

Viet Nam

Resource Efficiency Policies

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Land and Water

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Foreword

The Asia-Pacific region consumes over two-thirds of the world's natural resources, at a rate of resource efficiency three times lower than the rest of the world. The region is also in a continuous state of rapid urbanisation and economic growth. Such dynamics partly drive the rate of resource use, as infrastructure and housing are built for the first time and the economy transitions from primary to manufacturing activities.

The United Nations Economic and Social Commission for Asia and the Pacific seeks to support cities integrating resource use sustainability into their operations and development strategies. ESCAP is partnering with an institution with internationally recognised expertise in resource efficiency. The Partner Institution, CSIRO, is the world's leading research institution dealing with resource efficiency and material flows, which are the basis for designing sustainable consumption and production policies. The scientists at CSIRO are part of the UN Environment Programme International Resource Panel (IRP) modelling working group, which developed the modelling framework for the Global Resource Outlook 2019 (GRO2019). The partnership will help in establishing a baseline dataset and preliminary policy studies for countries and cities in the Asia-Pacific region. With access to material flow databases and proprietary systems models integrating global resource flows used in GRO2019, CSIRO is uniquely placed to present historical resource use trends to enhance policy design capacity towards sustainable consumption and production in Asia and the Pacific region.

This report has been produced under an agreement between ESCAP and CSIRO to strengthen the capacity of ASEAN policymakers to analyse the economic, social and environmental effects of resource consumption and the benefits of decoupling economic growth from natural resource use and its environmental impacts.

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Country background

Viet Nam has experienced a significant economic transformation in recent decades, moving from being one of the world's poorest nations to a middle-income economy in one generation¹. This has been achieved through large-scale investments in infrastructure and the successful implementation of an export-oriented development growth model based on added-value industries (Stimson Center, 2021). The country has benefited from its strategic location and connectivity with ASEAN countries. Industries in the Northern region of Viet Nam are linked with economic and commercial activity in China and Laos. Southern industries have more direct connections with Cambodia, Laos, and Thailand's economies. The United States and the European Union will also be important export markets for continuing economic growth in the future.

The country is developing legal frameworks, policies and capabilities to promote sustainable consumption and production (SCP) activities. However, there are still challenges to implementing SCP efforts, including a lack of resources and limited collaboration between sectoral strategies. Addressing existing challenges could contribute to more cost-effective use of natural resources, improved waste management (e.g. higher recycling rates) and more efficient sustainable public procurement. The involvement of the general public and partnerships between private and public organisations could facilitate a transition to SCP systems that support economic growth and environmental sustainability (SWITCH-Asia, 2021b).

¹ <https://www.worldbank.org/en/country/vietnam/overview#1>

Macro-economic overview

Viet Nam's economy continues to shift from primary production (agriculture) towards value-added production (manufacturing). The country's economic transformation observed in recent decades has resulted in high rates of GDP growth. From 2010 to 2020, GDP grew by 6% per year, unemployment increased from 1.11% to 2.39%, per capita GDP (US dollars) more than doubled by going from \$1,217 to \$2,785, and the inflation rate was around 5.8% per year^{2,3}. Tax revenue as a proportion of GDP reduced from 22.3% in 2010 to 15.52% in 2020⁴. This declining trend in revenue existed before the COVID-19 pandemic. The government debt to GDP ratio increased from 36.8% in 2010 to 46.7% in 2020⁵. Severe poverty, i.e. people with income below the international poverty line of \$2.19 per day (in 2020 prices), decreased from 4% in 2010 to 1.3% in 2019. These economic changes contributed to a decrease in the Gini coefficient (a measure of income inequality) from 39.3 in 2010 to 35.7 in 2018⁶. The human development index⁷ increased from 0.661 in 2010 to 0.704 in 2019⁸, and during this period, the country's economic complexity rank⁹ moved from 70 to 56¹⁰.

The country's GDP growth rate decreased from 7% in 2019 to 2.9% in 2020. Still, Viet Nam was one of only a few countries reporting economic growth in that period¹¹. COVID-related impacts are expected to slow the country's economic growth, which could have a negative impact on poverty reduction efforts, employment, revenue, and other economic indicators. However, by 2022 the World Bank projects GDP growth of around 5.5% in Viet Nam, driven by recovery in the service sector and steady demand for manufactured products from international markets¹². Cleaner production, consumption and trade are key for continuing the high rates of economic growth observed in the country before the ongoing pandemic.

