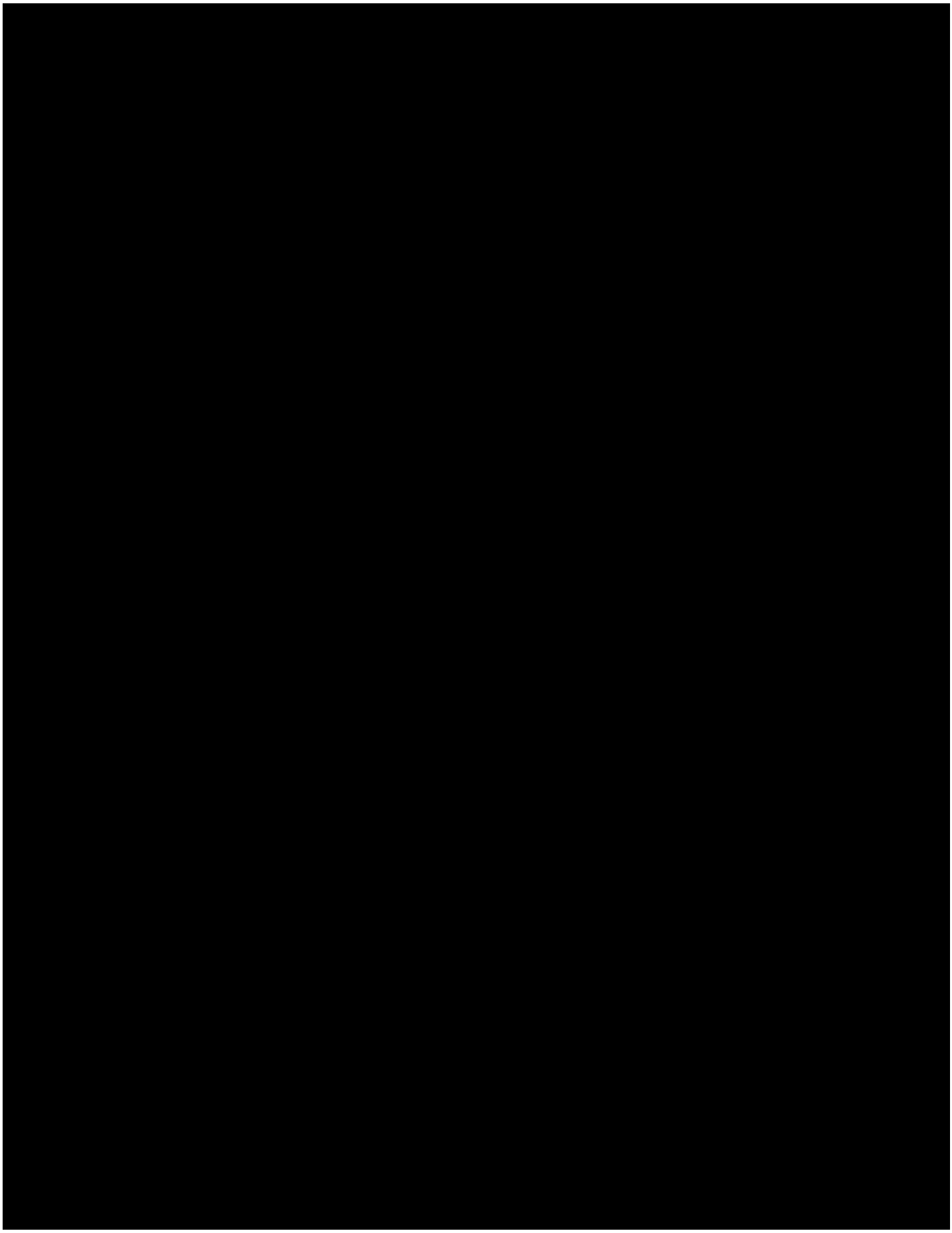

IMF Working Paper

Asia Pacific Department

Vietnam's Development Success Story and the Unfinished SDG Agenda[1]

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Abstract

Despite starting as one of the poorest countries in the mid-1980s, Vietnam has achieved rapid developmental progress, reaching lower middle-income status in 2010. In line with rapid economic growth, Vietnam has achieved impressive progress towards the Sustainable Development Goals (SDGs) during this time. This paper sheds light on some elements of Vietnam's success story, highlighting crucial policies in education and electricity sectors. It undertakes a forward-looking costing exercise that focusses on five sectors – education, health, roads, water, and electricity infrastructure. Achieving the remaining SDGs in Vietnam will be a challenge, with total annual additional spending needs in the 5 subsectors estimated at 7 percent of GDP by 2030.

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Keywords: Vietnam, economic policies, SDGs, education, electricity, infrastructure, health.
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[1] This paper is based on the work of a technical assistance mission led by Anja Baum that visited Hanoi July 9–13, 2018, and included Ms. Anh Thi Van Nguyen, economist in the IMF's Hanoi office. It met with officials from the Ministry of Planning and Investment, Ministry of Finance, Ministry of Agriculture and Rural Development, Ministries of Education and Training, Ministry of Transport, and Ministry of Health. The mission also met with development partners (World Bank, WHO, UNICEF, UNESCO, UNDP and ADB). The author is grateful for the support by Mr. Pham Hoang Mai and Ms. Nga Vo at the MPI on mission coordination, as well as to all counterparts for the valuable input and support. We are further grateful for the generous support by the GIZ in support of the project, and Ms. Nguyet Hoang and Ms. My Anh Nguyen for their support in Vietnam. While the paper draws on existing literature where available, some of the information was gathered during discussion with authorities and development partners and could not be cited. The cost estimation is based on methods developed by the IMF Fiscal Affairs Department under the leadership of Mercedes Garcia-Escribano.

Table of Contents

I. INTRODUCTION

Starting as one of the poorest countries in the mid-1980s, Vietnam has achieved rapid developmental progress, reaching lower middle-income status in 2010. The 1986 Doi Moi reforms ("rejuvenation") initiated a broad-based economic transformation, which dismantled the largely planned economy (beginning with agricultural reforms), opened a closed economy to international markets and trade, and initiated pro-business reforms. These reforms were accompanied by a wide-ranging social agenda, led by an expansion of education and electricity, with a clear goal of "leaving no one behind". In the aftermath of these policies, Vietnam sustained high economic growth rates that catapulted the country from one of the poorest to a lower emerging market economy within 25 years. Real per capita GDP tripled between 1990 and 2015, per-capita GDP increased 10-fold, and the poverty rate (living from below USD 1.90 per day) has fallen from more than 60 percent in the 1980s to below 5 percent of the population now.

In line with economic growth, Vietnam has achieved impressive progress towards the Sustainable Development Goals (SDGs). The country ranks in the top quarter of SDG performance across emerging market economies for the majority of indicators (Figure 1 and 2). The government of Vietnam has equally shown strong determination in implementing its 2030 Agenda to attain the SDGs, and most of Vietnam's development and economic plans feature the SDGs prominently.

Education has been a national priority since Doi Moi, and health outcomes have improved significantly. Vietnam has outperformed many developed countries in the 2012 and 2015 Young Lives longitudinal study and the Programme for International Student Assessment (PISA). The literacy rate of children aged 15 or over was 95 percent in 2016, 92 percent of 3 to 5-year old children are going to kindergarten, and 99 per-cent of primary school aged children are enrolled in school (VNR 2018). Over time, the focus shifted from education quantity to quality, and the general government (GG) budget now earmarks 20 percent of budget expenditure for education and training each year, even though the number has not always been reached. Vietnam has equally achieved Millennium Development Goal (MDG) 5 (maternal health, VNR 2018), and improvements in the health sector continue. Some 73 percent of Vietnam's population has access to essential health services, and health insurance coverage was 86.4 percent in 2017.

Vietnam's growth performance has also been underpinned by significant infrastructure development. Over the past decade, government capital spending has averaged almost 8 percent of GDP annually. In addition, state-owned enterprises (SOEs), including large infrastructure providers (such as the electricity company EVN), have invested about 5 percent of GDP annually. This high level of investment has resulted in a rapid expansion of infrastructure stocks and has enabled Vietnam to provide basic infrastructure access to its fast-growing industrial and manufacturing base. Power generation, transmission, and distribution capacity have been scaled up to meet rapidly rising electricity demand with Vietnam's per capita electricity consumption more than tripling over the past decade. The number of households accessing clean water has been rising annually, from 78.1 percent of households in 2002 to 93.4 percent in 2016; Access to paved roads is high, and rural household electrification increased from below 50 percent in 1990 to about 99 percent in 2016 (VNR 2018).

Figure 1. SDG Performance in Vietnam and Comparator Countries

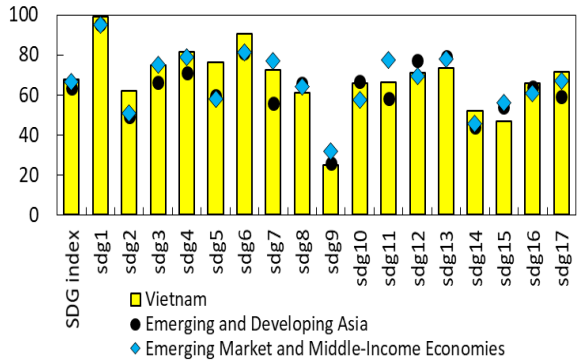
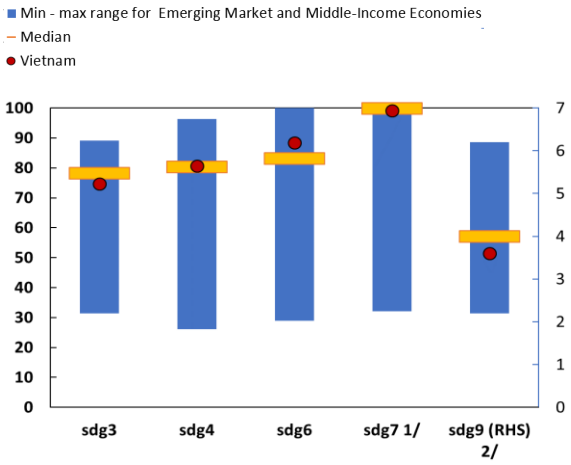


Figure 2. Selected Sustainable Development Goals Performance



Source: IMF staff calculations using Sachs et al. (2017).

