resources are largely developed, Vietnam has technical potential for wind power of 24 GW and large potential for solar power in the Center and South—the government target is 12 GW of solar power capacity by 2030—as well as for biomass and biogas. Feed-in tariffs have been used in the past to encourage solar development. These are effective in early stages of technology development. As solar technology has matured and costs declined, most countries have switched to auction systems, where developers bid to supply a certain amount of clean power. Auctions can involve projects implemented by private developers or those prepared...
by public sector agencies with support from multi-lateral development banks, where developers bid to construct projects within solar parks. Vietnam should accelerate the process of developing a solar auction roadmap with regularly scheduled auctions and gradual scaling up of installed capacity.

Feed-in tariffs also exist for wind development and 11 provinces have wind power development plans. But there is no national wind power development strategy that, for example, also covers necessary grid infrastructure. A comprehensive upstream study and analysis that covers the economic, environmental and social aspects of wind development would facilitate wind power expansion and ensure coordination across provinces. The analysis should involve a technical, geospatial analysis of onshore and offshore wind potential; economic analysis of the likely costs today and in the future; financial analysis that determines the bankability of projects; environmental and social analysis to reduce impacts around wind power installations; policies and procurement modalities; and supply chains and infrastructure required to build, connect and maintain wind power installations including grid connections, energy storage systems and facilities that ensure grid reliability.

**Promote effective renewable energy integration:** In order to increase the penetration of renewable energy technologies in Vietnam’s power system, it would be important to increase the capability of the grid network to incorporate these variable renewable energy generation resources. Already, transmission network congestion, lack of energy storage, and adequate dispatch management capabilities have resulted in curtailment of existing installed capacity. Public investment in grid capacity augmentation can further drive the use of climate resilient and economically feasible renewable energy.

**Promote energy efficiency.** Reducing wasteful energy consumption is usually cheaper than adding supply. The World Bank’s Low Carbon Study estimates that comprehensive demand-side energy efficiency investments in Vietnam could avoid 11 GW of new generation capacity by 2030. Even though energy efficiency investments typically pay off quickly, industrial and household consumers rarely make them without mandates or incentives. For industries these should focus on industrial processes, boilers and motors. At the household level, air conditioners and other appliances are a priority. Mandates can be matched with incentives to encourage energy service companies (ESCOs), concessional credit, or guarantee facilities that promote access to industries. The government could assign realistic energy saving targets to provinces and build a strong monitoring and enforcement system to ensure implementation.

**Complement clean energy efforts with natural gas and regional power trade.** While natural gas is a fossil fuel, its emissions during electricity generation are lower than those for coal. Vietnam’s gas consumption is expected to increase fueled by own resources and liquefied natural gas (LNG) imports. To improve efficiency in the gas sector, reforms are necessary to improve the legal and regulatory framework; change the organizational structures of governance institutions and Petro Vietnam (PVN); further develop gas market mechanisms; and create the regulatory framework for LNG-to-power processes. Besides gas, regional power trade can contribute to supply security with Vietnam importing hydropower from Lao PDR and China, which can displace coal-fired power generation using resources imported from Australia. Requirements for greater regional power trade are strong interconnections, a mutually beneficial tariff mechanism and high efficiency of system operations.