² <https://datacommons.org/place/country/KHM>

³ <https://data.worldbank.org/indicator/FP.CPI.TOTL.ZG?end=2020&locations=KH&start=1995&view=chart>

⁴ <https://www.ceicdata.com/en/indicator/vietnam/tax-revenue--of-gdp>

⁵ <https://tradingeconomics.com/vietnam/government-debt-to-gdp>

⁶ <https://data.worldbank.org/indicator/SI.POV.GINI?view=chart>

⁷ The Human Development Index is a composite index measuring average achievement in three basic dimensions of human development—a long and healthy life, knowledge and a decent standard of living.

⁸ <https://hdr.undp.org/en/indicators/137506#>

⁹ Countries improve their ECI by increasing the number and complexity of the products they successfully export.

¹⁰ <https://atlas.cid.harvard.edu/rankings>

¹¹ <https://data.worldbank.org/country/vietnam?view=chart>

¹² <https://www.worldbank.org/en/news/press-release/2022/01/13/vietnam-s-economic-growth-is-expected-to-accelerate-to-5-5-in-2022-and-greening-its-trade-would-offer-new-opportunities->

Resource Efficiency Context

Legal framework

Viet Nam's current main socio-economic development framework is based on its Socio-Economic Development Strategy 2021–2030. The country has generated several governmental policy documents related to Sustainable Consumption and Production (SCP). Most of them are national plans toward the Sustainable Development Goals (SDGs), for instance, the National Action Plan on Sustainable Consumption and Production (SCP) by 2020. Other examples are the National Action Plan on Implementation of the 2030 Agenda for Sustainable Development and the roadmap for Viet Nam's Sustainable Development Goals (SDGs) by 2030. In 2020, the government released Vietnam National Action Plan on SCP (2021–2030) supported by the SWITCH-Asia program. Vietnam's National Action Plan on Sustainable Production and Consumption until 2020 and Vision to 2030 are the most comprehensive policy documents to guide the country towards sustainable consumption and production until 2030 (SWITCH-Asia, 2021a). In 2021, Viet Nam released its National Green Growth Strategy for 2021–2030 with a vision to 2050 outcomes.

According to the National Action Plan on SCP (2021–2030), the Ministry of Industry and Trade has primary responsibility for implementing derived actions and is the national coordinating body of relevant ministries, sectors, and localities (Ministry of Industry and Trade of Vietnam, 2020). The plan sets clear objectives and targets towards SCP, including:

- Developing and replicating SCP models within the country.
- Developing legal policies, manuals, and technical handbooks on various SCP topics (e.g. ecolabelling, recycle-oriented design for production sectors, eco-friendly packaging).
- Establishing clear SCP plans, roles, and responsibilities for local action.
- Mainstreaming the SCP concept into training curricula at all levels.

The country has experienced rapid growth of renewable energy over the past six years and the government is committed to minimising future coal-fired power generation and the corresponding impacts on air pollution and climate change. This could cause governance challenges in the country if the transition to renewables is not supported by strategies to protect the livelihoods of people working on coal generation (Stimson Center, 2021).

Sectoral policies related to resource efficiency

Agriculture

Viet Nam's Green Growth Strategies include several policies related to sustainable agriculture:

- developing efficient, sustainable and low-emission agricultural production aiming towards a smart circular economy that can adapt to climate change;
- promoting more efficient value chains, raising the competitiveness of safe, organic products that meet national and international standards;
- developing intellectual property frameworks related to green agricultural products;
- implementing projects that involve preserving and recovering land used for agriculture, forestry, fishery, aquaculture;

- incentivising policies and mechanisms such as credits, insurance, taxes and market incentives with certificates for sustainable forest management compliant with international standards (Government of Vietnam, 2021).

Moreover, the SCP action plan prioritises the development of entrepreneurial capacity (e.g. through the dissemination of training material) to implement and replicate models of sustainable farming, organic agriculture, and sustainable trade villages (Ministry of Industry and Trade of Vietnam, 2020).

