

The Philippines 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.

Contents

Foreword	i
Figures	iii
Country background.....	1
Macro-economic overview	2
Resource Efficiency Context.....	3
Legal framework	3
Sectoral policies related to resource efficiency.....	3
The Philippines’ Performance on Resource Efficiency Indicators (SDG 8 and SDG 12)	6
Enabling conditions and opportunities for resource policy implementation	8
References	10

Figures

Figure 1 Material footprint and domestic material consumption per unit of GDP in Philippines and ASEAN countries.....	7
Figure 2 Material footprint and domestic material consumption per capita in Philippines and ASEAN countries.....	8

Country background

The Philippines is one of the fastest-growing countries in Asia. However, it faces issues associated with sustainable consumption and production (SCP) of materials, such as the environmental degradation of air, water and other natural resources. Frameworks, policies and actions involving public and private entities and citizens' engagement are required to achieve sustained economic and environmental improvements.

Due to its topography, the country is also one of the world's most vulnerable to natural disasters (USAID, 2022). The current National Development Plan of the Philippines has the 2022 targets of transitioning into an upper middle-income country and ameliorating COVID-19 impacts on the economy by lowering poverty rates to 14%, achieving unemployment below 8%, and increasing human development (Government of the Philippines, 2021). These short-term targets are framed in the AmBisyon Natin 2040 framework, which defines a long-term vision for the Philippines encompassing multiple dimensions of well-being. The country has implemented several activities to promote a circular economy, but the degree of circularity achieved across sectors is still below the global average of 8.6 % (ADB, 2020a).

Macro-economic overview

The Philippines' economy grew at an annual rate of 6.4% between 2010 and 2019¹. However, significant reductions in consumption and investment, exports, tourism, remittances and other COVID-19 related impacts generated a 9.6% reduction in GDP between 2019 and 2020. The economy grew 3.7% in the first half of 2021, which is consistent with expectations of an economic growth rebound in the coming years².

From 2010 to 2020, unemployment decreased from 3.61% to 2.52%, per capita GDP (2015 US dollars) increased from \$2,433 to \$3,270, and the inflation rate was around 2.98% per year^{3,4}. Tax revenue as a proportion of GDP increased from 11.6% in 2010 to 14.5% in 2019⁵. Government debt to GDP decreased from 51.48% in 2010 to 41.84% in 2018, but by October 2020, it was around 54.5%⁶. Severe poverty, i.e. people with income below the international poverty line of \$2.19 per day (in 2020 prices), has declined sharply from 10.7% in 2009 to 2.7% in 2018⁷. These economic changes contributed to a decrease in the Gini coefficient (a measure of income inequality) from 46.3 in 2009 to 42.3 in 2018⁸. The human development index⁹ increased from 0.671 in 2010 to 0.718 in 2019¹⁰, and during this period, the country's economic complexity rank¹¹ moved from 41 to 28¹².

¹ <https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?locations=PH>

² <https://www.worldbank.org/en/country/philippines/overview#1>

³ <https://data.worldbank.org/indicator/NY.GDP.PCAP.KD>

⁴ <https://data.worldbank.org/indicator/FP.CPI.TOTL.ZG?locations=PH>

⁵ <https://data.worldbank.org/indicator/GC.TAX.TOTL.GD.ZS?locations=PH>

⁶ <https://www.ceicdata.com/en/indicator/philippines/government-debt--of-nominal-gdp#:~:text=Philippines%20Government%20debt%20accounted%20for,51.2%20%25%20in%20the%20previous%20quarter.>

⁷ <https://data.worldbank.org/indicator/SI.POV.DDAY?locations=PH>

⁸ <https://data.worldbank.org/indicator/SI.POV.GINI?view=chart>

⁹ 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.

¹⁰ <https://hdr.undp.org/en/indicators/137506#>

¹¹ Countries improve their ECI by increasing the number and complexity of the products they successfully export.