1/ Indicator: Access to electricity (percentage of population).

2/ Indicator: Quality of Infrastructure.

Despite these achievements, more needs to be done to support Vietnam's socio-economic development. The structural transformation is not yet complete, with a still uneven playing field between the state-owned and the private sector. In addition, Vietnam's economy is characterized by a high degree of economic dualism, with the FDI sector and multinational companies showing limited integration with the local economy. On the social side, many children from poor households, remote areas and ethnic minority groups still struggle to access quality and inclusive education. Child mortality rates remain above the SDG UN target, and coverage of doctors and nurses remains low compared to advanced economies. Infrastructure remains fragmented and of low quality. Water pollution is a big challenge; average energy consumption is still low compared to other emerging markets but is expected to increase dramatically until 2030.[2] The current, especially urban road network is already severely congested during peak hours, with increases in private car ownership exacerbating this problem.

This paper first sheds light on Vietnam's success story, and then outlines the financing needs to achieve the 2030 SDGs. While many factors contributed to Vietnam's success, this paper highlights education and electricity developments since Doi Moi. It provides an overview of policies that likely added to the sectors' good outcomes and could be applicable to other countries (Section II).[3] Furthermore, this paper undertakes a forward-looking costing exercise that focusses on five sectors – education, health, roads, water, and electricity infrastructure (Section III). These sectors are

[2] Electricity production per capita was 1896 kWh in 2016, and its growth rate about 10.3 percent annually during 2011–2016 (GSO).

[3] It should be noted that the paper does not provide an in-depth analysis of causal relationships between the sectors and economic success, nor between policies and outcomes.

by no means comprehensive for the overall financing needs for SDGs, as climate change and poverty reduction play an important role in Vietnam. At this point, however, the models used in the paper focus on the five sectors given data and methodological constraints. Section IV gives a brief outline of financing options going forward, and Section V concludes.

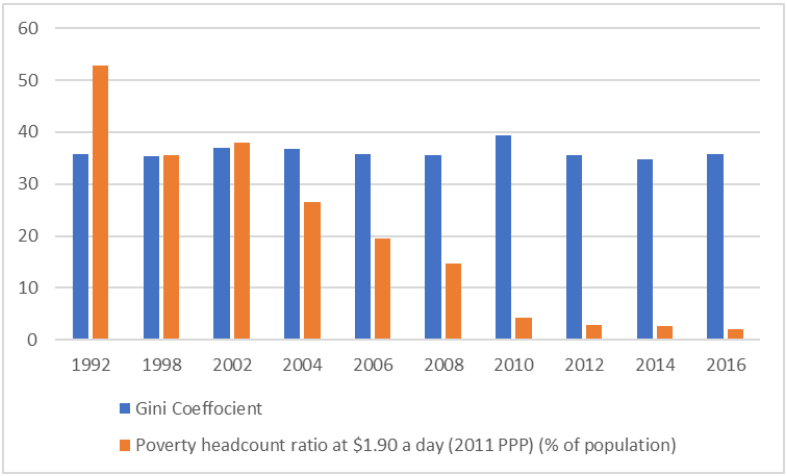
II. Vietnam's Development Success

A. Macroeconomy and Structural Transformation

Vietnam's success story begins with the Doi Moi ("rejuvenation") reforms of 1986. In 1986, following a period of economic collapse and standstill with 700 percent inflation, starving farmers, and an economy that was kept afloat by $4 million a day aid from the Soviet Union, Vietnam launched a political and economic renewal campaign called Doi Moi. The reforms were intended to facilitate the transition from a centralized to a market economy, combining government planning with free-market incentives. Doi Moi dismantled the largely planned economy (beginning with agricultural reforms), opened a closed economy to international markets and trade, and initiated pro-business reforms. Doi Moi was accompanied by a wide-ranging social agenda, led by expansion of education and electricity, with a clear goal of "leaving no one behind".

The original focus of Doi Moi on agriculture benefited the majority of the population. 70 percent of Vietnamese worked in agriculture at this time. Agricultural collectives were abolished, and the land was distributed among small farmers with 20-year leases. At the same time, price controls on agricultural goods were removed as farmers and industrial producers were allowed to sell their goods at a profit.[4] Rice production also benefited from yield improvement and the expansion of planted area induced by the improvements of the heavily subsidized irrigation system.

Figure 3. Gini Coefficient and Poverty Headcount



Source: World Bank (WDI)

International trade systems were similarly reformed, aiding agricultural progress. Barriers to trade were lowered; the checkpoint inspection system that required goods in transit to be frequently inspected was abolished; and regulations on private inflow of money, goods, and tourists from overseas were relaxed. Trade liberalization added to the favorable changes for the rice industry. Within less than

[4] Previously, crops could only be exported through state-approved companies, which made a profit by paying farmers significantly less than the world price.

two decades, after being a chronic rice importer, the country re-emerged as one of the world's largest rice exporters, with exports averaging 3–4 million tons a year.

The reforms did not stop at agriculture. Economic stabilization took center stage, with a devaluation of the Vietnamese Dong and a reduction of the budget deficit. The establishment of private businesses was encouraged, and achieved by streamlining bureaucracy, initiating the scaling down of inefficient government monopolies and opening small service industries to individuals and families. Inflation was brought down to the single digits within one decade following the initiation of reforms. State control also began to relax. Driven by successive rounds of restructuring, liquidation, divestment and equitization, the number of enterprises fully owned by the state fell from over 12,000 in 1989 to fewer than 600 in 2016 (World Bank 2016a, 2017 Government Report Number 441).

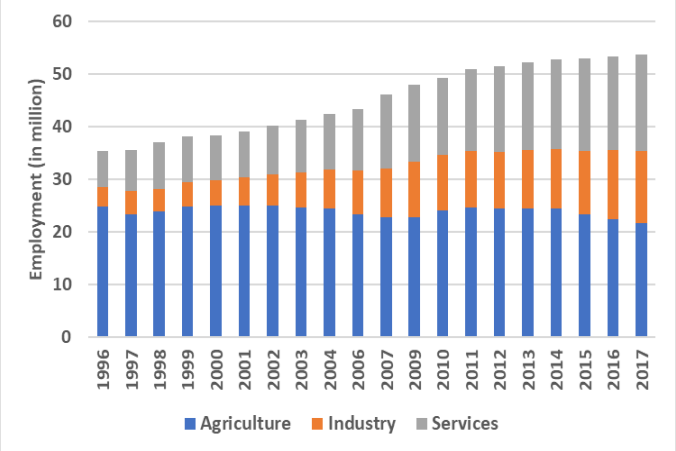
Trade integration was central to reform efforts. Vietnam integrated quickly into the world economy, resulting in a high degree of openness today (the sum of exports and imports stands at around 200 percent of GDP). Following Doi Moi, Vietnam negotiated and joined several trade agreements, including the Association of Southeast Asian Nations (ASEAN) and the ASEAN Free Trade Agreements in 1995, the bilateral trade agreement with the United States in 2000 (and later with Japan and the EU), and the WTO in 2007. In addition, the adoption of the Foreign Investment Law in 1987 opened the country to FDI inflows, which surged to 10 percent of GDP in 1996, and again to 9 percent in 2008 following the accession to the WTO (Herr et al. 2016). Trade integration not only facilitated agricultural exports; in addition, low- or zero-tariff imports combined with surging FDI enabled first low-tech manufacturing exports and later exports of more complex high-tech goods.

By the late 1990s, the success of business, trade and agricultural reforms was evident. More than 30,000 private businesses had been created, and the economy was growing at an annual rate of more than 7 percent. From the early 1990s to 2005, poverty declined from about 50 percent to 29 percent of the population.

In the decades following Doi Moi, the shift out of agriculture was dramatic, with the sector's share in GDP falling from over 40 percent in the late 1980s to less than 15 percent of GDP today. At the same time, sector shares of manufacturing and services increased rapidly since the early 1990s. These sectoral trends in GDP have been broadly matched by those in employment. Rapid job creation and rising wages in manufacturing and services has pulled an expanding share of Vietnam's work force away from agricultural production, and virtually all new jobs were created in industries and services (Figure 4.a). By 2017, agriculture as a share of the labor force declined to

Figure 4. Employment in Vietnam

4.a. Employment (in Million)

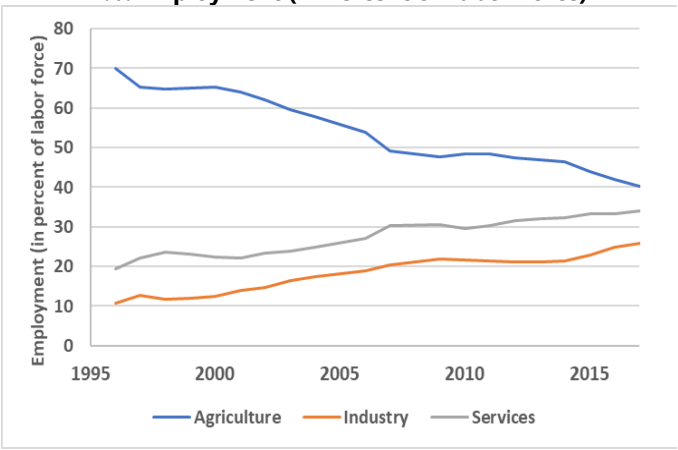


Source: ILO and IMF estimates.