In 2022, Viet Nam issued the Sustainable Agriculture and Rural Development Strategy 2021–2030 Vision to 2050. The document focuses specifically on promoting sustainable agriculture and rural development. The country has set targets to increase agricultural productivity and income from agricultural labour as well as to ensure sustainable food production. To achieve those targets, the government expects to sustain annual growth rates of 10 to 15% in safe production processes in agricultural areas and a yearly growth rate of 8% in aquaculture areas promoting sustainable practices (Ministry of Planning and Investment Government of Vietnam, 2019a).

Transportation and internet

Viet Nam's investment in transportation infrastructure is higher than many of its neighbours, which has resulted in significant improvements in physical connectivity. Road transportation in Viet Nam accounts for 86 to 90% of all transport demand, 4.5 to 7.5% of domestic transportation occurs in inland waterways in the Mekong Delta, 1 to 2% is based on the railway network, and a small proportion is covered by air transportation. One of the challenges in the transportation sector is the inadequate coordination between different jurisdiction levels. This has resulted in imbalances in the country's supply and demand of transport infrastructure (Stimson Center, 2021). Hanoi and Ho Chi Minh City are building urban transit systems to help reduce traffic and improve air quality. For instance, the 13-km Hanoi Metro line, the first urban transit system in the country, began operation in late 2021, servicing 12 stations from Ba Đình District to Hà Đông District (Viet Nam News, 2021).

The Ministry of Transport (MoT) is responsible for implementing policies to improve the domestic transport sector and contribute to green growth. Some of the policies include:

- restructuring freight transportation by shifting from heavy use of roads to using inland waterways, seaways and railways;
- encouraging vehicles to use clean, cheap, and efficient energy;
- investing in research and development for technologies to improve public transport infrastructure;
- developing high-volume public transport infrastructure, non-motorised traffic infrastructure, and the infrastructure to connect between different modes of transportation;
- developing green logistics centres and green ports.

The National Green Growth Strategy has set targets including a 40% rate of public transportation use, and 100% of new buses using clean energy, by 2050 (Government of Vietnam, 2021). Furthermore, MoT is responsible for developing and disseminating guidelines and information on sustainable procurement for ecolabel products, giving priority to energy labelling and ecolabel products in line with national and international regulations. At the same time, the Ministry of Industry and Trade is responsible for guiding green public procurement (Ministry of Industry and Trade of Vietnam, 2020).

Energy

Data from the Mekong Infrastructure Tracker indicates that, as of 2021, coal provided the largest proportion of energy (34.7%) in the country, followed by hydropower 27.8%, solar photovoltaic 22%, natural gas 11.6%,

wind 1.7%, oil 1.4%, and biomass and waste <1%. Electricity demand from 2017 to 2021 increased at an average of 10% per year, and 8% average annual growth is estimated until 2035. The growth of solar energy supply in Viet Nam has been significant in the past five years, and there are several ongoing solar and wind projects across the country. However, the rapid expansion of renewable power generation and limited transmission capacity cause grid congestion (Stimson Center, 2021).

The government promotes energy efficiency and national energy use improvements; reducing energy consumption in manufacturing, transportation, commercial and industrial activities; utilising domestic clean energy sources and reducing dependency on fossil energy; and increasing the proportion of renewable energy and local energy sources. The Ministry of Industry and Trade is responsible for promoting sustainable consumption and production of energy to achieve green growth. This includes improving sustainable energy and irrigation infrastructure to make it more economically and environmentally efficient, enhancing electricity distribution through new technologies and building a smart electricity grid. The Green Growth Strategy sets some energy targets by 2050, such as reducing primary energy consumption per unit of GDP by 1% per year and reaching 25 to 30% of the total primary energy supply generated through renewable sources (Government of Vietnam, 2021).

Water

The Current Green Growth Strategy aims at strengthening water, land and biodiversity management through the promotion of efficient use of those resources, the protection of terrestrial ecosystems, and protecting and promoting the efficient use of water resources to achieve water security. The strategy sets the following targets by 2050:

- 100% of urban areas have sewage systems that are synchronously built and refined to eliminate urban flooding;
- 100% of treated wastewater must comply with regulated technical standards before being discharged;
- at least 90% of the population uses sanitised and up to standards water (in compliance with the Ministry of Health's regulations);
- at least 60% of total irrigation areas apply water-saving irrigation methods.

