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Inputs to the Development of the
ASEAN SCP Framework

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Abbreviations

10YFP	10-year Framework of Programmes on SCP
ACE	ASEAN Centre for Energy
ACSDSD	ASEAN Centre for Sustainable Development Studies and Dialogue
ACSS	ASEAN Community Statistical System
AMS	ASEAN Member States
APRSCP	Asia Pacific Roundtable on Sustainable Consumption and Production
ASEC	ASEAN Secretariat
ASOEN	ASEAN Senior Officials on Environment
AWGEEAP	ASEAN Working Group on Environment Education Action Plan
CSR	Corporate Social Responsibility
EU	European Union
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GPP	Green Public Procurement
MSMEs	Micro, Small and Medium Enterprises
RPAC	Regional Policy Advocacy Component
SCP	Sustainable Consumption and Production
SDG	Sustainable Development Goals
SMEs	Small and Medium Enterprises
SPP	Sustainable Public Procurement
UNEP	United Nations Environment Programme
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
VNR	Voluntary National Review
WGSDGI	Working Group on SDG Indicators

Executive Summary

Sustainable consumption and production remains high in the agenda of ASEAN. The ASEAN Economic Community Blueprint and the ASEAN Socio-Cultural Community Blueprint both stress the need for sustainable and inclusive growth, and collaborative work in integrating SCP in regional, national and local agenda. Indonesia, being the lead coordinating country for ASEAN cooperation on SCP, sought the collaboration of the EU-funded SWITCH-Asia Programme, Regional Policy Advocacy Component (RPAC) in partnership with UNEP and the Asia Pacific Roundtable on Sustainable Consumption and Production (APRSCP) to develop an ASEAN SCP Framework.

The ASEAN SCP Framework is envisioned to support progress in SCP implementation in the region. As a preparatory activity, this Scoping study on *SCP in the ASEAN Member States* was carried out with the objective of

1. Identifying SCP policy frameworks in AMS, and its common themes;
2. Analyzing challenges and opportunities for an ASEAN SCP Framework; and
3. Presenting an outline of the proposed approach for the ASEAN SCP Framework.

SCP Implementation in ASEAN

In ASEAN, the production side has taken much of the focus in SCP efforts, which may be understandable considering the significant manufacturing sector of the region. Measures such as pollution control, cleaner production, waste treatment, and energy and resource efficiency have been implemented having dedicated policies and programs. Market instruments like ecolabeling and sustainable public procurement have also gained support in many AMS. Recent years saw the focus broaden to include the social dimension that is the sustainable consumption side where active participation from the public and other stakeholders on SCP is acknowledged. While each of the AMS have made advances in SCP implementation, some countries have yet to draft a dedicated national strategy, focusing instead on integrating SCP in national development plans and sustainability frameworks, or sectoral strategies and thematic programs. Broadly, the implementation of SCP in the AMS can be observed in any of the following measures (Gilby & Koide, 2018):

1. dedicated national strategy and/or action plan;
2. as part of a broader national strategy;
3. embedded in other sustainability frameworks (such as green growth and green economy);
4. mainstreamed into sectoral policies (such as hazardous waste management and air pollution control); and/or
5. embedded in thematic programs (such as sustainable public procurement and ecolabeling).

Common SCP Themes in AMS

A survey of the diverse SCP implementation in the region revealed 18 common SCP issues and themes in AMS, and were classified in five broad categories:

1. **SCP Needs** in the region as reported by many countries in their Voluntary National Review covers (a) *SCP policy and implementation* and (b) *human capacity*. With the increasing understanding of the need to decouple economic growth with environmental degradation, policies continually respond to sustainability needs to safeguard the planet and future generations. While AMS recognize the vast opportunities of SCP, some have yet to fully adopt a dedicated national plan, and implementation remain to be hampered in part by human capacity. Increasing awareness, technical capabilities, institutional capacity, and skills for green sectors will empower public and private sectors to implement SCP.
2. **Management and Use of Natural Resources** is a central theme to SCP and circular economy among others. Doing more with less represents an aspiration for sustainable growth and development, and this shift to SCP patterns will require adequate plans and approaches in (c) *waste management and recycling* of solid, hazardous and emerging waste streams, reducing (d) food loss and waste, efficiency in the use and development of renewable sources of (e) *energy*, (f) *consumption of natural resources* within the carrying capacity of environment and natural resources, and preventing the loss of (g) *biodiversity and wildlife* to environmental degradation and unsustainable practices.
3. **Urbanization and Mobility (Built Environment)** presents a significant challenge and opportunity in sustainable transitions in the region especially as population, incomes and urbanization continue to rise, and the need for mobility as well. To ensure that development of the built environment promotes livability and sustainability, it needs to follow (h) *sustainable land use and development* practices, consider (i) *sustainable building* standards and materials, allow for (j) *sustainable infrastructure*, and promote (k) sustainable transportation to prevent lock-in of unsustainable design and technologies. At the same time, development needs to be undertaken with (l) *climate change and resiliency* considerations.
4. **SCP Themes** promote alternative green models of growth, and sustainable and inclusive development. Alternatives to the traditional linear economy like (m) *green economy* embody principles of sustainability, resource conservation and circularity, supporting economic competitiveness. Likewise, approaches such as (n) *sustainable industry and SME* and (o) *sustainable tourism* are important to the region because these contribute greatly to livelihood and economic development.

5. **SCP Tools** that are increasingly utilized in the region include a mix of market instruments and education and awareness to promote SCP practice among all stakeholders. The establishment of *(p) sustainable public procurement and ecolabeling* can create broader market opportunities for green products, whereas *(q) corporate sustainability reporting* encourages corporations to support causes beyond the usual corporate social responsibility activities, and involve programs incorporating SCP and the other Sustainable Development Goals. Stakeholder participation is also crucial in SCP particularly in encouraging *(r) sustainable lifestyles and education* for the public and consumers to practice sustainability in households and make informed choices.

Challenges and Opportunities

1. There is a need to **emphasize common goals, but different paths**. Given the vast developmental priorities and the diversity of the region, crafting a framework that can capture a common ground for the AMS in shifting to SCP patterns will be a challenge. The Framework may focus on creating a main goal and using sustainability indicators as metrics of progress of action plans.

2. **Levelling key priorities and sectors** can be an opportunity for regional cooperation. Even as interpretations per country of what could be their pressing problems for SCP are, finding shared interests guided by common goals will strengthen partnerships and collaborations.

3. The Framework can be a way of stepping back to **internalize lessons and forge a mission** to bridge the gap in translating regional SCP knowledge to practice. There are extensive experiences in implementing SCP from grassroots to national level through the support of key partners, and the Framework can be an avenue to bring together all these knowledge, policy and technical knowhow for the greater benefit of the region.