40 percent, while services reached 34 percent (Figure 4.b). The shift in employment to higher productivity sectors contributed about 40 percent of the labor productivity growth during 1990-2010. Rapid urbanization followed. In 1986, the country had fewer than 13 million urban residents; it now has more than 30 million.

Figure 4. Employment in Vietnam (Continued)

4.b. Employment (in Percent of Labor Force)



Source: ILO and IMF estimates.

While strong agriculture fundamentals and trade integration benefited the rapid economic development, economic transformation and rapid growth were not a given. Many largely agricultural economies have failed to replicate Vietnam's success. Similar to many low-income economies, electricity in Vietnam was not widely available in 1986, illiteracy was a widespread issue, infrastructure was largely destroyed after years of war, and Vietnam had 54 ethnic groups and many different languages, issues often cited as reasons for insufficient investment and growth in other developing regions.

Strong ownership and successful decentralization in Vietnam facilitated service delivery and targeted investments. Before 1996, budgetary expenditures were centrally mandated with little provincial discretion (WB 1996). The State Budget Laws (SBL) of 1996, 2002 and 2015 granted wide-ranging fiscal responsibilities to provincial authorities.[5] The revenue-sharing and transfer arrangements aimed to redistribute revenue collected in richer provinces to poorer ones. Spending responsibilities increased drastically, with local authorities executing over half of total government spending today (17 out of the 30 percent of GDP in 2016), a significant share compared to other countries at a similar level of development.[6] While accounting and transparency issues of local activity remain, local determination has shown results. For example, local responsibilities in the education and transport sectors facilitated the identification of and addressing infrastructure and other gaps based on local needs, especially in rural areas.

[5] Vietnam is a unitary state with four tiers of government: central; 63 provinces; around 680 districts; and around 11,000 communes. Each tier of government has both legislative and executive authorities. At central level legislative authority rests with the National Assembly, and executive authority rests with line ministries and agencies. At local level, each tier of government has People's Councils to exercise legislative authority; and People's Committees and line departments to exercise executive authority. The SBL 2002 provided a solid framework for public financial management including intergovernmental fiscal relationships (World Bank 2015), which included powers to raise revenue from fees, charges and tolls and autonomy to determine fiscal relationships with districts and communes.

[6] Nguyen-Hoang and Schroeder (2010) find that the shared revenue and balancing transfers system is equalizing as it reduces variation in revenue per capita across provinces. World Bank (2015) notes that higher capacity local authorities have higher levels of spending responsibilities on average, and that the share of rural population is positively linked to the level of decentralization within a province.

B. Success Stories by Sector

This section provides a brief look into sectoral policies that supported Vietnam's rapid economic transformation.

Education For All

Education outcomes today reflect the legacy of putting education first in national strategies since Doi Moi. The government recognized that educating only the young would be insufficient to lift sufficient people out of poverty in the short term, given the longer lag of school children entering the labor market. As result, education for both the young as well as the out-of-school population was strengthened.

In 1992, Vietnam agreed on the "Education For All" (EFA) 1993 to 2000 Action Plan, followed by a second EFA for 2003 to 2015. The core of the first (1993–2000) EFA plan included quality primary education for all, gender equality across all levels of education, and appropriate education and training for all out-of-school young people and adults in need of basic education to promote adult literacy. The 2003–15 EFA plan set 5 main goals: moving from quantity to quality, completing universal primary and universal lower secondary education, providing lifelong learning opportunities, mobilizing full participation (all for education), and ensuring effective management and ever better resource utilization.

The two EFA plans and their implementation share the following common elements:

- **Determination.** The EFA strategies and follow-up action plans were well organized and monitored, with well-coordinated donor support and strong public determination for their implementation. The plans were action oriented, time-bound and contained mid-term performance indicators (EFA 2003, Nga 2002). With decentralization marking a positive step towards planning of education activities and budget allocation according to provincial priorities, provinces were also made accountable for achieving the EFA and other plan goals. Provincial plans were thereby fully integrated into the national EFA plan to ensure effective coordination of activities (MoET 2016).

- **Quantity with inclusiveness.** The contribution of education to poverty alleviation was given prominence within the government's poverty and growth strategies. One core principle was free primary education to allow full access, with special focus given to poor families, disadvantaged children, the 20 percent hardest to reach, and gender equality. Policies included the free supply of textbooks, notebooks, and school supplies for ethnic minority students. All communes gained primary and lower-secondary schools in communal or inter-communal areas; and high schools were established in the districts. The provinces and districts with many ethnic minority groups were provided with boarding and semi-boarding schools, with free access for children of those groups.

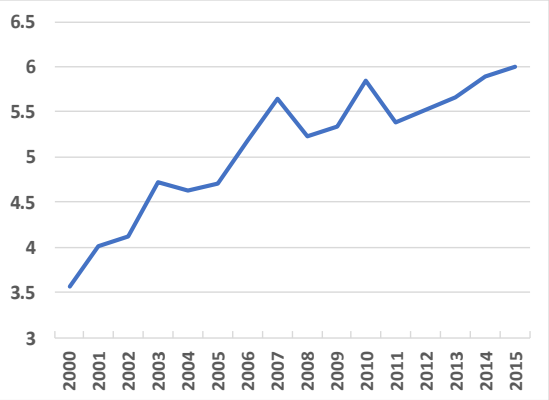
- **Expanding out-of-school learning.** With Doi Moi generating rapid growth in the manufacturing and globally oriented sectors, as well as urbanization, education was re-oriented to work along the new needs of economic development. Greater government attention was given to vocational education to meet the demand for trained workers, particularly for key economic areas and sectors. A network of continuing education centers and community learning centers was developed. Vocational and specialized training institutions were established in most of the highly populated

localities, regions, cities and even in difficult-to-reach areas such as the North West, Central Highlands and the Mekong Delta.

- **Focus on teachers.** Providing support to teachers was a cornerstone of the education reform. The spirit of teachers and educational managers was considered important, as teachers and management staff were regarded as the leading decisive factors in ensuring high quality and effective education (EFA 2003, Parandekar and Sedmik 2016). Development of new pre- and in-service training programs was initiated at a massive scale for all teachers; student and teacher assessment systems were put in place, and continuous monitoring was used to adjust and strengthen activities. A sense of responsibility among key actors, including teachers, was an important contribution to the implementation of education activities.

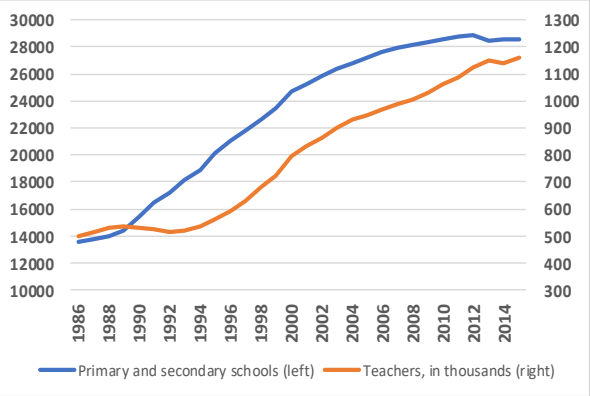
Public education expenditure increased dramatically. Primary education expenditure doubled until 1990. By late 1990, education expenditure accounted for about 15 percent of total public spending and was subsequently increased to 20 percent of annual GG budget expenditure, where it remains until today. Public education expenditure as a ratio to GDP has consequently increased from 3.5 percent in 2000 to 6 percent in 2015 (Figure 5.a). The state budget remained the main funding source, with donor support estimated to cover only 10 percent of the total public education budget in the 1990s. Public education spending was first used for investing into schooling institutions (Figure 5.b) and primary school teachers, followed by an expansion of secondary school teachers (Figure 5.c). Vietnam's situation was helped as the school-age population began to stabilize, meaning more resources could be spent on fewer children, and the student-teacher ratio fell from 35 in 1995 to 20 today (Figure 5.d).

Figure 5.a. Public Education Expenditure (Ratio to GDP)



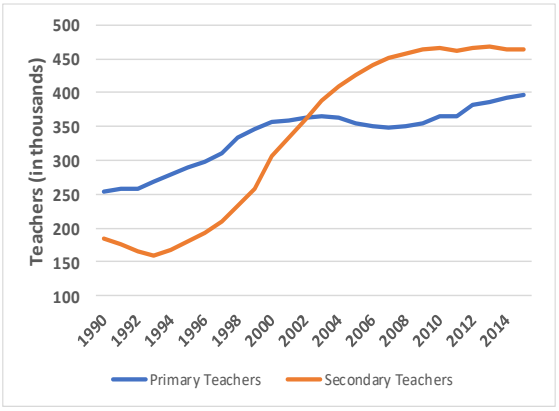
Source: EFA 2015 Report (before 2012) and UNESCO

Figure 5.b. Numbers of Schools (Primary and Secondary) and Teachers (Kindergarten to University)



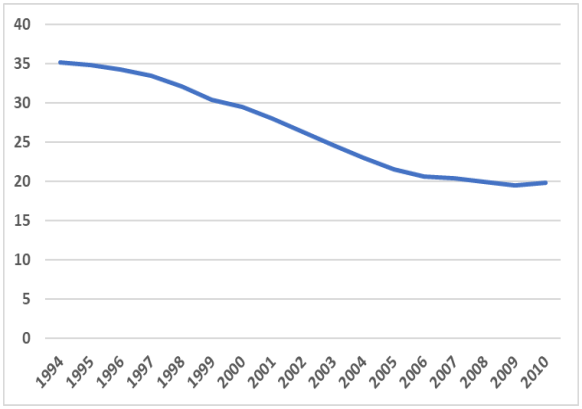
Source: GSO and IMF estimates

Figure 5.c. Numbers of Primary and Secondary School Teachers



Source: GSO and IMF estimates

Figure 5.d. Pupil-teacher Ratio in Primary Education



Source: World Bank Education Statistics

Vietnam's determination showed success, with a spectacular expansion of the education system. Primary education reached 80 percent of school-age population in the early 2000s, and near universal primary and pre-primary education are reached today. Net enrolment rates jumped to almost complete gender balance, and enrolments in lower secondary education doubled. The literacy rate of children aged 15 or over was 95 percent in 2016, 92 percent of 3 to 5-year old children are going to kindergarten, 99 per-cent of primary school aged children are enrolled in school, and 99.7 percent of children were completing primary education in the 2016-2017 school year (VNR 2018). Vietnam's 2012 and 2015 PISA results outperform most other countries in its income group, as well as several advanced countries (Parandekar and Sedmik 2016).[7]

While Vietnam's success in education is remarkable, challenges remain. Many children from poor households, remote areas and ethnic minority groups still struggle to access quality and inclusive education. School days tend to be short in primary schools, increasing household spending into private tutoring and raising equity concerns (Dang and Glewwe 2017). Many employers complain about skill mismatches in professional or technical high-paying jobs (World Bank 2014). In addition, Vietnam is a high-outbound student market, with 63,703 students studying abroad in 2017.[8] High outbound mobility not only reflects a fast growing middle-class, but also shortcomings in the higher education system, with a deficit in both the number and quality of higher education institutions.