The SCP Action Plan lists prioritised activities to develop, disseminate and replicate good examples of efficient use of resources and cleaner production and water management models and efficient use of water (Ministry of Industry and Trade of Vietnam, 2020).

Material and waste

The government aims to establish mechanisms or policies to develop green and smart urban technical infrastructure systems and establish economic and technical standards for green materials and green and energy-efficient construction. As part of the strategy to develop green resources, the government is expanding the construction of safe, green, clean and smart schools (Government of Vietnam, 2021). The Action Plan on SCP also includes tasks to develop guidelines for auditing the efficiency of construction materials and communicating and raising awareness about the benefits of buildings with green certification for enterprises, organisations and consumers.

Regarding sustainable waste management, the country has set targets to reduce the proportion of municipal solid waste that is buried to 10% in 2030 and to minimise it by 2050; and increase to 95% the proportion of properly managed hazardous solid waste that meets technical standards and regulations by 2030 (Ministry of Planning and Investment Government of Vietnam, 2019b). The SCP National Plan also aims to:

- promote a circular economy for waste through disseminating and replicating models for classifying, collecting, reusing, and recycling waste;
- develop training materials and local capacity to implement circular economy models for waste, particularly in sectors of agriculture, fisheries, electronics, chemicals, thermal power, plastics, paper, and construction;
- promote supply/demand matching, market development for green products and technologies, low-carbon technologies;
- apply biotechnology in waste treatment (Ministry of Industry and Trade of Vietnam, 2020).

The National Green Growth Strategy lists policy interventions to improve waste management, including:

- developing integrated solid waste management strategies and implementing waste treatment technologies to transform waste into resources and materials;
- implementing waste separation at its source and recycling and reusing of solid waste (Government of Vietnam, 2021).

Urban planning and land use

According to the current National Green Growth Strategy, the government aims to improve environmental quality in urban areas through the implementation of sustainable and smart urban development to enhance resilience to climate change impacts. This is expected to improve economic and ecological efficiency and provide favourable conditions for the development and use of public transport. The strategy sets out targets to increase the proportions of properly treated solid waste, recycling, treated wastewater and the rate of public transportation use.

The Ministry of Construction is responsible for formulating a digitised, interconnected, and multi-sectoral database of urban spaces, programs and experimental projects to develop smart and sustainable urban areas and deploy training programs to increase related capabilities. These tasks are expected to support the development and operation of smart and sustainable urban areas (Government of Vietnam, 2021). Additionally, the National Action Plan on SCP sets targets for provinces and cities to organise and raise awareness of SCP, develop local action plans to implement activities aligned with the SCP National Action Plan, and assign responsible agencies for the local implementation of the plan (Ministry of Industry and Trade of Vietnam, 2020).

Industrial sector

In 2019, the United Nations Industrial Development Organization (UNIDO), the Global Environment Fund (GEF) and the State Secretariat for Economic Affairs (SECO) of the Swiss government supported the generation of a review of eco-industrial parks in the world and the documentation of potential strategies and regulations for eco-industrial parks in Viet Nam (UNIDO and Ministry of Planning and Investment, 2019). Such a document was co-developed with Vietnam's Ministry of Planning and Investment to guide the implementation of an eco-industrial park initiative for sustainable industrial zones in Viet Nam. This initiative aims to transform conventional industrial zones into sustainable ones through the transfer, deployment and adoption of clean technologies and practices to minimise hazardous waste, GHG emissions, and water pollutants (UNIDO, 2020). The National Action Plan on SCP aims to raise awareness and knowledge of ecolabelling and to set strategies to implement activities and certification of industrial parks and enterprises which meet the criteria of eco-industrial parks and enterprises, respectively. The plan also sets the target to achieve a 7–10% decrease in resources and materials used by major production sectors such as textiles, steel, plastics, chemicals, cement, alcohol and beer, beverages, paper, and seafood processing. There is also a target of 70% of all industrial parks,

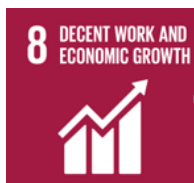
clusters and trade villages to be aware of SCP practices by 2025 and 100% by 2030 (Ministry of Industry and Trade of Vietnam, 2020).