¹² <https://atlas.cid.harvard.edu/rankings>

Resource Efficiency Context

Legal framework

The current Philippines Development Plan, PDP (2017–2022), is the medium-term plan toward a long-term vision guided by the ‘AmBisyon Natin 2040’ (2015–2040). It offers a framework for development across at least four administrations. The PDP prioritises the health and resiliency of Filipinos by improving the foundation of sustainable development that support multiple strategies of the plan. The government has also participated in the Voluntary National Review of the Sustainable Development Goals (SDG) since 2016. Over the past two decades, the government has enacted several laws and generated several policy documents related to sustainable consumption and production, such as the Biofuel Act of 2006, the Renewable Energy Act of 2008, the *Climate Change Act 2009*, the *Green Jobs Act 2016*, and recently, the Philippine Action Plan for Sustainable Consumption and Production (PAP4SCP) for 2020–2040 (ADB, 2019; Government of the Philippines, 2021; SWITCH-Asia, 2021). There are multiple programs and projects to support SCP and green growth, for instance the Clean Energy, Green Procurement, and Eco-labelling initiatives. The SWITCH-Asia program has technically and financially supported implementing multiple projects across different areas impacting SCP. The GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit) and the Asian Development Bank have also contributed to multiple SCP projects, including supporting the implementation of SCP projects.

Sectoral policies related to resource efficiency

Agriculture

Agriculture, fisheries, and forestry play a critical role in the Philippines’ economy, as agriculture and fisheries account for about 10% of GDP and almost 30% of employment (USAID, 2022). Agriculture is the second largest contributor to greenhouse gas emissions, accounting for 33% of the total (ADB, 2019). Conversion of agricultural land to other uses has increased since 1991, and the sector’s economic contribution has been contracting. Poverty is prevalent among farmers and fishermen. Some other challenges include constraints to land and water resources, vulnerability to climate change impacts and natural disaster risks, and a lack of coordination and overlapping functions within and among agencies. However, SCP has significant potential to be applied to improve agricultural sustainability and food security (ADB, 2020a; Government of the Philippines, 2021).

The PDP sets out strategies for expanding economic opportunities in this sector and ensuring food security, especially since the COVID-19 crisis. The government aims to support the development of the primary sector by:

- Increasing the efficiency of farm operations and reducing costs and post-harvest losses by using more cost-effective machinery and production processes.
- Promoting innovative technologies and practices for sustainable and resilient fish and marine industries.
- Ensuring sustainable and resilient production by promoting intercropping, integrated farming systems and urban agriculture.
- Improving productivity within ecological limits.

The Department of Trade and Industry (DTI) has adopted various green growth policies linking the agricultural sector to SCP practices. The DTI has ongoing cooperation with the Global Green Growth Institute (GGGI) to

promote sustainable waste management from processing agricultural commodities. In collaboration with local government units, the Department of Agriculture (DA) is responsible for promoting SCP agricultural and fisheries practices such as using agricultural waste for new income-generating activities, biogas generation, reusing waste products from food processing, and promoting agroecology and organic farming. Two agricultural practices toward resource efficiency are the National Organic Agricultural Program, which promotes regenerative agriculture, and biofuels from sugar cane and other bioenergy options. One example of the results generated by such programs is the development of an alternative material to natural leather made of cellulose fibres from pineapple leaves that can be used for clothing, footwear or furniture (ADB, 2020a).

Transportation

The transport sector accounts for the largest proportion of energy consumption, 35% in 2017. It is also the main contributor to air pollution in highly urbanised areas. About 73% of air pollutants in 2018 came from mobile sources such as cars, trucks and motorcycles. The Department of Transport (DOTr) is responsible for improving the potential of public transport to foster green growth and job creation, including shifts to greener modes of transportation (ADB, 2020b). The National Action Plan on SCP includes policies to improve transport infrastructure and provide more sustainable transport choices to residents (The National Economic and Development Authority, 2019a). The Philippines is the first country to establish a national framework for ridesharing services such as Uber and Grab. This regulation categorised app-based ridesharing companies as Transport Network Companies (TNC) rather than transport provider companies. Such regulation and digital innovations to develop efficient and effective transportation could reduce vehicle usage and traffic and increase available parking space (ADB, 2020a).

Energy

Consumption of fossil fuels has a significant impact on domestic greenhouse gas emissions and air pollution in the country. In 2019, oil had the largest share of the domestic energy supply (31%), followed by coal (29%), biofuel and waste (18%), wind and solar (15%), and natural gas (6%)¹³. The government passed the *Biofuels Act 2006* to direct the use of biofuels and established a biofuel program to promote the use of biofuels in road transport (biodiesel and gasoline blended with bioethanol). It also established the *Renewable Energy Act 2008* for promoting the rapid development, utilisation and commercialisation of renewable energy (ADB, 2019). Moreover, the Renewable Energy Trust Fund was established under the Renewable Energy Act, aiming to enhance the production and use of renewable energy. This fund:

- finances the research, development, demonstration, and promotion of renewable projects and studies;
- supports the development and operation of new renewable energy resources to increase their competitiveness in the market;
- enhances renewable energy knowledge by accrediting and training institutions (ADB, 2020b).