Electricity

Vietnam's energy sector is among the most noticeable success stories in the developing world. Together with education, electricity has been one of Vietnam's priorities since Doi Moi. Power losses

[7] Students facing the greatest disadvantage on an international scale outperformed the most advantaged students in about 20 other PISA-participating countries (OECD 2018). Children's performances also show relatively little variation in scores by socio-economic status.

[8] Source: https://wenr.wes.org/2017/11/education-in-vietnam

in transmission and distribution are at or close to best-practice international standards (Figure 6.a), and collection rates from consumers are almost 100 percent (World Bank 2016b). Rural household electrification increased from below 50 percent in 1990 to almost 100 percent today. By early 2018, 99.9 percent of communes and 99 percent of rural households were connected to the grid (Figure 6.b) (World Bank 2018, VNR 2018). According to the World Bank's 2017 Competitiveness Assessment indicators, access to electricity in Vietnam scored 78.69 out of 100.

Traditionally, financing for energy infrastructure has relied on public investment by state-owned enterprises backed by government guarantees. Benefitting from significant ODA support, USD 8 billion annual investment went into electricity, primarily executed through the public electricity company Electricity Vietnam (EVN). EVN was established in 1995 and has been largely self-financing since. Donor loans to the sector were on-lent by the Government to EVN, and EVN was required to repay the debt at concessional interest rates (World Bank 2018). About half of EVN's investment was financed through on-lending, the other half EVN borrowed from local and international commercial banks, guaranteed by the government. These financing modalities required EVN to remain financially sound to service its obligations. Finally, the government provided some other payment guarantees (non-debt related), such as needed collateral to allow EVN to enter contracts, or by covering default risks for EVN's off-take and termination payment obligations in some BOT projects.

In addition, the government incentivized the private sector. In 2006, the government approved a roadmap for establishing a competitive power market, with EVN to maintain a monopoly only for power transmission grid infrastructure to ensure national energy security. Electricity liberalization started with the 2004 Vietnam Electricity Law, which kickstarted the unbundling of EVN, established a market regulator, and introduced a competitive generation market (World Bank 2018). Two private schemes were introduced to encourage private sector participation, build-operate-transfer (BOT) and independent power producer (IPP). The government supports private sector financing with tax holidays and renewable energy investments now benefit from tax reductions, import duty exemptions, and accelerated depreciation. Today 30 percent of generation capacity of electricity has been developed by the private sector under build-operate-transfer (BOT) arrangements, most with government guarantees and mainly for large thermal power plants by international investors. Private

Figure 6.a. Electric Power Transmission and Distribution Losses (Percent of Output)

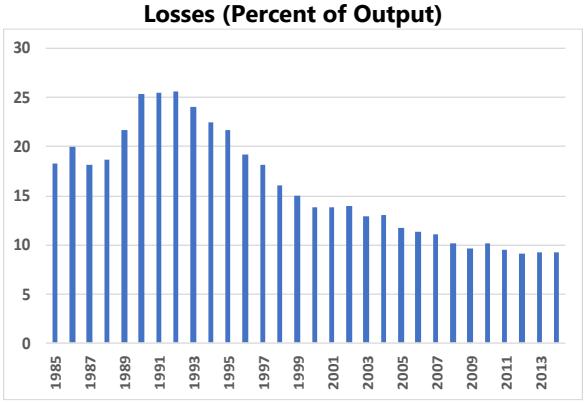
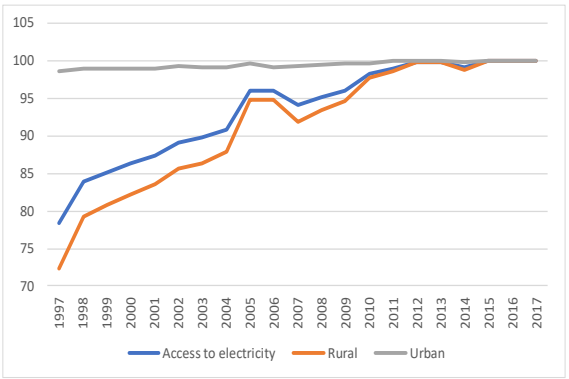


Figure 6.b. Access to Electricity (Percent of Population)



Source: World Bank

sector investments in hydro power plants by local investors were generally conducted without government support (World Bank 2018).

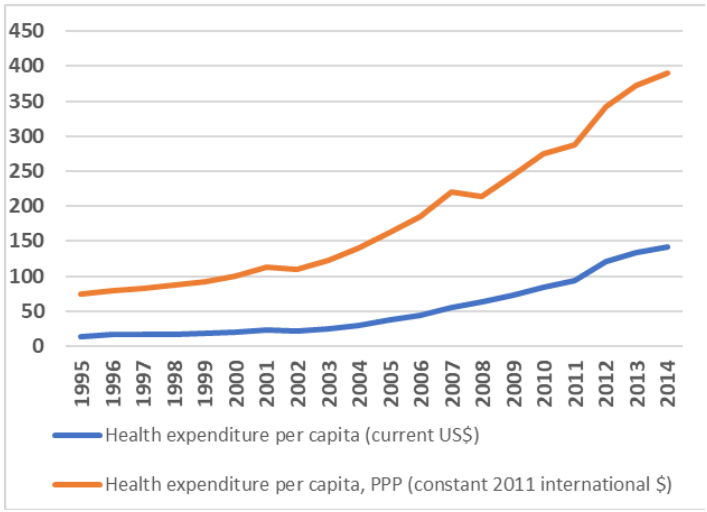
While financing scale and modalities explain some of Vietnam's electricity success, EVN's above average performance and sectoral strategies helped the rapid electricity expansion. Once electricity was made locally available, both rich and poor households were equally likely to connect to the grid. This result was partly driven by EVN's early goals to bring electricity to rural areas and the poor. EVN established a separate rural electrification department to take care of the approval of rural electrification projects, which were implemented by the regional companies, leading to a jump of poor household access from 50 percent in the mid-90s to 77 percent in 2001 (Khandker et al. 2009). World Bank (2016) assesses EVN's performance standards as "very good in many respects". In 2018, EVN produced more than 2200 kWh per capita, which is just less than half of that of China, but it surpasses levels of India and Indonesia and is approaching Thailand – all of which are richer than Vietnam (Dapice 2018). In 2015, only six power outages were recorded, demonstrating EVN's effectiveness in providing adequate network investment to provide good consumer service (World Bank 2018).

Despite these achievements, average energy consumption is still low compared to other emerging markets, and is expected to increase dramatically until 2030.[9] Struggles to keep up with the rising demand were visible in the past, and low tariffs to ensure social equity mean that most of EVN's capital spending is financed through debt, primarily in foreign currency, increasing EVN's sustainability risks and exposing it to foreign exchange risks. Current generation and transmission operations are also near capacity limits. In addition, the share of renewable energy is still small and coal production continues to increase rapidly, a key contributor to degrading air quality and premature mortality.

Health

Vietnam has achieved MDG 5 (maternal health), and improvements in the health sector continue. The maternal mortality rate declined by 75 percent between 1990 and 2015 (VNR 2018). National statistics on new cases of HIV/AIDS and related deaths have declined in recent years, and new cases of tuberculosis per 100,000 people were reduced from 375 cases in 2000 to 130 cases in 2017 (WHO 2018). Immunization was brought close to 100 percent a few years following Doi Moi. Some 73 percent of Vietnam's population has access to essential

Figure 7. Total Health Expenditure per Capita



Source: World Bank Health and Nutrition Statistics

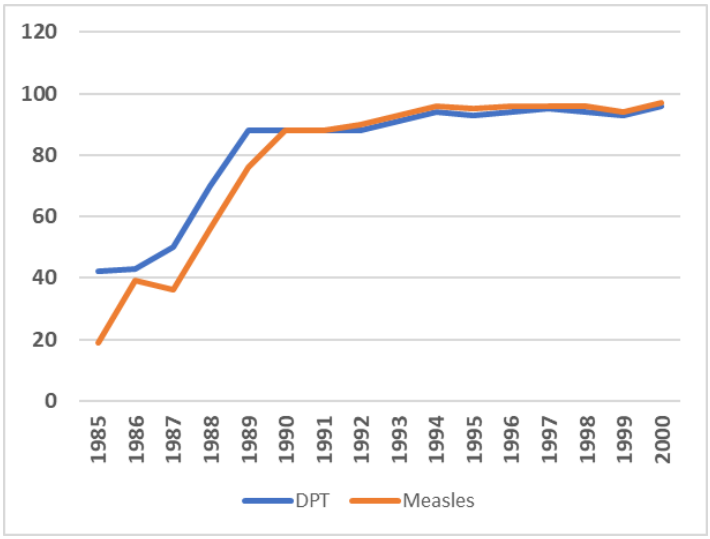
[9] Electricity production per capita was 1896 kWh in 2016, and its growth rate about 10.3 percent annually during 2011–2016 (GSO).

health services, and health insurance coverage was 87 percent in 2018. Per capita health expenditure has been growing rapidly as well (Figure 7).