Vietnam's Performance on Resource Efficiency Indicators (SDG 8 and SDG 12)

According to the UN Global Material Flow Database, Viet Nam's Material Footprint (MF) per unit of GDP (indicator 8.4.1) and Domestic Material Consumption (DMC) per unit of GDP (indicator 8.4.2) had a decreasing trend from 1970 to the late 1990s, converging to around 4 kg per USD of the GDP in 1998 (Figure 1). Between 2000 and 2003, both indicators increased from 4 to 6 kg per USD of the GDP. Since then MF per unit of GDP has decreased and DMC per unit of GDP oscillated around 6 kg until 2015 when it started to drastically reduce (Figure 1). Both indicators have been above the corresponding averages for ASEAN countries since 2000.

From 1970 to 2019, Viet Nam had an increasing trend in its MF per capita (indicator 12.2.1) and DMC per capita (indicator 12.2.2), which accelerated after 2000 (Figure 2) (International Resource Panel, 2022). Both indicators were around 4 tonnes per capita in 2000 but DMC per capita increased to 11 tonnes and MF per capita to 9 tonnes by 2010. Since then, those metrics have oscillated around 2010 values. When compared with the ASEAN countries, Viet Nam has lower values in those metrics in most years (Figure 2) (International Resource Panel, 2022).

According to the SCP Hotspot Analysis database¹³, the largest contributor to raw material consumption is the construction sector, with a share of 40%, followed by agriculture (22%) and food (12%). While construction used the largest share of raw materials, it employed only 8% of the total workforce. Agriculture employed the largest share of the total workforce (28%). Significant resource use efficiency improvements could be promoted through policies focused on the construction sector.



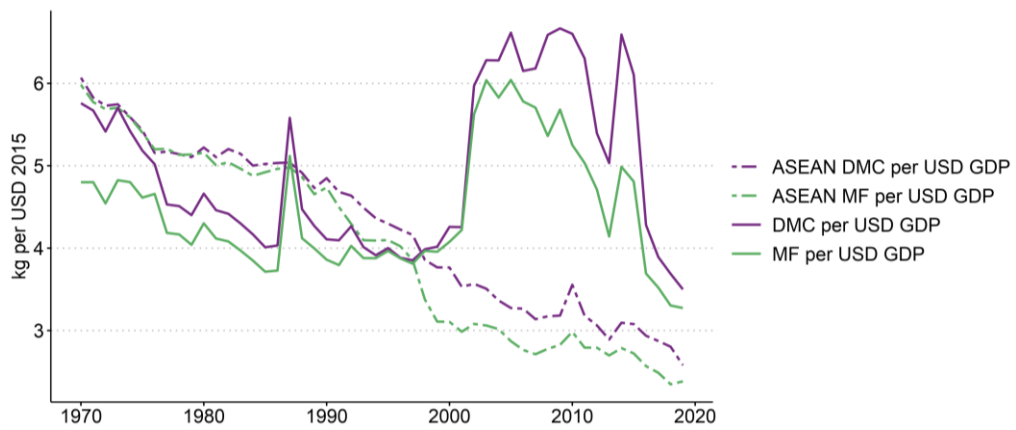
SDG Target 8.4 Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-Year Framework of Programmes on Sustainable Consumption and Production, with developed countries taking the lead.

Indicator 8.4.1 Material Footprint¹⁴ (MF) per unit of GDP: 3.3 tonnes per 2015 US\$

Indicator 8.4.2 Domestic material consumption (DMC) per unit of GDP: 3.5 tonnes per 2015 US\$

¹³ <http://scp-hat.lifecycleinitiative.org/sector-profiles/>

¹⁴ The total material footprint is the sum of the material footprint for biomass, fossil fuels, metal ores and non-metal ores, measured in tonnes per person per year.



Data source: International Resource Panel (2022)

Figure 1 Material footprint and domestic material consumption per unit of GDP in Viet Nam and ASEAN countries



Target 12.2 By 2030, achieve the sustainable management and efficient use of natural resources.