4. **Supporting institutions** through interagency cooperation and partnerships will be key to empowering agencies to deliver relevant services on SCP. Government ministries and agencies are constantly challenged in performing their mandate (e.g., water supply, consumer protection, and food safety) while at the same time incorporating new sustainability frameworks (e.g., SCP, green economy, and circular economy) into these regular functions. Identifying the needs of institutions and facilitating links to relevant institutions can allow for assimilation of new practices and skills.

5. **Connecting structures for efficiency** explores the possibility of establishing links between working groups of ASOEN and with other ASEAN Bodies to streamline work plans and avoid duplication of efforts. Establishing said links and collaborative work can be beneficial as both the ASEAN Economic Community Blueprint and the ASEAN Socio-Cultural Community Blueprint incorporate SCP in its objectives.

Proposed Approach for The ASEAN SCP Framework

This Scoping Document presented a proposed approach in developing the ASEAN SCP Framework. The approach highlights the need for synergy among the vast elements of SCP present in the regional setting (ASOEN Working Groups and initiatives, and other ASOEN bodies with work plan relevant to SCP). The project proposed to create key priorities from the eighteen common themes, and planned to address these through a framework following the Marrakech Process. The framework involves four nodes of action, namely, policy approaches, technology innovation and capacity building, market mechanism and public awareness.

1. Introduction

1.1. ASEAN commitment to sustainable consumption and production

The ASEAN continues to reiterate its commitment to support progress in sustainable consumption and production (SDG 12) and regional development. To this end, the ASEAN has adopted the *ASEAN 2025: Forging Ahead Together* comprising of four plans and blueprints that will advance the region in political cohesion, economic integration, and social inclusion (ASEAN, 2015). In particular, the *ASEAN Socio-Cultural Community Blueprint 2025 (ASCC 2025)* calls for the integration of sustainable consumption and production (SCP) strategy and best practices into national and regional policies (ASEAN, 2016). Mainstreaming circular economy principles and promoting SCP to ASEAN Member States (AMS) necessitates collaborative actions for research and development in greening industries and establishing high technology and knowledge-intensive sectors, and transformative policies to support socioeconomic growth and resilience while at the same time move towards pollution-free and carbon neutral approaches. Furthermore, the ASCC 2025 roadmap includes four components for SCP in the region:

- a. strengthen public-private partnerships to promote the adoption of environmentally-sound technologies for maximizing resource efficiency;
- b. promote environmental education (including eco-school practice), awareness, and capacity to adopt sustainable consumption and green lifestyle at all levels;
- c. enhance capacity of relevant stakeholders to implement sound waste management and energy efficiency; and
- d. promote the integration of SCP strategy and best practices into national and regional policies or as part of corporate social responsibility (CSR) activities.

ASEAN Leaders have also expressed commitment to the global framework of the United Nations 2030 Agenda for Sustainable Development (Sustainable Development Goals) when declaring the ASEAN Vision 2025 in 2015, recognizing complementarities between these two agendas in supporting ASEAN Community building efforts. SDG 12 on SCP involves the following eight targets:

- a. implement the 10-year Framework of Programmes on SCP (10YFP);
- b. sustainable management and efficient use of natural resources;
- c. halve per capita global food waste;
- d. environmentally sound management of chemicals and all wastes;
- e. substantially reduce waste generation;
- f. sustainable corporate practices and reporting;
- g. sustainable public procurement; and
- h. promote universal understanding of sustainable lifestyles.

The ASEAN “Complementarities Initiative” undertaken with the UN Economic and Social Commission for Asia and the Pacific (UNESCAP) resulted to the identification of crosscutting themes and synergies between the ASEAN Community Blueprints and SDGs. Among others, this complementarities framework emphasizes the need for better resource management as it cuts across a majority of the priority areas of complementarity, including infrastructure and connectivity, SCP, and sustainable management of natural resources itself (UNESCAP, 2017).

Recognizing the urgency of the efforts needed to implement the UN Agenda for Sustainable Development, the ASEAN published the *inaugural ASEAN SDG Indicators Baseline Report* (with corresponding online database ASEANstats at www.aseanstats.org) that brings to light challenges in data collection, data monitoring and management, and improvements in support of SDG reporting in the region (ASEAN, 2020). Expanding the capacities of national statistics offices, which are the key data custodians, presents a crucial challenge particularly as the SDG indicators involve vast amounts of data (134 SDG indicators compared to the 25 Millennium Development Goals indicators) and methodologies that have corresponding global standards of reporting. This regional report on SDG presents a baseline status for half of the SDG indicators, noting that monitoring these and the rest of the indicators may be beneficial not only in reporting, but also in planning and policymaking at both the national and regional levels.

1.2. Objectives of this Scoping Document

With its commitment to “leave no one behind” and in accord with ASEAN 2025 Roadmap, ASEAN intends to facilitate the advancement of SCP among AMS through a Sustainable Consumption and Production Framework for the region. This ASEAN SCP Framework is envisioned to promote regional cooperation and collaborative measures for SCP. Especially as the recently launched baseline report on SDG progress by the ASEAN determined challenges in data collection and monitoring of SCP indicators among others, an overarching framework can be a key step for the region to adopt SCP in the national and regional development process. With the ongoing COVID-19 health crisis and socioeconomic challenges, resources are more constrained than ever and progress towards achieving the SDGs are hampered in more ways. Regional cooperation through an ASEAN SCP Framework offers a means by which AMS can pursue concerted efforts and partnerships for the advancement of SCP goals. Moreover, Goal 17 of the SDGs emphasize and regard partnerships as an enabling mechanism to achieve the SDGs.

This scoping document aims to provide inputs to the preparation of an ASEAN SCP Framework:

1. Identification of existing SCP policy frameworks in AMS, and common themes;
2. Analysis of challenges and opportunities for an ASEAN SCP Framework; and
3. Outline of the project approach.

Country briefs (**APPENDIX A-J**) were prepared based on reports by international organizations, and Voluntary National Reviews (VNR), which present country assessments on the progress made towards achieving the SDGs.

2. SCP Implementation in ASEAN

2.1. Progress of SCP in ASEAN

A brief review of the policies on SCP and related sectors reveal countries in the region as having a combination of the following: a comprehensive SCP policy or strategy, national development plan incorporating components of SCP, policies on related themes (e.g., waste management and energy efficiency), and policies on other sustainability frameworks (e.g., green growth and green economy) (**Appendix K**). SCP progress in the region resembles the typical scenario globally with the following characteristics (Gilby & Koide, 2018):

- a. dedicated national strategy and/or action plan;
- b. as part of a broader national strategy;
- c. embedded in other sustainability frameworks (such as green growth);
- d. mainstreamed into sectoral policies; and/or
- e. embedded in thematic programs (such as renewable energy).