The health sector received less focus than education and electricity in the early years after Doi Moi. The overall budget was small, with total health spending at around 5 percent of GDP, of which one third was public and only 3 percent financed by ODA. Yet, some important reforms contributed to Vietnam's good health outcomes. The health care and pharmaceuticals market were liberalized in in the late 1980s and official user fees introduced at public health facilities to improve financial sustainability of the sector (Ekman et al. 2008). All communes were required to have community clinics to provide a wide network of health service access. Centrally administered National Target Programs for health existed since the early 90s, with a focus on vaccination programs, nutrition, and later food safety. Salaries started to be paid by the central government for all health staff in 1994 (they were paid by agricultural cooperatives before Doi Moi). In addition, a rigorous, centrally controlled training of health staff contributed to high capacity in the health sector.

As in the case of education, "leaving no one behind" was a central mandate also in health care. Health insurance was introduced in 1992, first covering formal sector workers and the poor. In order to improve accessibility to health care services for the poor and other vulnerable population groups, the government implemented policies aiming at providing coverage, either by exempting the poor from paying user fees for services used or by covering them via health insurance.[10] Until today, the government subsidizes 100 percent of premiums for the very poor, ethnic minority children, and children under six years of age, at least 70 percent of the premium for the "near-poor" and at least 30 percent of premiums for school children and students as well as the rest of the informal sector. While the policy was not targeted at the poor (e.g., children from rich families are equally covered), it gave large parts of the population access to health care. As the reforms were implemented, out of pocket spending on health care increased dramatically, reaching 71 percent of total health spending by 1993 and 80 percent by 1998

Figure 8. Immunization (Percent of Population)



Source: World Bank (WDI)

[10] The first user fee exemption policy for the poor was issued in 1994 (Decree 95). Provinces were required to use budget funds to enroll at least 30 percent of the poor in compulsory health insurance as of 1999 (Circular 05). Health Care Funds for the Poor (including ethnic minorities) were introduced in every province in 2002 and as of 2005 all the poor had to enroll in compulsory health insurance with government funds subsidizing their premiums (Health Insurance Decree 63). Some 15 million poor and ethnic-minority people are now covered by subsidized health insurance. This policy reduced the risk of catastrophic spending on health care for the poor (Tien et al. 2011; Wagstaff, 2007).

(Liebermann and Wagstaff, 2009). It declined to below 50 percent with increasing public health spending in the 2000s.

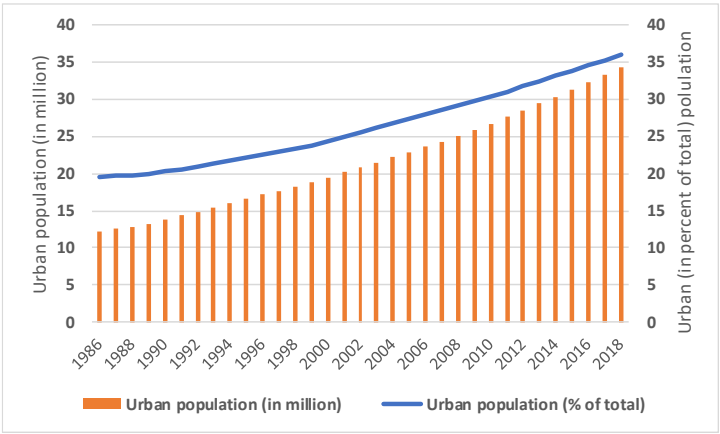
While health outcomes were already relatively good at the onset of the Doi Moi reforms, the focus on core health provision was crucial. Public spending was concentrated on access to clean water and sanitation, and priority was given to primary health care and prevention. Preventative services (such as immunizations, hygiene, nutrition, mother and child health care) were free, with health education widely given in schools. As a result, immunization of children increased to 90 percent already by 1990 (Figure 8), 90 percent of births are attended by a skilled health worker, and most major diseases have been eradicated or drastically reduced.

Despite achievements in the health sector, significant challenges remain. Child mortality rates are above the SDG UN target, and coverage of doctors and nurses remains low compared to other developed and emerging markets. In addition, food contamination, food poisoning and disease contagion through food are pervasive (MPI 2012).

Other Infrastructure

Infrastructure investment has been a priority for decades, with road infrastructure receiving the majority of donor funding. Early heavy investment into trunk infrastructure played a large role in creating new business opportunities and promoting income diversification and off-farm employment (World Bank 1999, 2006). International donors started to support the transport (and electricity) sector as of the early 1990. The early focus was on main roads to connect sea and airports. World Bank (2006) and ADB (2012) found that the rehabilitation of trunk infrastructure facilitated the spread of economic linkages between growth centers and their surrounding rural areas, proving the vital importance of connecting remote areas with power grids, and trunk roads with feeder roads to achieve poverty-reducing growth. Similarly, the Vietnam Academy of Social Sciences (2006) states that spending an additional 1 percent of GDP in transport infrastructure led to a proportionate reduction of the poverty rate of roughly 0.5 percent, with the impact being larger in poorer provinces. Given the long coastline of Vietnam, maritime development was made a priority for growth as well, receiving significant donor funding.

Figure 9. Urban Population



Source: World Bank WDI

Infrastructure is still lagging the country's rapid rate of socio-economic development and remains fragmented and of low quality. Road quality remains relatively poor (ADB 2017). Strong growth in major urban centers (Figure 9) has resulted in a large demand for transport, which has

been met mainly by rapid expansion of private vehicle fleets. Private vehicles, mostly motorcycles, make up an abnormally high proportion (80–90 percent) of total vehicles and there is significant potential for household incomes to rise, enabling more families to afford to purchase cars. The current road network is already severely congested during peak hours, and the increase in private car ownership will only exacerbate this problem. Similarly, while access to clean and safe water has improved significantly over recent decades, safely managed water access remains a challenge in both rural and urban areas. In addition, elevated water pollution levels increase risks.[11]

III. Assessing Vietnam's Spending Needs For the 2030 SDGs

Significant progress towards the SDGs has been achieved, yet challenges abound. As outlined above, some of the MDGs have been achieved and performance in sectors such as electricity and education has been commendable. Challenges in other sectors remain large. Going forward, rapid economic transformation will add additional challenges to the Vietnamese economy, which will require significant public and private sector funds, especially for road and electricity infrastructure. This section estimates Vietnam's spending needs to achieve the SDGs in select social and infrastructure sectors.

The government of Vietnam has shown strong determination in implementing its 2030 Agenda to attain the SDGs. Particular attention continues to be paid to vulnerable groups through a number of policies aimed at promoting social equality to ensure that no one is left behind. After more than 30 years of reforms, Vietnam has made great strides towards the SDG goals. Several of the MDG goals were achieved during 2001-2015, such as poverty reduction, universal primary education and gender equality, and has achieved certain health-related indicators (targets for maternal mortality, malaria and tuberculosis control and combating the HIV/AIDS prevalence rate (MPI 2015)). Following the successful MDG implementation, Vietnam has mapped the 17 global SDGs into 115 Vietnam SDG (VSDG) goals in its "National Action Plan for Implementation of the 2030 Agenda for Sustainable Development" to suit the country's context and socio-economic conditions.

Vietnam's development and economic plans feature the SDGs prominently. Sustainable development goals have been integrated into the updates to the Socio-Economic Development Strategy (SEDS) 2011–2020 and the Socio-Economic Development Plan (SEDP) 2016–2020. Similarly, a large number of laws, regulations, strategies, and action plans of ministries, localities and related agencies reflect the SDGs. SDGs will also play a central role in the SEDP 2021–2025, the SEDS 2021–2030 and the annual SEDPs, which are currently being developed.

Vietnam launched its Voluntary National Review (VNR) in July 2018 and has formulated a national system of statistical indicators for monitoring and evaluating sustainable development. Vietnam's SDG implementation has been strongly supported by international development partners and integrated into their development cooperation strategies.

The costing exercise below focusses on five sectors: education, health, roads, water, and electricity infrastructure. These sectors are by no means comprehensive for the overall financing

[11] The number of households accessing clean water has been rising annually, from 78.1 percent of households in 2002 to 93.4 percent in 2016 (99 percent urban and 91 percent rural, VNR 2018). Similarly, the percentage of households using hygienic latrines has increased from 55 percent in 2002 to 83 percent in 2016.

needs for SDGs, as climate change and poverty reduction remain important challenges. At this stage, however, the models focus on the abovementioned five sectors given data and methodological constraints.

A. Spending Needs in the Social Sectors

Spending needs in the social sectors are estimated using a benchmarking approach. A three-step approach is adopted. First, the main cost drivers of health and education are identified. Second, *reference* values for those cost drivers are derived, consistent with delivering SDG3/SDG4 scores of 80 to 100 in countries of a selected range of GDP per capita. Third, based on these reference values, Vietnam's 2030 public health and education expenditure needs are estimated.