Indicator 12.2.1 Material footprint: 822.3 megatonnes

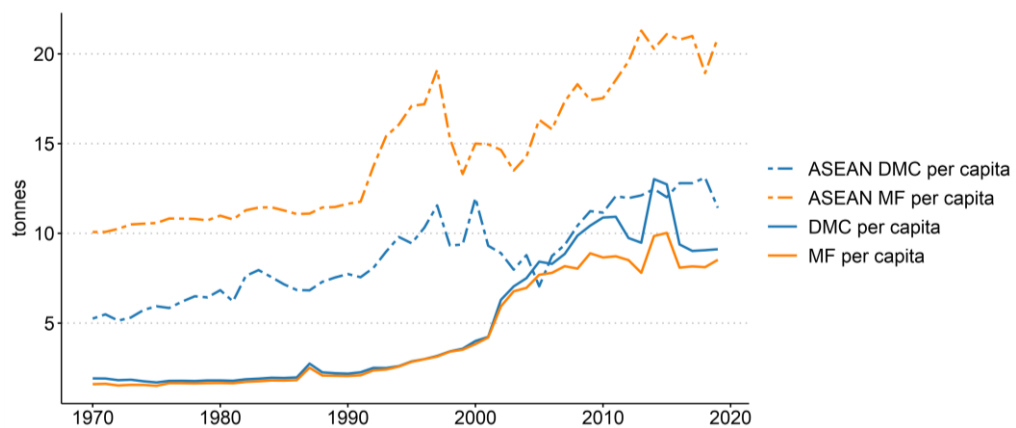
Material footprint per capita: 8.5 tonnes per capita

Material Footprint per unit of GDP: 3.3 tonnes per 2015 US\$

Indicator 12.2.2 Domestic material consumption: 879.3 megatonnes

Domestic material consumption per capita: 9.1 tonnes per capita

Domestic material consumption per unit of GDP: 3.5 tonnes per 2015 US\$



Data source: International Resource Panel (2022)

Figure 2 Material footprint and domestic material consumption per capita in Viet Nam and ASEAN countries

Enabling conditions and opportunities for resource policy implementation

1. Continuous actions and meaningful public participation: As international partners have provided continued support and domestic and foreign private sectors have been actively involved in business, production and social support, more continuous involvement of citizens on the ground could lead to sustainable contributions to the implementation of development plans. This could be promoted through projects supporting SCP capacity building from international partners like the European Union, USAID or ASEAN, such as Sustainable and Equitable Shrimp Production and Value Chain Development, the project for Mainstreaming Energy

Efficiency through Business Innovation Support among small and medium enterprises (SWITCH-Asia, 2021a), and projects related to renewable energy promotion (Stimson Center, 2021).

2. SCP capacity building: A key activity in the SCP National Action Plan is to develop and distribute SCP material for training and teaching at all levels of education, including capability development programs for ministries, sectors, and localities (Ministry of Industry and Trade of Vietnam, 2020). This could enable more practical, collaborative, and empowered action among citizens around SCP strategies and programs and create opportunities for skills development that could be useful for jobs in green industries.

3. Green job creation: Domestic policies to promote SCP and favourable conditions for solar and wind power generation offer significant job creation opportunities (Stimson Center, 2021). Initiatives to develop eco-industrial parks also offer opportunities to create green jobs in local projects that could boost regional development and livelihood opportunities (UNIDO and Ministry of Planning and Investment, 2019).

4. Towards a more circular construction sector: Viet Nam's government realises the importance of recycling and reusing construction and demolition waste and has generated several mechanisms, policies, and laws to promote a circular construction sector (ISPONRE Viet Nam and SWITCH Asia RPAC, 2020). These actions are expected to result in positive natural resource consumption outcomes, e.g. reducing embodied water, energy, and greenhouse gas emissions, and reducing waste going to landfill, thereby improving environmental quality.

5. Media involvement: Engagement with media could be strategic to bringing advocacy in resource efficiency measures (e.g. recycling, water-saving options) to public attention. This could be undertaken through the distribution of information about the potential benefits of resource efficiency and sustainable consumption and production for society and the private benefits of green businesses for private enterprises.

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