The implementation of SCP in ASEAN takes after the evolution of SCP beginning with end-of-pipe approaches to cleaner production to encompassing resource efficiency to lifecycle approach and incorporating its social aspects. The earlier policies enacted in many ASEAN countries comprise general environmental laws that contain provisions on management of pollution and setting of pollution limits (i.e., national pollution control laws and general policies on environmental management). What follows next include policies and projects directed at industries that focus on efficient use of water and energy, and minimization of waste (i.e., solid and hazardous waste management laws, energy efficiency and conservation decrees, energy development plans, and industrial development). Similarly, the SCP programs and projects implemented through technical and financial assistance agreements with external institutions focus on capacity building for industries and enterprises on cleaner production and resource efficient production (**Appendix L**). Some thematic sustainability frameworks have also made its way on the national agenda through policies on green growth, green industry and green economy, and also by being incorporated into national development plans.

After these technical approaches on sustainable production, sectoral approach on SCP and thematic policies on sustainability frameworks, a broader interpretation of SCP encompassing the social dimension followed. This new focus on social aspects of SCP comes at a timely period in ASEAN development being a major global manufacturing and trade hub and having a fast-growing middle class in the world. Against this growth context, the environment and natural resources of the region is under constant increasing pressure from resource extraction and pollution. Consumption need to be sustainable, and countries embody this in policies, such as sustainable and green procurement, and green building. Government programs and other initiatives also begin to push for corporate sustainability reporting, as well as eco-labelling schemes to encourage both manufacturers to produce with less resources and hazardous components, and consumers to consider sustainable products.

Sustainable lifestyles and SCP mainstreaming highlight the need for complementary measures in both sustainable consumption and sustainable production as consumption patterns continue to increase.

Other themes related to SCP include climate change and management of emerging waste streams, such as electronic waste (e-waste) and plastic waste. In addition, the increasing food losses and waste in the region present a significant challenge as this contribute to economic losses, greenhouse gas (GHG) emissions, land degradation and food insecurity. Natural resource consumption and GHG emissions become apparent concerns given the rapid industrialization, urbanization and increasing incomes in the region. Recent concerns in the region with ongoing policy or strategy formulation include marine litter and consumption of single-use plastic.

Many countries in the region have mixed approaches in implementing SCP, mostly having four of the five means enumerated above. Only a few countries have prepared a dedicated SCP policy, yet many appear to have difficulties in data collection and monitoring of SDG 12 indicators based on country-assessed VNR (**Appendix M**). This lack of baseline information presents a critical hurdle in the region to systematically assess its performance against SDG indicators, and create policies and plans to address national and regional challenges. At the minimum, there is a need to develop policies on natural resource use to support data and knowledge on resource availability, and inform policies and plans on efficient use and management of these resources. As the region continues to urbanize, industrialize, and develop into higher income countries, resources will be in intense pressure from these transformations. These socioeconomic gains need to be safeguarded by implementing broader SCP measures, innovative production systems, sustainable capital investments and productivity, and highly skilled human resources.

Various key partners have contributed to completed and ongoing SCP programs and projects that have empowered select sectors and agencies, and continue to address issues of concern. Financial, technical, and policy support from international organizations have been instrumental in many of the achievements in policy framing, capacity building, and technical approaches to SCP in the region, yet much more remains to be accomplished in SDG 12. In the continuous process of SCP implementation in the region, an internal examination and dialogue on the priorities for SCP implementation, as well as, a unifying and synergistic approach to all the developments may offer a concrete next step in forging a harmonized and dedicated path for sustainable growth.

2.2. Common Themes in SCP in ASEAN

This section discusses common SCP issues, themes, and programs among AMS and ASEAN structures and initiatives as input to the priority sectors and actions of the ASEAN SCP Framework. These commonalities have been identified from a survey of national policies and plans in the AMS (**Appendix N**). Broadly, these common themes can be classified into SCP needs, management and use of natural resources, urbanization and mobility, SCP themes and SCP tools (**Fig. 1**).

SCP Needs

a. SCP Policy needs and implementation

As indicated in the previous section, a few countries in ASEAN have a dedicated policy on SCP, and these have been developed using principles, such as life cycle and sufficiency economy. On the other hand, SCP elements integrated in national development plans feature action items on promoting sustainable lifestyles, green consumption, and green public procurement, recognizing the need for sustainable consumption by end-consumers as well. This social dimension is particularly important in light of the development needs of the region as many are in the lower-middle income segment that have more infrastructure and social services to fulfill along with economic growth prospects. These development gaps and sustainable development challenges vary among AMS and entail specific policies, financial commitments, and technical and institutional capacity (IMF, 2018).



Figure 1. Eighteen common SCP thematic issues in AMS classified into five categories

b. Human capacity

While AMS vary in their approach to implementing SCP, data collection and monitoring appears to be a main challenge among countries when reporting SDG 12 targets and indicators. Beyond the technical difficulties in setting up and maintaining data collection and monitoring systems, identifying information to be collected and adopting global reporting frameworks may be a barrier to national statistics offices in charge of providing these data. Even when the concept of SCP may not be relatively new, the idea of circularity, resource efficiency (from a macroeconomic perspective), and material consumption may not be fully incorporated into regular economics data reporting of gross domestic product (GDP), household consumption, productivity, and the like. Therefore, institutional capacities from data gathering to policy implementation in the region need to be strengthened. New and extended knowledge and skills among work forces are needed, especially among agency staff tasked with the planning, designing, and implementation of related policies (UNEP, 2015). The development of knowledge, skills, and attitudes towards the transition to greener, more sustainable markets will help develop a better quality of life for low-skill workers, increase job creation, and aid poverty alleviation (UNEP, 2015).

On the other hand, jobs and skills continue to be challenges for developing countries particularly as countries acknowledge and seek to address global issues, such as climate change and sustainable development (Maclean, Jagannathan, & Sarvi, 2013). More than 40% of all people in the Asia Pacific region work in resource extraction and production sectors, mainly in biomass production (UNEP, 2019). Greening these resource extractive and related sectors will involve identifying key skills, and technical and vocational education to support inclusive and sustainable growth in the region (Maclean, Jagannathan, & Sarvi, 2013).

Management and use of natural resources

c. Waste management and recycling

Waste management policies in the region already incorporates 3R principles, with implementation yet to be fully observed. Managed largely by public entities through government ministries and agencies, waste management remains to be a challenge in most of the region. Moreover, infrastructure for proper waste management and recycling remains lacking. The resulting waste leakage necessitates further secondary containment measures and costs. Consideration of these consequences and opportunities for recycling for high value products can provide the necessary push for strengthening waste management practices and resource use. How resources and raw materials are processed and used affect the quantity and quality of waste generated.

Aside from solid waste management, plastic and electronic wastes are emerging concerns in the region. With Southeast Asia being one of the largest contributors to the plastic waste, waste trade further increases the amount of waste being disposed in the region where solid waste management mostly remains a challenge and waste leakage widespread. In Southeast Asia, plastic waste makes up about 14% of the overall municipal solid waste (SWITCH-Asia, 2018). The Southeast Asian region is also one of the biggest contributors to plastic waste in the ocean, with majority of the ocean plastic waste coming from Indonesia, the Philippines, Viet Nam, and Thailand (Jambeck, et al., 2015). Furthermore, growing cities in Southeast Asia contribute to 60% of plastic waste leakage into the environment.