Health Expenditure

Given data limitations, the methodological goal is to estimate total health spending needs based on a parsimonious set of indicators. Total health expenditure (HE) can be expressed as the sum of doctors' compensation (DCOMP), other health staff compensation (OSCOMP), other current spending (OCURRENT—including drugs), and capital expenditure (CAP), summarized in equation (1.1). We can express OCURRENT and CAP as fractions x and y of HE, and DCOMP and OSCOMP as the respective product of the average doctor and other staff wages (DAWAGE and OSAWAGE), and the number of doctors (D) and other staff (OS), respectively, summarized in equation (1.2). OSAWAGE and OS can be represented as a share of DAWAGE (α) and the doctor-to-other staff ratio (ρ). Further, the number of doctors D can be expressed as the product of the total population (pop) and the density of doctors (PDR) (equation 1.3). Finally, total HE is represented as a function of DD, α, DAWAGE, ρ, x and y (equation 1.4).

$$(1.1)\quad HE = DCOMP + OSCOMP + OCURRENT + CAP$$

$$(1.2)\quad HE = D * DAWAGE + OS * OSAWAGE + x * HE + y * HE$$

$$(1.3)\quad HE = \mathrm{PDR} * pop * \left(1 + \frac{\alpha}{\rho}\right) * DAWAGE + x * HE + y * HE$$

$$(1.4)\quad HE = \frac{DPR * pop * \left(1 + \frac{\alpha}{\rho}\right) * DAWAGE}{(1 - x - y)}$$

WHO has readily available country data for total health spending (HE), doctor's density (DPR), the share of capital spending in HE (y), and the ratio of doctor to all other staff (ρ). Based on OECD data, the ratio of other staff wage-to-doctor wage (α) is assumed to be ½. The share of other current spending is computed as the residual of total spending minus capital and staff compensation, assuming and imputing the share of average remuneration of health workforce within total health expenditure for each country given WHO aggregated data by income groups and geographical regions (x). These data can be used to estimate doctor wages as $DAWAGE = \frac{HE * (1 - x - y)}{PDR * pop * \left(1 + \frac{\alpha}{\rho}\right)}$.

Identity (1.4) allows us to derive *reference values* based on relatively little information, while being consistent with delivering good health outcomes. The reference values for the different cost drivers of identity (1.4) are taken from the median performers among countries in a range of GDP per capita between $4000 and $10,000, that have an SDG3 score of 80 to 100. These countries

are called "good performers". Of the 39 countries with GDP per capita between $4,000 and $10,000, only 8 have a SDG3 score above 80. The median good performer has 2.3 doctors per 1,000 population, doctor wages of $27,024, and a share of capital spending of 2.2 percent of total health expenditure. Spending is $404 per person or 6.7 percent of GDP (Table 1).

If Vietnam aimed at achieving indicators of its good performing peers, public spending needs for health would increase until 2030. Despite good health outcomes in Vietnam, current total and public sector health spending, as well as the number of doctors and nurses is still significantly below that of its peers. Using the above reference values, we estimate Vietnam's total health spending needs for 2030 (*hats* denote the reference values) as

$$HE = (\widehat{DAWAGE} * \widehat{PDR} * \widehat{\left(1 + \frac{\alpha}{\rho}\right)} * pop_{2030})/((1 - \hat{x} - \hat{y})).$$

We project GDP to 2030 assuming the projected real growth of GDP for 2023 remains constant between 2023 and 2030. If Vietnam was behaving as the *median good* performer in 2030, it would increase total health spending from 5.4 to 6.9 percent of GDP ($321/capita), paying doctors an average salary of 4.8 times the GDP/capita, and having 2.3 doctors per 1,000 population (4 times more than the most recent value, see last column Table 1). In addition, the share of public to private spending is significantly higher in good performing countries. If Vietnam aimed at a similar public-sector share, total public health spending would increase by 1.5 percent of GDP, with the public share increasing by 1.4 percent.

Vietnam's health plans foresee only a small increase in number of doctors per 1000 population, however, requiring a significantly smaller increase in overall spending. Public plans currently aim at an increase in doctors to 1.1 per 1000 population (MoH Decision 3929), significantly below the level of top performing peers. If this number was targeted instead, total health spending would remain almost constant at 5.5 percent of GDP, with the public share increasing by 0.6 percent of GDP, to 3.3 percent of GDP (second to last column, Table 1).

While spending plans beyond 2020 are scarce, public spending on health will likely increase steadily. Recently, public hospitals as well as other PSDUs have tried to improve their financial autonomy (through increasing fees) to cover recurrent spending and to increase capital spending going forward. However, there are several reasons that will likely drive spending needs up further. The government aims to achieve universal health insurance in the coming years. It is currently paying subsidies for health insurance premiums as well as some costs for up to 60 percent of the population (and prices for healthcare services are rising), which implies an increasing public spending share in total health spending over time. Similarly, rapid aging and international trends of rising medical costs will likely drive costs up further. In line with this trend, the government mandates that GG health spending has to increase more than overall budget spending each year, implying that the final increase in public spending will likely be higher than 0.6 percent of GDP. To be conservative, the financing discussion below assumes an increase of 1 percent of GDP for public health spending, and 0.8 percent of GDP for total health spending.

Education Expenditure

Table 1. Median Reference Values for Health in Peer Countries and Vietnam

Median statistics	Peers	Good Performer Peers	Vietnam Latest	Vietnam 2030 Plans	Vietnam 2030 Good Performer Comparison
Number of countries	35	8			
GDP per capita (current USD)	5871.4	5616.3	2214.4	4628.8	4628.8
Doctors per 1000 population	1.6	2.3	0.8	1.1	2.3
Other health staff per 1000 population	6.3	6.4	3.9	6.4	6.4
Doctor Salary	34245	27024	9037	22273	22273
Salary to GDP per capita ratio	5.8	4.8	4.1	4.8	4.8
Capital spending (% of total health spending)	2.3%	2.2%	9.9%	2.2%	2.2%
Total health spending to GDP (%)	**6.4%**	**6.7%**	**5.4%**	**5.5%**	**6.9%**
Spending per capita (current USD)	399.1	404.4	119.8	254.3	321.0
Public Spending (% of total)	**59.4**	59.5	**49.6**	**59.5**	**59.5**
Public Spending (% of GDP)	**3.8%**	**4.0%**	**2.7%**	**3.3%**	**4.1%**
SDG3 score	74	82	75		

Source: IMF staff estimates, WHO, UN and authorities estimates and data.

Good performing peers are countries with and SDG index 3 above 80, and peers are countries with per capita income between $4000 and $10,000.

VSS spending on health (Health Insurance Fund, excluding budget transfers) is included in public sector spending.

Estimation of education expenditure needs follows that of health closely. Public education expenditure (EE) can be expressed as the sum of teachers' compensation (TCOMP), non-teaching staff compensation (NTCOMP), other current spending (OCURRENT), and capital expenditure (CAP) (equation 1.5). TCOMP can be expressed as the product of the average teacher wage (AWAGE) and the number of teachers (T), and NTCOMP, OCURRENT and CAP as fractions of EE (x, y, and z, respectively) (equation 1.6). Equation (1.7) derives EE as a function of AWAGE, T, and the shares x, y, and z. Furthermore, we can rewrite T as a function of the teacher-to-student ratio (TSR) and the number of students, which itself can be represented as the enrollment ratio (ER) times the student-age population (equation 1.8).

$$(1.5) \quad EE = TCOMP + NTCOMP + OCURRENT + CAP$$

$$(1.6) \quad EE = AWAGE * T + x * EE + y * EE + z * EE$$

$$(1.7) \quad EE = \frac{AWAGE * T}{(1-x-y-z)}$$

$$(1.8) \quad EE = \frac{AWAGE * TSR * ER * SAP}{(1-x-y-z)}$$

Derivation of reference values for education follows that of health, with UNESCO data on most components used to derive the average wage following identity (1.8) ($AWAGE = \frac{EE*(1-x-y-z)}{TSR*ER*SAP}$). Good performing countries follow similar classifications as for health, with GDP per capita between $3000

and $10,000 and an SDG4 score of 80 to 100. Targeted 2030 enrollment rates (ER) are assumed to be 100 for pre-primary, primary, secondary, and 40 for tertiary education.

Vietnam has achieved above-average education outcomes in its income group, and an additional public spending increase in percent of GDP is not necessarily required to improve education outcomes further (Table 2). Vietnam's education outcomes are slightly above the median country, and education spending (both public and total) is significantly higher. Teacher salaries compare to the average top performer, while the student-to-teacher ratio is about average among peers. Yet, Vietnam's enrollment rate is already at that of the average good performer. Table 2 shows the spending needs by 2030 if Vietnam was adopting spending characteristics similar to the good performers in the comparator income group. Additional public and total spending will likely not be needed.

Education remains a top priority for the government, and a change in the policy that envisions 20 percent of total budget spending earmarked for education is unlikely to change in the near term. The Vietnamese government does currently not target a reduction in student-teacher ratios.[12] However, Resolution 104 issued in early August 2018 agreed with MOET's proposal on waving tuition fees for 5-year old children at pre-school level and students at lower public secondary school, which will increase the share of public spending in total education spending.[13] These reforms will likely lead

Table 2. Median Reference Values for Education in Peer Countries and Vietnam

		Peers: $3000 < GDPpC <$10,000		
Median statistics	**Vietnam Latest**	**Peers**	**Good Performer Peers**	**Vietnam 2030**
Number of countries		42	20	
GDP per capita (current USD)	2214	5103	5219	4630
Average enrollment rate	**73%**	69%	**71%**	**71%**
Student-age population (% of total pop)	32%	38%	34%	29%
Teachers per 100 students	**5.4**	5.5	**6.8**	**6.8**
Student to teacher ratio	**18**	18	**15**	**15**
Average teacher salary (current USD)	4584	11240	9999	8913
Teacher salary to GDP per capita ratio	**2.1**	1.9	**1.9**	**1.9**
Teacher compensation (% total spending)	**33.9**	60.9	**55.9**	**55.9**
Other current and capital cost (% total spending)	**66**	39	**44**	**44**
Public education spending to GDP (%)	**5.3%**	4.1%	4.0%	**4.8%**
Spending per student (current USD)	630	964	1,059	1,078
SDG4 score	81	80	86	
Private spending share	**20.5%**	15.4%	**15.4%**	**15.4%**
Total Education Spending (% of GDP)	**6.7%**	4.8%	4.8%	**5.7%**

Source: IMF staff estimates, World Bank, UN, UNESCO and authorities estimates and data. Good performing peers are countries with and SDG index 4 above 80.