The country also released the Philippine Green Building code in 2015 and the *Energy Efficiency and Conservation Act* in 2018. The National Action Plan on SCP listed interventions to improve energy consumption and efficiency. These include constructing and renovating public buildings to comply with the Philippine Green Building Code and the Energy Efficiency and Conservation Act and mapping renewable energy sources as part of research and development (The National Economic and Development Authority, 2019b).

¹³ <https://www.iea.org/countries/philippines>

Water

Challenges to the sustainable management of water resources include inadequate wastewater treatment facilities, a lack of water pollution control measures, and weak monitoring and evaluation systems (e.g. wastewater discharge and treatment capacity) that could prevent timely and appropriate interventions (Government of the Philippines, 2021).

The PDP sets out strategies in two main areas for sustaining ecosystem services and improving environmental quality. In the context of sustaining ecosystem services, the government aims to enhance water conservation and efficiency measures to tackle water shortages using nature-based solutions such as establishing riparian buffer strips and restoring floodplains. There is also an emphasis on prioritising interventions and investments in critical watersheds to improve forest protection and reforestation. The government aims to improve the sustainable use of inland wetlands and scale up comprehensive water resource assessments for sustainable water supply, especially in critical groundwater areas and major river basins.

For improving water quality, the plan lists strategies for strengthening the regulation of point sources and non-point sources of water pollution, accelerating the establishment of local wastewater treatment facilities, and promoting wastewater reuse and reclamation for the subsequent intended use (Government of the Philippines, 2021). As a large proportion of the Philippines' population does not have access to sanitation, focusing on waste processing at the municipal level could benefit the urban poor (ADB, 2020a)

Material and waste

Regarding waste management, the PDP set out strategies to manage the recent increase in infectious waste materials and solid waste from single-use packaging in households and healthcare facilities. The government aims to prioritise the approval and implementation of the 10-year solid waste management plan, closure of dumpsites, and clustering of waste management facilities through inter-local government partnerships. One of the main strategies is to accelerate the implementation of waste management measures for solid, toxic, hazardous, and electronic waste, especially at local levels. In February 2022, the government passed the Extended Producer Responsibility (EPR) Bill on plastic waste to make manufacturers and producers responsible for the proper management of plastic packaging waste. This law is expected to help minimise packaging materials in the food and beverage sector at the source (Department of Environment and Natural Resources, 2022; Government of the Philippines, 2021). The Philippine Green Building code of 2015 also listed material sustainability as part of performance standards governing all matters related to resource efficiency of materials and corresponding environmental impacts (Department of Public Works and Highways, 2015).

Urban planning and land use

The PDP aims to improve environmental quality in urban areas through several strategies for different environmental areas. The strategies for air quality management include upgrading air pollution control and emission regulatory frameworks, and improving air quality monitoring systems. For water quality management, prioritised activities include fast-tracking the establishment of domestic wastewater treatment facilities and conveyance systems, supporting wastewater reuse and recycling, upgrading water quality monitoring systems, and strengthening water quality control regulations. For land management, the PDP lists strategies including encouraging the development of walkable cities and expanding green and open urban spaces to improve air quality, people's health and well-being (Government of the Philippines, 2021).

Industrial sector

Mini, Small and Medium Enterprises (MSME) account for about 99% of the total businesses in the country, and 67% of total employment, with wholesale and retail trade as the main industry. As the manufacturing industry increases production, waste generation grows. Despite having industry standards and regulations in place to control the discharge and disposal of harmful wastes, there is a high level of non-compliance in the manufacturing sector, causing many environmental issues, especially air and water pollution. Two challenges in implementing sustainable business are that business goals are not constrained by sustainable practices, as their focus is on growing their businesses, and a lack of monitoring of sustainability levels (ADB, 2019).

The National Action Plan on SCP listed the intention of institutionalising the ‘Polluter Pays Principle’ for consumers and ‘Extended Producer Responsibility’ (EPR) for manufacturers, as mentioned in the material and waste section on EPR on plastic packaging (The National Economic and Development Authority, 2019). DTI has developed various policies promoting SCP, including supporting greening production processes in MSMEs and developing standards for a circular economy. In 2019, DTI had an ongoing collaboration with the Global Green Growth Institute (GGGI) for implementing a cross-cutting project, ‘Greening MSMEs and Promoting Greenpreneurship’, to promote green growth of MSMEs. This project supports initiatives to support micro-enterprises in agricultural value chains that could improve climate resilience and productivity, create jobs and income in rural areas, and develop green business indicators for MSMEs.