The rapid increase of e-waste volume is a common concern most especially among developing countries that still lack the appropriate waste management and treatment systems and facilities. Illegal dumping, where unusable electronic parts are released into the environment after being dismantled, is one of the most common improper waste disposal activities in Southeast Asia due to the lack of awareness and knowledge on the proper disposal of e-wastes and the dangers of such unsafe practices. There has also been an observed surge of e-waste imports in Southeast Asian countries, most especially the developing countries (The ASEAN Post Team, 2018) after the China halted all imports of wastes.

d. Food waste and food losses

A significant challenge for South and Southeast Asia on the sustainable consumption of food pertains to the large percentage of food lost and wasted in the system, accounting to about one-fourth of the food supply. This inefficiency compounds the challenges in food security and malnutrition in the region, and environmental impacts associated with food production. In 2018, the Asia Pacific region accounted for 58% of the global total of undernourished people, with about 13% undernourished people in the region belonging to Southeast Asia. Inputs to food production and food waste itself contribute to the increasing GHG emissions, as well as the changing diets of the population with preference for meat-based and processed diets.

Unsustainable land-use to intensify agricultural production is also recognized as one of the most significant drivers of biodiversity loss and climate change over the last 10 years (FAO, 2020). Southeast Asia, in particular, has experienced major deforestation to cater to crop land and plantation expansions (FAO, 2020).

e. Energy supply and efficiency

Economic growth continue to drive energy consumption in the region, which has doubled in two decades (1995–2015) at an average annual growth of 3.4% and is expected to grow by an average of 4.7% per year until 2035; this growth will be highest in the power sector, followed by industry, transport, and buildings (IRENA, 2018). Top countries contributing to the total energy demand in ASEAN are Indonesia, Thailand, Viet Nam, Malaysia, and the Philippines. As of 2015, oil accounts for 34% of the region's total primary energy supply, followed by similarly non-renewable energy sources in natural gas and coal, whereas renewable energy sources account for 17% of the region's energy generation (IRENA, 2018).

Despite the rapid development in the ASEAN region, around 10% of the population remain without access to electricity. Subsequently, these households resort to biomass burning for fuel needs, affecting their environment and health. Fossil fuels still account for majority of the total energy mix in the region and is expected to remain the same until 2040. Import dependence for energy sources is also expected to grow from 60% to 80% by 2040.

f. Consumption of natural resources

The Asia Pacific region is currently a major consumer of global resources, accounting for about 63% of global material use (UNEP, n.d.). Rapid population and economic growth along with prevailing social inequalities in Southeast Asia continue to put significant pressure on natural resources within each country (Kalirajan, Zaman, & Wijesekere, 2015). Per capita resource consumption in the Asia Pacific region has been increasing and the participation of ASEAN in global supply chains as well. Many tropical forests, such as that of the Southeast Asia have been identified as deforestation hotspots that are closely tied to international trade (Hoang & Kanemoto, 2021). In addition, transboundary environmental issues such as air, water, and land pollution contribute to urban environmental degradation and the depletion of natural resources have also resulted in the increase in waste generation (Kalirajan, Zaman, & Wijesekere, 2015). Sustainable management of natural resources need to equally consider the function of environment in the provision of raw materials and its capacity to support ecosystem services.

g. Biodiversity and wildlife

Despite having an abundance of natural resources, ASEAN countries are faced with challenges in balancing environmental sustainability and economic development (Kalirajan, Zaman, & Wijesekere, 2015). The ASEAN region, occupying only 3% of the Earth's land, hosts the highest proportion of endemic bird and mammal species (9% and 11%), the second highest proportion of endemic vascular plant species (25%), and has the world's center for marine biodiversity (ASEAN, 2020). However, the region much progress is needed in the region in terms of addressing biodiversity loss (ASEAN, 2011).

Current unsustainable land-use practices lead to several negative environmental impacts such as biodiversity loss, destruction of natural habitats, and loss of other ecosystem services (UNEP, 2019). Such practices are highly correlated with agricultural activities and have caused global species loss of approximately 11% by 2010 (UNEP, 2019). This impact is especially evident in islands and tropical areas, such as most areas in the ASEAN region, due to their high endemic species densities (UNEP, 2019). Other key drivers of biodiversity loss in the region include, climate change, invasive alien species, water-use, and wildlife hunting and trade (ASEAN, 2011).

Urbanization and mobility (Built Environment)

h. Sustainable land use and development (urban and rural development)

The global urban population is expected to increase by 2.4 billion people over the next 30 years with 66% of the population living in cities by 2050 (ASEAN, 2018). This increase will lead to a significant expansion of existing cities and the construction of new ones, and, as a result, increase material consumption at a rate faster than that of population growth (ASEAN, 2018).

Moreover, while urbanization is one of the leading drivers of economic growth, it leads to various challenges in line with inclusiveness (particularly housing), environmental pollution, economic efficiency (linked to rising traffic congestion), health and cultural heritage (ASEAN, 2018). As in many ASEAN countries, these are intensified by rapid and haphazard urbanization (ASEAN, 2018). Without a new approach to urbanization, material consumption by the world's cities will grow from 40 billion tons in 2010 to about 90 million tons by 2050 (UNEP, 2018).

i. Sustainable building

Current construction activities and manufacture of basic building materials lead to major consumptions of natural non-renewable sources such as metals, fossil fuel, and non-renewable energy sources (Shafii, Ali, & Othman, 2006). The ASEAN population is expected to be 785 million by 2050 with 63% living in urban areas (ASEAN, n.d.). With increasing population growth and rapid urbanization, the demand for buildings and infrastructure, massive construction and new building projects is also expected to increase, leading to increased related environmental degradation (Shafii & Othman, 2005).