[12] Based on Decision 2161 of MOET, 2030 targets of student-teacher ratios are less ambitious than the ones used for calculation here, with a student-teacher ratio for pre-primary of 15, primary of 20, and secondary of 22. If the resulting lower average student-teacher ratio was implemented, the additional fiscal space could be used for targeted education initiatives, such as intensified out-of-school training and training on IT.

[13] The state budget will also support tuition for students at private schools in poorer and remote areas.

to higher enrollment rates than in top performing peers, and could result in a reduction of the private spending share. Additional plans are limited beyond 2020.

B. Spending Needs in Infrastructure

Water Spending Needs

Access to save water remains a public priority in Vietnam. The Law on Water Resources and the National Strategy on Water Resources are two important policies to implement SDG 6. In addition, the National Target Programs (NTP) on New Rural Development (2016-2020) and on Sustainable Poverty reduction (2016-2020) are especially focused on meeting the water needs of the poor, ethnic minorities and those living in remote areas.

Going forward, based on the World Bank WASH costing model, Vietnam would need to spend 1.1 percent of 2017 GDP per year total to provide safe water to all households and end open defecation (Table 3).[14] This result is mainly driven by the need to expand safely managed water

Table 3. WASH Spending Needs Assessment for Vietnam – World Bank Model

	Ending	Basic			Safely Managed		Total
	OD	Water	Sanitation	Hygiene	Water	Sanitation	SDG
Total cost (million USD)	16	1,249	2,581	56	15,693	10,715	30,308
Annual cost (million USD)	1	96	199	4	1,207	824	2,331
Total cost (percent of 2017 GDP)	0.0%	0.6%	1.2%	0.0%	7.1%	4.9%	13.8%
Annual cost (percent of 2017 GDP)	0.0%	0.0%	0.1%	0.0%	0.5%	0.4%	1.1%

Source: IMF staff calculations on World Bank Global WASH Cost.

supply. In recent years, the private sector has been increasingly encouraged to participate in water supply, especially in areas of high population density. Preferential land access and loan subsidies are provided. The biggest concern remains the fragmented water supply in remote areas, where donor assistance is still targeted, as well as high and increasing maintenance costs. Unofficial government estimates show that current spending on water is about 0.6 percent of GDP, and about VND 300 trillion in additional spending needs until 2030 are predicted (6 percent of 2017 GDP). Thus, the average cost estimate of the WASH model is comparable to the sum of current public spending and estimated additional needs per year.

Electricity Spending Needs

SDG Target 7.1 defines the electricity target as: "by 2030, ensure universal access to affordable, reliable and modern energy services." In the costing exercise, two components of costs are measured: (1) *How much would it cost to expand electricity capacity to extend the coverage to 100 percent of the population, while taking into account the population growth and maintaining the same initial level of electricity consumption per user* (INV_1), and (2) *how much would it cost to elevate the level of electricity consumption per user to some higher benchmark* (for example the median level

[14] See Hutton and Varughese (2016) for a detailed description of the model, which has unit costs calibrated at the country level. A similar WASH model estimated by UNICEF calculated annual needs of 1.2 percent of GDP to reach the additional population, and 0.3 percent for maintenance of already existing water infrastructure. Please see https://data.worldbank.org/indicator/SH.H2O.SMDW.ZS for a description of the WASH model and its indicators.

of emerging market electricity consumption, or the individual country's current aspiration) (INV_2). Both INV_1 and INV_2 depend on a unit cost factor to reach the total cost. World Bank (2013) assumes a unit cost of $2,258 per kW of generating capacity, including associated network cost. The system of equations can be represented as

$$
\begin{aligned}
INV &= INV_1 + INV_2 \\
INV_1 &= \left\{ (1-a) * P + \left[P * (1+g)^T - P \right] \right\} \Big/ T * w * C \\
INV_2 &= (\hat{w} - w) * P * (1+g)^T * C / T
\end{aligned}
\tag{1.9}
$$

where *a* is the fraction of the population with access to electricity, *P* is the population level, *g* is the population growth rate, *T* is the number of years to reach the SDG goal, *w* is the level of electricity consumption per user, $\hat{w}$ is a benchmark level of electricity consumption per user, and *C* is the unit cost to generate electricity ($2,258).

Full electricity coverage in Vietnam has almost been reached, but the expansion of the current grid and power generation to accommodate the increase in per capita electricity consumption will require significant resources (Table 4). Per capita consumption is expected to grow 8 percent per year on average until 2030 (Danish Energy Agency 2017), leading to costs of an additional 3.3 percent of GDP per year. Most of the increase in electricity generation will be carried out by the electricity SOE (EVN) and the private sector. EVN is currently not receiving public transfers. The extension of the electricity grid for renewable energy will need major investments that EVN might not be able to finance, and mass storage facilities (for example for solar power) still need to be developed. The domestic private sector is expected to increase its participation, but the share of public costs in electricity expansion will likely be significant.

Table 4. Spending Needs for Electricity until 2030

Electricity access at starting period	**100%**
Annualized Population Growth	0.8%
Electricity consumption per user at starting period (kwh)	1,866
Unit cost incl. generation and transmission ($)	2,258
(A)	
Annual cost to reach universal access while maintaining initial consumption	357,377,537
As percent of GDP at starting period	**0.2%**
(B)	
Expected GDP Growth	133%
Expected consumption per user based on GDP Growth	2,139.21
Target consumption per user (enter government target, or choose from distribution table below)	**5072**
Additional annual cost to reach target consumption	**6,555,758,403**
As percent of GDP at starting period	**3.2%**
(C)=(A)+(B)	
Annual cost to reach universal access and target consumptio	6,913,135,939.77
As percent of GDP at starting period	**3.3%**

Notes: 2018 and 2030 electricity consumption have been approximated based on 2014 per capita consumption estimates (World Development Indicators) and 8 percent electricity demand growth rates per year (MoIT 2017).

Road Spending Needs

Road spending needs are estimated based on road density, used to proxy transportation performance related to SDGs. The UN SDG documents do not have specific targets for road infrastructure. However, SDG Target 9.1 states the following goal: "Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all." In this exercise, we define the target road density as *the level of road density in a country which would be required to support economic growth and the country's demographic trend*.

A regression is used to derive the determinants of network needs. Road density is regressed on variables capturing the size and composition of the economy, including GDP per capita, population density, agriculture and manufacturing sector shares in the economy, the urbanization rate, as well as the Rural Access Index (RAI), for a cross-section of low-income developing countries and emerging market economies (see Fay and Yepes, 2003, for a comparable estimation of infrastructure needs). Based on data constraints, a pooled regression is estimated. Using the regression results, the additional kilometers of roads needed to ensure road access for an increased RAI are estimated, accounting for projected changes in population and GDP per capita through 2030.

The rural access index (RAI) is relatively high in Vietnam (84 out 100 in 2004, and higher today).[15] Current rural access is set to 90 percent and is estimated to increase by an additional 5 percent by 2030. Increasing the RAI by 5 percent (given population and GDP growth) translates into an increased road density of 1054 km per 1000 km^2, resulting in an additional 68,700 km of roads (Table 5).

Table 5. Road Spending Needs

	Today	2030
Population	93,456,712	103,117,320
Area (Sq Km)	331,230	331,230
RAI	90%	95%
Km Roads	280,547	349,193
of which: Highway	*1000*	*6500*
Road Density (Km per Sq Km)	**0.847**	**1.054**
New Roads		
Additional Km Needed		**68,646.25**
Unit cost 2-lane paved ($/Km)		1,000,000
Unit cost highway ($/km)		6,400,000
Total Cost		98,346,246,547.17
Annual Cost New Roads		7,565,095,888
% of GDP		**3.7%**
Maintenance Costs		
Depreciation rate		5.00%
Average annual maintenance cost		1,584,144,151
% of GDP		0.8%
Total annual cost (New plus Maintenance)		9,149,240,039
% of GDP		**4.4%**

Source: IMF staff estimates.

Costs to build roads in Vietnam varies greatly depending on the type of roads. IMF (2019) estimates unit costs of constructing one kilometer of a two-way paved road as USD 500,000 (see also World Bank 2013, Annex 1.4, and Iimi and others 2016). However, unit costs for a two-lane paved road in Vietnam

[15] Today's estimate based on discussions with authorities and the significant increase in road density since 2004. See Rural Access Index, World Bank Group, https://datacatalog.worldbank.org/dataset/rural-access-index-rai

are likely higher and set to USD 1 million here.[16] In addition, significant highway projects are underway, which should be accounted for. Of this, about 5,500 km will be new highway construction, with the Ministry of Transport currently targeting expressways between 6,400 and 7000km total by 2030. Unit costs for highway construction are significantly higher, estimated at $6.4 million.

With these cost estimates, total new construction would require about 3.7 percent of GDP additional spending per year. To account for depreciation, the total cost of the additional kilometers is increased by 5 percent. Together with maintenance costs, spending needs are estimated at 4.4 percent of GDP per year.

The private sector is increasingly targeted for infrastructure development in Vietnam, but currently insufficient regulations and high risks have limited the number of large PPPs in the road sector.[17] The authorities' expansion plans focus on the North-South Highway Number 1, which, given the geographic realities of Vietnam, will require significant resources. The Ministry of Transportation is giving priority to PPPs for this expansion. Rural road expansion remains a priority for the government.

In summary, total additional spending needs into the 5 subsectors is estimated at 7 percent of GDP by 2030 (Table 6, Figure 10). Annual spending needs are thereby not estimated for education and health, which are 2030 targets instead, and annual needs are constant for roads, electricity and water. Additional spending needs are based on current budget provisions above which spending would need to increase. In the absence of public spending plans, uncertainties about targets in some sectors, high data uncertainties (including 2017 budget provisions for roads, electricity and water), and uncertainties surrounding private sector participation, these estimates should be understood as a general trend rather than precise forecasts. The share of public sector spending (excluding SOEs) is approximated at around 4.7 percent of GDP.[18] As only 5 of the 17 SDG goals are costed here, overall public spending needs are likely to be significant.