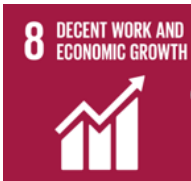
The Philippines’ Performance on Resource Efficiency Indicators (SDG 8 and SDG 12)

According to the UN Global Material Flow Database (International Resource Panel, 2022), the Philippines’ Material Footprint (MF) per unit of GDP (indicator 8.4.1) decreased from 3.08 kg per USD of GDP in 1970 to 2.02 kg in 1983 (Figure 1). From 1984 to 2013, this indicator oscillated around 2.2 kg per unit of GDP and increased to 2.79 kg in 2014. Domestic Material Consumption (DMC) per unit of GDP (indicator 8.4.2) decreased from 4.46 kg per USD of GDP in 1970 to 1.76 kg in 2013. This indicator then increased to 2.6 kg in 2014 and has remained around that level in recent years (Figure 1). These indicators have been consistently below the average for the ASEAN region, indicating higher resource efficiency in the Philippines.

DMC and MF per capita have also been below the average for ASEAN countries from 1970 to 2019 (Figure 2). From 1990 to 2013, DMC per capita was below 5 tonnes. Afterwards, it started increasing until reaching 8.2 tonnes in 2019. MF per capita oscillated around 4 tonnes from 1970 to 2003 and then increased until reaching 8.77 tonnes per capita in 2019 (Figure 2).

According to the SCP Hotspot Analysis database¹⁴, the construction sector used around 22% of domestic raw material consumption with a share of 22%, followed by the food sector with 19%, agriculture with 14% and energy with 10%. While construction used the largest share of raw materials, it only employed 9% of the total workforce. Agriculture employed the largest proportion of the workforce (20%). Therefore, improvements in resource use efficiency in the construction sector could reduce total domestic material demand in the Philippines.

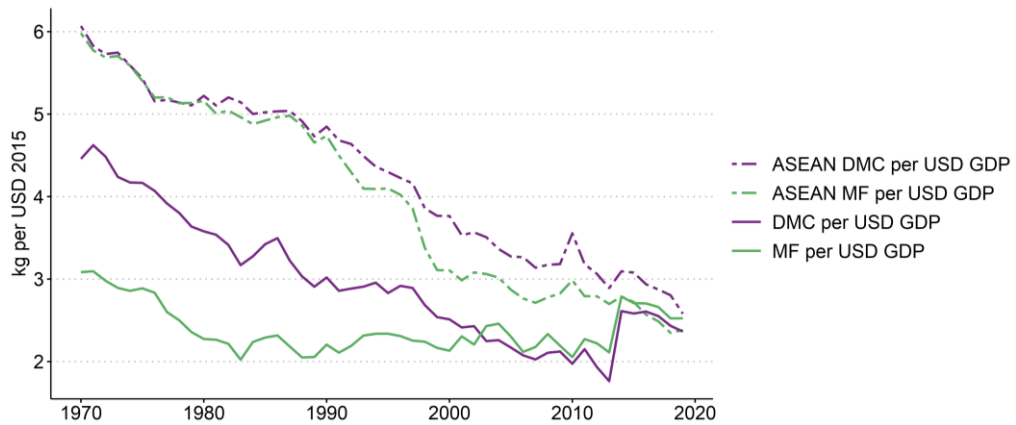
¹⁴ <http://scp-hat.lifecycleinitiative.org/sector-profiles/>



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 Footprint¹⁵ (MF) per unit of GDP: 2.52 tonnes per 2015 US\$

Indicator 8.4.2 Domestic material consumption (DMC) per unit of GDP: 2.36 tonnes per 2015 US\$



Data source: International Resource Panel (2022)