The demand for energy among electricity consumers is also predicted to increase as urbanization, and standards of living rise (UNEP, 2018). Cities now account for more than 70% of global energy consumption and GHG emissions, while the ASEAN region's total primary energy demand is expected to increase by 80% by 2040 over the 2013 baseline (UNEP, 2018). Moreover, the 100 largest cities in the world affect more than 42 watersheds while urban expansion continues to cause a decrease in agricultural land and negatively impact biodiversity (UNEP, 2018).

j. Sustainable infrastructure

Infrastructure development helps increase budget savings and economic growth, reduce trade costs, increase profits, and improve the quality of life (ASEAN, 2020). However, there is increasing pressure on the capabilities of infrastructure in the region due to rapidly expanding populations and needs to sustain economic growth (ASEAN, 2020). Rapid urbanization in emerging Asian countries has led to traffic congestion, reduced green spaces, increased waste generation and sinking land area due to excessive groundwater extraction (Infrastructure Asia, n.d.). Infrastructure development need to respond to these evolving circumstances, mitigate environmental impacts of such developments at the design stage, and account for known climate change scenarios. Incorporating such considerations in the construction and operation of infrastructure in areas such as water, energy, transportation and waste will support sustainable growth. Neglecting sustainable infrastructure needs can lead to negative environmental and social impact (Infrastructure Asia, n.d.).

k. Transportation

The transport sector in ASEAN currently consumes about one-fourth of final energy consumption and related CO₂ emissions and is over 90% oil-dependent (Bakker, Major, Mejia, & Banomyong, 2017). This may triple to 870 million tons by 2050 without any significant interventions (Bakker, Major, Mejia, & Banomyong, 2017). Energy security, city livability, social equity, traffic safety, and economic competitiveness may also worsen due to current transport practices (Bakker, Major, Mejia, & Banomyong, 2017).

Based on available data, there are currently no cities in the ASEAN region that meet the World Health Organization (WHO) PM safe air standards, with the transport sector being one of the biggest sources of pollution (UNEP, 2018). Also, 1.4 million of global deaths were linked to traffic accidents related to transportation infrastructures (UNEP, 2018).

I. Climate change and resiliency

Climate change impact and vulnerability are major concerns to ASEAN countries with Indonesia, Thailand, Myanmar, Malaysia, Viet Nam, and the Philippines among the 20 most vulnerable countries in the world (ASEAN, n.d.). The average temperature in Southeast Asia continues to increase and may rise by 2–4 °C by the end of the century, with the largest rises expected to be in Thailand, Indonesia, and Viet Nam (ASEAN, n.d.).

Aside from the rising temperatures, the region is highly vulnerable to climate change impacts as major portions of economic activity across the region are heavily dependent on natural resources and forestry (ASEAN, n.d.). Many citizens rely on agriculture and coastlines for livelihoods, and the level of extreme poverty in the region also remains high (ASEAN, n.d.).

SCP Themes (fostering inclusivity of growth)

m. Green economy

Green economy and green growth policies has been gaining momentum the ASEAN region, with more than half of the countries having their own policy or plans of implementation. Financing or access to financial mechanisms remain a particular challenge for green growth as many countries still rely on foreign and private investment to develop specific sectors, such as renewable energy, green infrastructure, and modern agriculture (Tay & Selamat, 2018).

Green economy advocates for resource conservation and circular economy, among others. Green economy in the region presents wide opportunities for inclusive and sustainable growth, particularly as Southeast Asia is a biodiverse region that is vulnerable to climate change impacts and resource extraction. In addition, green economy can develop the global economic competitiveness of the region considering that sustainability has become a crucial criterion among investors, and more governments are imposing taxes on imports from countries with high carbon footprints (Hardcastle & Mattios, 2020).

n. Sustainable industry and SMEs

Small and medium enterprises (SMEs) remain a significant part of the socioeconomic system of many countries in ASEAN. SMEs constitute more than 88% of the establishments in AMS, providing employment to at least half the labor force and at least 30% to the GDP of the country (ASEAN, n.d.).

These SMEs and micro-enterprises are likely to face the challenge of implementing national green industry policies, sustainable growth, and resource efficiency practices; complying with international trade regulations and requirements as ASEAN increases its manufacturing and global trade capacity; and increasing competitiveness as digital transformations and greater productivity become hallmarks of internationalization (OECD & ERIA, 2018).

The ASEAN recognizes the importance of SMEs in achieving sustainable economic growth and narrowing the development gap, thereby forming the ASEAN Coordinating Committee on Micro, Small and Medium Enterprises (ACCMSME) (formerly, ASEAN SME Working Group) for the development of micro, small and medium enterprises (MSMEs). The work of the ACCMSME is governed by the ASEAN Strategic Action Plan for SME Development (2016–2025) and covers five strategic goals, namely, promote productivity, technology and innovation; increase access to finance; enhance market access and internationalization; enhance policy and regulatory environment; and promote entrepreneurship and human capital development (ASEAN, 2019).

o. Sustainable tourism

Aside from SMEs, tourism ranks high in contribution to the GDP of ASEAN at 12% (USD 329.5 billion) in 2017 (The ASEAN Post, 2019). In the latest Travel and Tourism Competitiveness Report 2019, Southeast Asia relies the most on travel and tourism among the sub-regions in the Asia Pacific region, yet ranks lower than global average in environmental sustainability due to deforestation and its consequences, and lack of wastewater treatment (WEF, 2019).

The ASEAN recognizes the importance of a sustainable approach to tourism in the ASEAN Tourism Strategic Plan 2016–2025: “By 2025, ASEAN will be a quality tourism destination offering a unique, diverse ASEAN experience, and will be committed to responsible, sustainable, inclusive and balanced tourism development, so as to contribute significantly to the socioeconomic well-being of ASEAN people” (ASEAN, 2015). The ASEAN Tourism Plan contains two strategic directions, namely, to enhance the competitiveness of ASEAN as a Single Tourism Destination, and to ensure that ASEAN tourism is sustainable and inclusive. The latter involves elements of climate change response and resilience, and public-private engagement.

SCP Tools

p. Sustainable public procurement and eco-labelling

As with the increasing social dimension of SCP implementation in the region, sustainable and green public procurement (SPP/GPP) practices figure prominently in many country policies in the AMS. This focus straightforwardly encourages consumption of green products through government initiative as national spending takes up about 30% of the GDP, and can therefore provide the demand catalyst and example in transforming supply chains towards sustainability (UNEP, 2013).

Progress in implementation may be slow owing to different systems and approached to SPP/GPP that can cause confusion to producers. Furthermore, Asian Institute of Technology (2016) identified important barriers to implementation of SPP/GPP in the Asia Pacific region to include a lack of clear framework for implementation of GPP, economic pressure, lack of governmental capacity to implement GPP, lack of awareness, lack of promotion, and the multiplicity of sustainability labels.

As ASEAN is one of the largest economies and manufacturing centers in the global supply chain, awareness and foresight on global agreements and labeling schemes can be a competitive advantage in pursuing broader trade relations. Major investing countries in the region, such as Japan, Singapore, Malaysia, South Korea, and China have a national version of labelling schemes, and the World Trade Organization addresses both compulsory and voluntary labelling schemes.

q. Corporate sustainability reporting

Sustainability reporting the ASEAN region will continue to gain momentum as the global demand and benefits of such practices continue to increase (Loh, et al., 2018). This growth is attributed to several driving forces, such as increasing efforts to promote sustainability principles and reporting, and the creation of value-adding synergies for companies committed to having their own sustainability frameworks and reporting schemes (Loh, et al., 2018). In addition, company investors or stakeholders have increasingly become conscious of the social and environmental performance of companies, further adding to the momentum for increased transparency and disclosure of sustainability initiatives among corporations. At present, the Philippines, Singapore, and Thailand have policies that promote corporate sustainability reporting.

r. Sustainable lifestyles and education

Following the SPP/GPP approach on sustainable consumption, countries are also incorporating sustainable lifestyles and education among its national agenda. This goal realizes the magnitude of consumption that can happen as social mobility in the region improves and as basic infrastructures develop. While this situation is not unique to ASEAN, economic growth outlook remains positive and consumption patterns drastically change. For the broader Asia Pacific region, 4.5 tons of materials are consumed by every person per year in 2000, which doubled to 9 tons/person/year in just 15 years (UNEP, n.d.). ASEAN recognized the transformation required to manage growth with equal consideration for social inclusivity and environmental protection for sustainable development. Thus, environmental education forms part of its initiatives in this regard to increase awareness among individuals, and develop skills, values, and attitudes that empower them to contribute to sustainable development (ASEAN, n.d.).