IV. MEDIUM-TERM FINANCING STRATEGY

Vietnam has developed a significant institutional framework surrounding its social-economic development agenda. The Ministry of Planning and Investment (MPI) has played the leading role in coordinating ministries and related agencies and implementing the 2030 Agenda and National Action Plan. The National Council for Sustainable Development and Competitiveness Improvement was set up in 2005, with a mandate to advise the Prime Minister on sustainable development objectives. Various ministries and localities have also established Steering Committees or Offices for Sustainable Development. In addition, the Vietnam Business Council on Sustainable Development (VBCSD) was set up and led by the Vietnam Chamber of Commerce and Industry (VCCI) to foster involvement and participation of the business community in a sustainable development process. The

[16] Decision 706/2017 of the Ministry of Construction sees the average unit cost of a two-lane paved road in the Delta area at $2.6 million.

[17] There are currently 68 PPP projects at the national level. Smaller PPPs at the subnational level are numerous, and their exact number is unknown given gaps in monitoring and reporting.

[18] Estimates on private sector participation across sectors have been approximated following conversation with the authorities about likely options going forward. 2016 budget provisions are approximated based on 2016 GSO data, which group electricity with gas, steam and air conditioning supply, and roads with overall transportation and storage.

2030 National Action Plan also emphasizes the importance of partnerships and clearly assigns tasks and responsibilities to respective stakeholders at both central and local levels in SDG implementation.

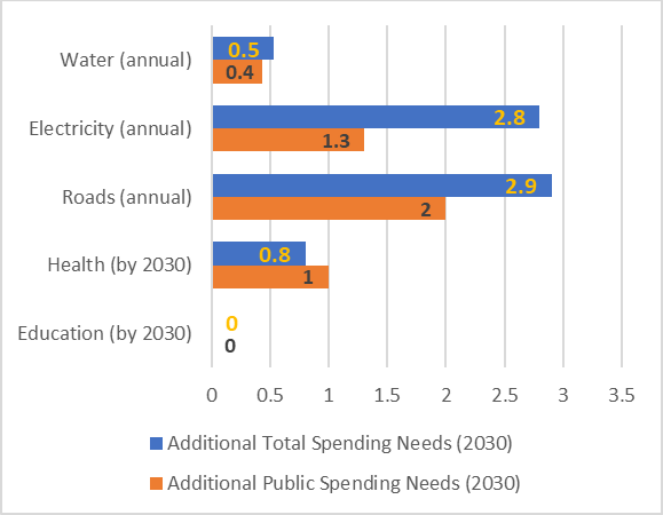
Table 6. Total and Public Spending Needs – Preliminary Estimates

	Total Spending (2017 Estimates)	Budget Provision (2017 Estimates)	Total Spending Needs (2030)	Total Public Spending Needs (2030)	Additional Total Spending Needs (2030)	Additional Public Spending Needs (2030)
	A	B	C	D = C minus estimated private sector share	E = C-A E = C -B if A= (-) E = 0 if (C-A) < 0	F = D - B if (D - B) > 0 F = 0 if (D - B) < 0
Education (by 2030)	6.7	5.3	5.7	4.8	0	0
Health (by 2030)	5.4	2.7	6.2	3.7	0.8	1
Roads (annual)	-	1.5	4.4	3.5	2.9	2
Electricity (annual)	-	0.5	3.3	1.8	2.8	1.3
Water (annual)	-	0.6	1.1	1	0.5	0.4
Total (vertical sum)		**10.6**	**20.7**	**14.8**	**7.0**	**4.7**

Notes: Additional health spending is a cost estimate average between authorities' plans (targeted ratio of doctors per 1000 inhabitants of 1.1 by 2030) and resulting costs if Vietnam behaved as top performing peers (ratio of 2.3).

Official spending plans beyond 2020 are not available, and specifics on SDG implementation will remain scarce before the new National Strategy (2021–2030) is finalized. The socio-economic development plan 2016–2020 provides specific targets across sectors, without specifying financing sources (except for broad education and health spending provisions). For example, of the original proposed public investment, only half was agreed to given financing constraints under the public debt ceiling. However, given the breadth of the SDG goals, the majority of funding for medium-term public investment plans (2016–2020) is being channeled towards implementing the SDGs. Going forward, scattered financing estimates exist, such as an estimate of VND 105 trillion for the east-side of the North-South highway (more than half of which is expected from PPPs), but an overarching financial needs assessment is not available.

Figure 10. Additional 2030 Public and Total Spending Needs



Source: IMF staff estimates.

Financing for additional public spending for SDGs is limited in Vietnam. In 2018, public debt stood at 55.6 percent of GDP (GSF classification), a good 10 percent below the statutory debt limit of 65 percent. The government has

repeatedly signaled that breaching this debt limit within the law will not be an option. In addition, IMF analysis (Article IV 2018) has shown that increasing the debt limit is not recommended, given significant macroeconomic risks, such as potential growth and interest shocks, as well as contingent liabilities and age-related spending needs in the longer term. Therefore, while some limited fiscal space is available, an increase in the public deficit and debt is not an option in the medium-term.

The revenue ratio in Vietnam is high for its income group, and ODA is declining. At 24.5 percent of GDP (18.5 percent tax revenue), the public revenue-to-GDP ratio is relatively high (Table 7). While tax policy changes are under discussion, such as an increase in the VAT rate, numerous tax incentives to stimulate the private sector and declining oil and trade revenues make an increase in the overall tax ratio unlikely in the near to medium term. In addition, Vietnam's 2010 graduation to lower middle-income status has led to a drastic decline in development assistance. In the past, development assistance played a minor role in education and health spending, but a large role in the water, road and electricity sectors, which received most of the donor support. While ODA will continue to remain an important financing source in some sectors (especially water) for some time, additional concessional funding will be difficult to mobilize.

Table 7. Vietnam: Summary Table (percent of GDP, 2018)

	Value
General Government Revenues	24.5
Tax Revenue	18.5
General Government Expenditure	28.8
Fiscal Deficit	-4.4
Gross Government Debt	55.6
Total Investment	33.5
General Government Investment	8.0

Note: IMF calculations using IMF World Economic Outlook and World Bank health and education data.

Given these constraints, Vietnam is aiming at increased private sector participation to mobilize additional financing for investment and some areas of development. While public spending for both health and education is set as a target or will increase further, the private sector is encouraged to participate. In education, much of the pre-primary education is likely to remain privately funded. Hospitals are increasingly self-reliant on fees and charges, and out-of-pocket spending is projected to remain high.

The government is aiming at increasing self-reliance of companies in the electricity, water and road sectors. The public electricity company EVN is expected to implement most of the needed investments to expand the electricity grid, and private domestic investment and FDI into electricity generation are expected to increase further. For example, as of 2015, 29 percent of Vietnam's power generation was private (ADB 2015). However, given the size of investment needs, public sector investment will likely be required to support EVN in the medium-term. Private sector participation in the form of PPPs is especially sought after in the road sector. The private sector is also encouraged to participate in the water sector, but fragmented rural water access and high costs will continue to require ODA and public-sector support. The Government continues to improve an enabling legal environment and encourages foreign and domestic private sectors to invest and do business in line with sustainable development principles.

Another financing source comes from achieving efficiency gains in public spending. The September 2018 IMF FAD PIMA mission confirmed significant weaknesses in the public investment

management (PIM) system, likely leading to significant losses of public money. Increasing efficiency could therefore result in noticeable savings, freeing up space for additional needed infrastructure. The government has started to take steps: The new Public Investment Law was issued in 2019, and a revision of the PPP framework is underway to improve the regulatory framework. In addition, the government has made efforts to streamline recurrent spending, for example by a requirement to reduce the public-sector staff headcount by 10 percent by 2020 to help create fiscal space for needed investment and maintenance spending.

Vietnam is one of the world's most affected countries by climate change and sudden natural disasters, which will affect the SDG implementation process. The government therefore is increasingly focusing on climate change adaptation and green growth. The "Vietnam Green Growth Strategy" with a Green Growth Action Plan will directly impact most SDGs (though health and education will be impacted only indirectly), and many projects and project financing, particularly for renewable energy, have been identified until 2020. Green growth will continue to play a central role in the national strategies beyond 2020. For example, the MOF is currently improving policies on environmental protection charges for wastewater and emissions to promote green and sustainable economic development.

V. CONCLUSION

Vietnam's development success rested on broad based economic reform and an inclusive growth agenda. This paper sheds light on some of the main development successes. Vietnam implemented a leaving no one behind policy in education (and other sectors), with a focus on educating the poor, future education needs, and out-of-school education. Electricity received priority, and Vietnam's public electricity company was well managed within a sound financing framework. Donor support was embedded in national development strategies, and decentralization supported provinces and localities to reach the largest part of the Vietnamese people.

Several elements of Vietnam's development success could serve as an example to other countries. Some factors, such as a long coast line (supporting exports) are country-specific, but others could be replicated in other countries. A well planned and successful education reform that includes all children of society, is well-coordinated with current labor market needs but accounts for economic transformation is highly relevant for many low-income and emerging markets today. Similarly, EVN's success story should be studied by policy makers especially in countries with inefficient or insufficient public electricity supply and loss-making public electricity companies.

Still, achieving the remaining SDGs in Vietnam will be a challenge, with total additional spending needs into the 5 subsectors estimated at 7 percent of GDP by 2030. The share of public sector spending (excluding SOEs) is approximated at around 4.7 percent of GDP. As only 5 of the 17 SDG goals are costed here, overall public spending needs are likely to be significant, at a time when ODA is being phased out. Increases in tax revenue, spending rationalization and efficiency gains, and increased private sector participation will be crucial elements to reach Vietnam's development goals.

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