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



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

Indicator 12.2.1 Material footprint: 948.3 megatonnes

Material footprint per capita: 8.77 tonnes per capita

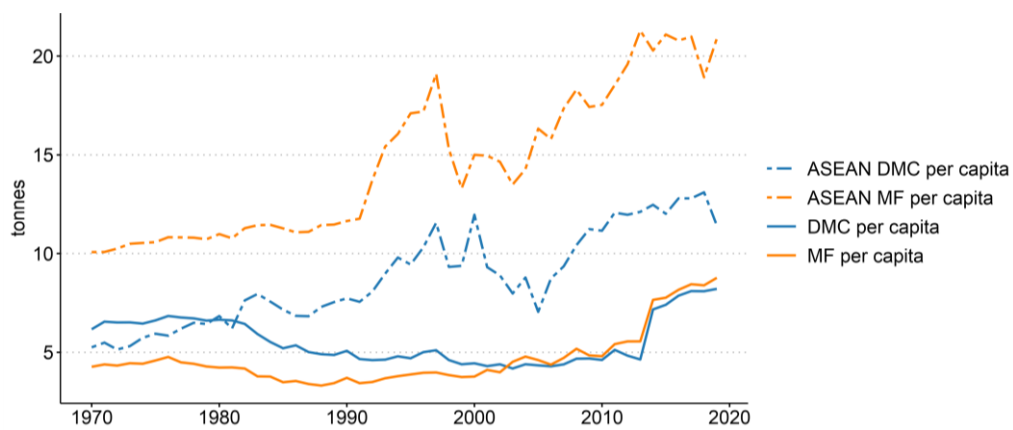
Material Footprint per unit of GDP: 2.52 tonnes per 2015 US\$

Indicator 12.2.2 Domestic material consumption: 887.8 megatonnes

Domestic material consumption per capita: 8.2 tonnes per capita

Domestic material consumption per unit of GDP: 2.36 tonnes per 2015 US\$

¹⁵ 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 2 Material footprint and domestic material consumption per capita in Philippines 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 and production and social support, more continuous involvement of citizens on the ground could streamline the adoption of SCP practices in multiple economic sectors. This could be enhanced by the learnings generated in ongoing or completed projects with positive capacity building outcomes, which could be used to promote SCP practices in other areas. Examples of such projects are the USAID Fish Right Program focused on improving the management of fisheries, mangroves, and other coastal resources in 39 municipalities¹⁶, the Municipal Waste Recycling Program funded by USAID to improve waste management practices and reduce plastic pollution in marine ecosystems¹⁷ and projects related to renewable energy promotion¹⁸.

2. SCP models: Local adoption of SCP practices could enable practical, collaborative, and empowered action among citizens, create opportunities for developing new skills, and create jobs within communities. Using best practices as models to replicate in other regions could help accelerate sustainable consumption and production in the country. Examples of this approach include the Mother Earth Foundation, which provided successful training to multi-stakeholders across the Philippines to improve planning and implementation practices related to ecological waste management, and the Pasig City exemplary municipal waste management which relies on citizens engagement in related activities (ADB, 2020a).

3. Green job creation: It is projected that from 2017 to 2040, energy demand in the Philippines will grow by 80%. Therefore, promoting renewable energy production and consumption and energy efficiency are critical to achieving sustainability goals. The tourism sector is growing rapidly and transforming to adopt SCP practices, e.g. the target of zero-carbon tourism supported by Switch-Asia (SWITCH-Asia, 2021). There are opportunities to create jobs in these two sectors as the government aims to promote renewable energy generation and use and sustainable tourism.

4. Encouraging behavioural changes: Positive reinforcement and indirect suggestions could provide enabling conditions to influence people's decision making processes and behaviours. This approach of 'soft nudges' could help the community to become more circular by increasing environmentally-conscious actions. Some

¹⁶ https://www.crc.uri.edu/projects_page/usaid-philippines-fish-right/

¹⁷ <https://www.dai.com/our-work/projects/philippines-sri-lanka-and-vietnam-municipal-waste-recycling-project-mwrp>

¹⁸ <https://gggi.org/project/project-reference-profiles-philippinesph10-bataan-50mw-solar-farm-project/>

examples include recognising best practices for promoting a circular economy in the country through business awards, e.g. Circular Economy Business Awards for sustainability reporting practices (ADB, 2020a).

5. Economic incentives: Tax mechanisms, preferential loan rates, subsidies, etc., could be used to expedite the adoption of SCP practices or disincentivise unsustainable practices. This is consistent with the 'Polluter Pays Principle' for consumers and 'Extended Producer Responsibility' (EPR) for manufacturers that the Philippines government is implementing. Some examples of this approach include agricultural policies to incentivise biomass recycling (ADB, 2020a) and the *Philippines Green Jobs Act* passed in 2016, which offer incentives to enterprises generating green jobs. Such incentives include tax deductions from taxable income for 50% of the total expenses for skills training and research development, and tax-free and duty-free importing of equipment to create green jobs (ADB, 2020b).

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