3. Challenges and Opportunities

This section identifies challenges and opportunities for ASEAN SCP Framework.

3.1. Emphasizing common goals, but different paths

The region has different structures and varying economic developments. Certain countries focus investments and developments on particular industries or economic sectors that may not be applicable to others. Even as the region continues to have a strong economic outlook, growth comes from different sectors. Where one specializes in medical devices, another country focuses on agriculture and infrastructure.

While other countries in the region may not fit the middle class scenario of increasing consumption patterns to narrow the development gap, higher income countries may already be ahead in the consumption (overconsumption). The bottom line of SCP is to decouple economic growth from environmental impacts—the goal is to maximize resource productivity (GDP per resource consumption) and minimize resource intensity (resource consumption per GDP output). Viewing development paths and economic goals from the perspective of resource use may be key to identifying target sectors and planning effective measures. The ASEAN 2025 Roadmap and SDG 12 can be used as a guide in identifying goals, and paths to achieving these goals may be country-specific.

3.2. Levelling key priorities and sectors

Middle class population, incomes, industrialization, and urbanization continue to increase in the region, and this significantly challenges resource consumption patterns and pollution (waste) management practices. As economic growth and income continues to support poverty alleviation and greater social mobility, improving lifestyles and purchasing power open up for increasing consumption and waste generation. Present waste management infrastructure and practices need to cope with waste generation as new waste streams emerge and pose more challenges to existing practices. Challenges in e-waste and plastic waste management have resulted to numerous initiatives and policies involving broad stakeholders.

Furthermore, the interpretations and needs of countries to support SCP can also vary even when the same resource is considered. In the case of energy, SCP can both mean rural electrification and access to sustainable energy to lessen the use of charcoal and wood for fuel, and sustainable housing/building design to lessen energy requirements for cooling and promote energy conservation. For water, SCP can mean better irrigation practices and food processing (water consumption and conservation) in agricultural sector, whereas it translates to water conservation and pollution prevention in garments and textile manufacturing. Even policy development plans have different takes on sustainability frameworks from low-carbon growth and resilience to livability.

3.3. Internalizing lessons and forging a mission

Financial and technical support from international organizations significantly contribute to the progress of SCP in the region. Diverse SCP projects supported by SWITCH-Asia, UN organizations, World Wide Fund for Nature (WWF), Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), country partners and many other institutions and organizations (**Appendix L**) involved capacity building and SCP implementation in various sectors and policy support components. For example, the Sustainable Product Innovation program in Viet Nam, Cambodia and Laos (SPIN-VCL) increased awareness among SMEs on the potential for sustainable and innovative products. Policy support projects have enabled a number of ASEAN countries to prepare a dedicated SCP policy.

Many of these projects and initiatives provide lessons and valuable insights in furthering the implementation of SCP and supporting local capacities in undertaking SCP. Taking time to reflect on the accomplishments and lessons can inform future steps in SCP implementation. Especially as replicability of pilot projects are highly encouraged, what kind of facilitation will be needed to translate this knowledge into a broader and effective SCP practice in the region? How do we apply tailor-made SCP projects and tools to another sector or situation considering that solutions or projects consider and adjust to local capabilities and needs?

Even with the variety of country initiatives and SCP projects supported by international organizations, many VNRs still report lack of awareness and knowledge of SCP, lack of capacity, lack of access to financing mechanisms, lack of data and multi-sectoral cooperation as challenges to SCP implementation. From grassroots and sectoral SCP projects to mainstreaming SCP policy projects, regional collaborative work can be explored on how to bridge this gap in translating knowledge to practice.

3.4. Supporting institutions

Institutional mechanisms in SCP implementation in the region mostly rely on interagency cooperation with the Ministry of Environment or the Ministry of Industry taking the lead, and in some instances the (Economic/Development) Planning Agency of the country. This multi-agency approach highlights the various expertise and viewpoints needed to implement SCP. There is a need to identify and involve the relevant agencies and institutions to support the lead agency tasked with the implementation of SCP. In addition, networks of SCP practitioners with the experience and expertise can be of benefit to implementation and integration of SCP to various sectors, and can be complementary to the policy support projects with key partners in the region.

Moreover, institutions tasked with SCP implementation will need support in various forms. For instance, data collection and management continue to challenge many AMS, especially as SCP indicators require monitoring of material inputs and outputs to the economy to provide quantitative measure of resource efficiency among many others. Adequate baseline information on the efficiency and productivity of economic systems (e.g., tons resource use per GDP output, per capita consumption of resources) will provide an objective account of how sustainable growth is.

The use of such metrics can indicate the quality of economic growth of the region—does it come at the expense of resource use?—and can inform policy and planning. Strengthening statistical capacity and localizing methodologies to support data collection and monitoring can be among the many areas of cooperation and collaboration in a regional framework for SCP.

3.5. Connecting structures for efficiency

The commitment of ASEAN to SCP can be seen in the ASEAN Blueprints 2025 (Section 1) and through various structures and initiatives within the ASEAN that engage stakeholders on SCP themes, and foster regional cooperation and partnerships, such as:

- a. ASEAN+3 Leadership Programme on Sustainable Production and Consumption is one of ASEAN's flagship activities under the environmental education stream that has been implemented annually since 2008. Formerly under the ASEAN Environmental Education Action Plans (AEEAP 2008–2012 and AEEAP 2014–2018), the current ASEAN Socio-Cultural Community Blueprint 2025 framework expands the scope of program to include capacity development in more sectors beginning in 2019 under the implementation of the ASEAN Working Group on Environmental Education (AWGEE) Action Plan.
- b. The ASEAN Centre for Sustainable Development Studies and Dialogue (ACSDSD) is a newly launched ASEAN Centre, which “serves as a regional platform to encourage research and studies as well as build capacities of AMS, and promote dialogue and cooperation on sustainable development within ASEAN, and between ASEAN and external partners, including the implementation of concrete cooperation projects relating to sustainable development” (ASEAN, 2019). Its establishment is part of the recommended actions of the Complementarities Initiative to enhance cooperation on sustainable development within AMS, similar centres and institutions, and with the international community.
- c. The ASEAN Centre for Energy (ACE) is another intergovernmental body addressing energy concerns in the region including a sustainable future of ASEAN energy landscape where the ASEAN Plan of Action for Energy Cooperation: Phase II (2021–2025) includes seven program areas that include energy efficiency and conservation, renewable energy (sustainable energy growth and energy diversification), and regional energy policy and planning (ASEAN, 2020). The ACE also serves as a fora for business (ASEAN Energy Business Forum) and researchers (ASEAN Researchers Network on Energy and Climate Change) on issues, such as energy security, climate change, and energy efficiency. It also manages energy statistics in the region, and has an ongoing program on Training of Trainers for Energy Managers in ASEAN through the ASEAN Japan Energy Efficiency Partnership.

- d. The ASEAN Community Statistical System (ACSS) has set up a Working Group on SDG Indicators (WGSDGI) in 2017 to support the ASEAN SDG monitoring through provision of relevant statistics. The ASEAN has also recently launched the ASEAN SDG Indicators 2020 Baseline Report through the support of the WGSDGI.
- e. The ASEAN Guidelines on Green Meetings has been developed to serve as a reference to support AMS, ASEAN organs, and other entities in organizing ASEAN-related meetings to be more resource-efficient and environmentally responsible.
- f. The Report *Circular Economy and Plastics: A Gap-Analysis in ASEAN Member States*, and draft *ASEAN Framework on Circular Economy* prepared under the chairmanship of Brunei Darussalam further strengthens regional work and cooperation in incorporating circular economy perspective to manage plastic waste and foster sustainable growth and development.
- g. The ASEAN Senior Officials on Environment (ASOEN) has seven working groups that represent the strategic priorities they are working on to support the ASEAN Socio-Cultural Community Blueprint 2025:
 - Nature Conservation and Biodiversity;
 - Coastal and Marine Environment;
 - Water Resources Management;
 - Environmentally Sustainable Cities;
 - Climate Change;
 - Chemicals and Waste; and
 - Environmental Education.

These existing structures and initiatives within the ASEAN can be an opportunity for broader cooperation on SCP in the region and within ASEAN bodies, and may be considered in the ASEAN SCP Framework and means of implementation. Sectors such as transportation, tourism, and energy are SCP concerns covered under existing ASEAN bodies outside of the scope of ASOEN. Enrolling these established bodies to the framework may contribute to financial and structural efficiency in implementing the ASEAN SCP Framework by avoiding duplication of efforts. In addition, it will be practical to promote synergies in linking with existing strategic priorities and programs of these existing ASEAN sectoral bodies.

4. ASEAN SCP Framework (and Means of Implementation)

The foregoing sections describe the growth and pain points in national SCP implementation in the region, and the common themes of existing policies. Drawing on years of capacity building, financial and technical assistance, and policy support from SCP project partners, and national experience in rolling out policies in support of sustainable development as a whole, a notable lack of reporting of SDG 12 indicators in-country VNR on the implementation of Agenda 2030 becomes a cause for concern and opportunity for cooperation.

4.1. Project Approach

- a. **Goal of the ASEAN SCP Framework.** Recognizing the importance of SCP in the growth and development of the region, the ASEAN SCP Framework aims to strengthen synergies and bring all networks together for greater collective impact in the through:
 - active engagement among intergovernmental and governmental, businesses, and civil society, and community groups within ASEAN in SCP Practices; and
 - a knowledge platform to mobilize and share knowledge, expertise, best practices, technology and financial resources, and past and future projects to foster active engagement among institutions, National Focal Points for SCP of all AMS and UN agencies, and ASEAN Partners.

- b. **Synergistic approach.** There is a need for an overarching framework for SCP policies, planning, and implementation in ASEAN to bring together the vast elements of SCP spread throughout different means (of integration). A framework can also mobilize funding and coordinate efforts at the sub-region. This SCP Framework will be an enabling element to increase the implementation of SCP activities in the AMS and will address their needs on capacity building in accelerating SCP practices. This synergistic approach can also connect networks of SCP practitioners and experts, such as national networks like those in Indonesia and Thailand, and global networks like that of the Resource Efficiency and Cleaner Production (RECPnet) and National Cleaner Production Centers (NCPC) supported by UNIDO and UNEP, with a view of supporting institutions and sectors for a broader implementation of SCP.

- c. **Priority areas.** The common themes discussed in Section 2 characterizes SCP implementation in AMS. These themes come from the key priorities identified in the VNRs, national policies, and ASEAN initiatives; and highlight SCP needs in AMS, identify sectors where SCP is implemented, provide SCP themes with national policies, and enumerate SCP tools in use. This broad survey of sectors, thematic areas and SCP needs and tools provides the starting point in selecting the priority areas, which the ASEAN SCP Framework will focus on for an initial three-year implementation period. These priority areas and objectives will be decided following the consultation process, and in consideration of the nexus among identified themes that will provide broader and multiple benefits to the region.

d. **Framework structure and means of implementation.** The structure of the SCP Framework proposes four areas of cooperation or action (**Table 1**). Foremost is policy setting for the key priority sectors to guide the overall activities. Second, the structure also proposes a technology innovation and capacity building framework to advance SCP, recognizing the need to strengthen technical capacities and support institutions. Third, market mechanisms provide the framework broader opportunity for cooperation and implementation with private and public sectors. Lastly, lifestyle and wellbeing engages end-consumers, which are a significant factor in the changing consumption patterns in the region. This approach recognizes that SCP needs to be integrated in the policy as a guiding framework; technical and capacity needs have to be met to empower stakeholders; market mechanisms influence the uptake of SCP; and lifestyle and wellbeing provide the social dimension.

Goals and outcomes for each of the final priority areas will be identified, and action items/activities will be determined following the policy-capacity-market-lifestyle framework in **Table 1**. In this approach, the priorities will be clearly defined.

Table 1. ASEAN SCP Strategy Framework following the SCP stages

Framework/ Node of action	(Priority Area 1)	(Priority Area 2)	(Priority Area 3)
Policy			
Technology innovation and capacity building			
Market mechanism			
Lifestyle and wellbeing			

e. **Structures/ Partnership/ Cooperation.** Operationalizing the ASEAN SCP Framework will entail significant coordination, cooperation, planning and implementation among relevant structures, country representatives, external partners and the like. Project management will be time consuming, and require manpower and resources to support implementation. Synergies with institutions and initiatives of existing ASEAN and ASOEN bodies may be sought to facilitate the implementation of the ASEAN SCP Framework. Crosscutting roles and cooperation is also expected among stakeholders (e.g., government, consumers, private industry).

4.2. Considerations for the Implementation of the Framework

- a. A partial list of relevant ASEAN structures is listed in Section 3.5 as an example of bodies and initiatives that can be tapped for cooperation and partnerships within ASEAN. Linking with existing ASEAN bodies may further the integration of SCP into existing sectoral and strategic programs.
- b. The ASEAN SCP Framework can also incorporate part of the plan of action of the *Asia Pacific Citizenship Pledge for Resilient and Sustainable Societies* which is major accomplishment of Indonesia, the lead country that initiated the preparation of this Framework. Some of the action items of the Citizenship Pledge include:
 - Support regional and national collaboration towards the implementation of the UNESCAP SDGs Regional Roadmap and the implementation of the Complementarities between the ASEAN Community Vision 2025 and the UN 2030 Agenda particularly on the initiatives to form the ASEAN Resource Panel, providing support for Greening SMEs in ASEAN, and forming the ACSDDSD;
 - Support the implementation of SCP initiatives through multi-stakeholder partnerships and the mainstreaming of SCP into policies through National SCP Framework and Action Plans and sectoral Roadmaps;
 - Encourage international, regional, and national collaboration/partnerships among effective change agents led by UNEP, EU SWITCH-Asia Programme, IGES, among others, to scale-up implementation of SCP through policy reforms, building technical skills and institutional competency, and supporting ongoing public and private sector investments in sustainable technologies;
 - Support the formation of communities of practice such as developing a National SCP Resource Pool, which is in synergy with One Planet Network of the 10YFP on SCP at the global level. The National SCP Resource Pool aims to contribute to improving the science-policy interface; advancing policy reforms and implementation, innovations and investments; and enhancing stakeholder collaborations, information-sharing, and knowledge platforms for better decision-making on SCP. It is important to ensure that these efforts are in line with the global frameworks for cooperation, particularly its contribution to the achievement of the SDG 12 and related SDGs.
- c. An initial period of three years can be targeted for the implementation of the ASEAN SCP Framework, where an initial three priority areas for SCP cooperation will be piloted.

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APPENDIX A: COUNTRY BRIEF ON SCP FOR BRUNEI DARUSSALAM

1. Key Data

1.1. Economics

Brunei Darussalam is an energy-rich sultanate on the northern coast of Borneo in Southeast Asia. Brunei Darussalam boasts a well-educated, largely English-speaking population; excellent infrastructure; and a stable government intent on attracting foreign investment. Crude oil and natural gas production account for approximately 65% of GDP and 95% of exports, with Japan as the primary export market.

Brunei Darussalam's imports include machinery and transport equipment, manufactured goods, food and chemicals. Its exports include agricultural products such as rice, vegetables, fruits, chickens, water buffalo, cattle, goats, and eggs in addition to crude oil, natural gas and garments. Its major industries are comprised of petroleum, petroleum refining, liquefied natural gas and construction. Major export partners of Brunei Darussalam are Japan (45.2%), South Korea (15.9%), Australia (11.4%), Indonesia (8.1%), India (5.7%) and China (4.4%). Major import partners include Singapore (27.4%), India (15.4%), China (12.8%), South Korea (10.1%), Malaysia (9.4%) and Germany (7.9%). (Source: <https://www.aseanbriefing.com/regions/brunei>)

Per capita GDP is among the highest in the world, and substantial income from overseas investment supplements income from domestic hydrocarbon production. Bruneian citizens pay no personal income taxes, and the government provides free medical services and free education through the university level. (Source: <https://www.cia.gov/library/publications/the-world-factbook/geos/bx.html>)

Table 1.1 GDP Growth Rate and Inflation, % per year

GDP growth				Inflation			
2018	2019	2020	2021	2018	2019	2020	2021
0.1	3.9	2.0	3.0	0.1	-0.4	-0.2	0.1

(Source: <https://www.adb.org/sites/default/files/publication/575626/ado2020.pdf>)

Brunei's GNI per Capita data was reported at 45,251.419 BND in 2019. This records an increase from the previous number of 43,136.317 BND for 2018. Brunei's GNI per Capita data is updated yearly, averaging 49,210.134 BND from Dec 1990 to 2019, with 30 observations. The country's GNI per Capita reached an all-time high of 51,605.924 BND in 1992 and a record low of 43,136.317 BND in 2018.

(Source: <https://www.ceicdata.com/en/brunei/gross-domestic-product-real/bn-gdp-real-gni-per-capita>)

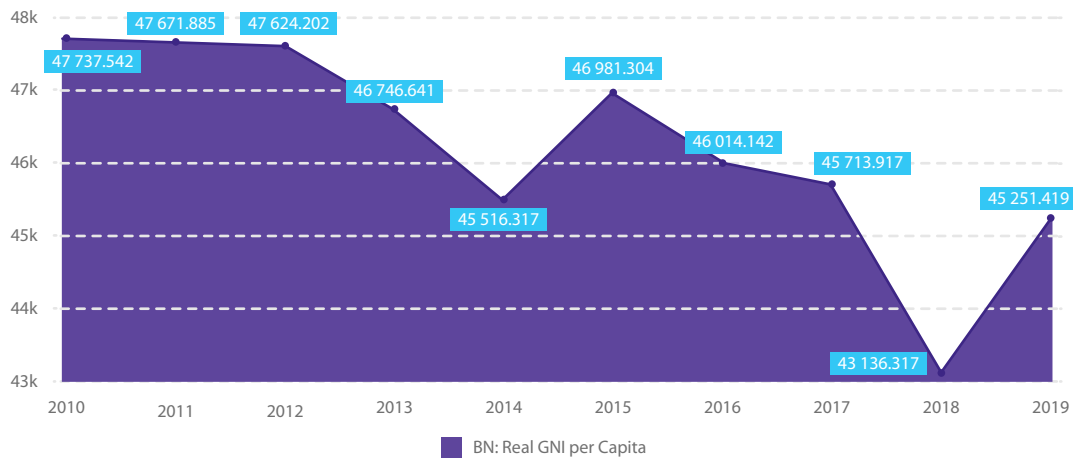


Figure 1.1 Brunei Darussalam GNI per Capita in BND (2010-2019)

1.2. Social

With a population of 442,400 (2018), it is the least populous of the ASEAN Member States, and with an area of 5,765 km² it is also one of the smallest nations in the region. Most of the population is classified as urban – 77.6%– and around 70% of the population lives in the metro area around the capital city of Bandar Seri Begawan. (Akenji, et al., 2019) It has an annual growth rate of about 3.9% and an urbanization rate of more than 2% per year. In 2004, the last time during which official records were made, the 66.3% of the population was Malay, 11.2% was Chinese, and 3.4% was indigenous. Indigenous groups of the Malay race include Belait, Dusun, Kedayan, Murut, Tutong and Bisaya. (Akenji, et al., 2019) Its population is mostly urban and growing, with a population growth rate of 1.29%, a fertility rate of 1.8 children, and a life expectancy of 77.5 years. Around 72% of the population is of legal working age (15–64 years). Below is the population pyramid for Brunei.

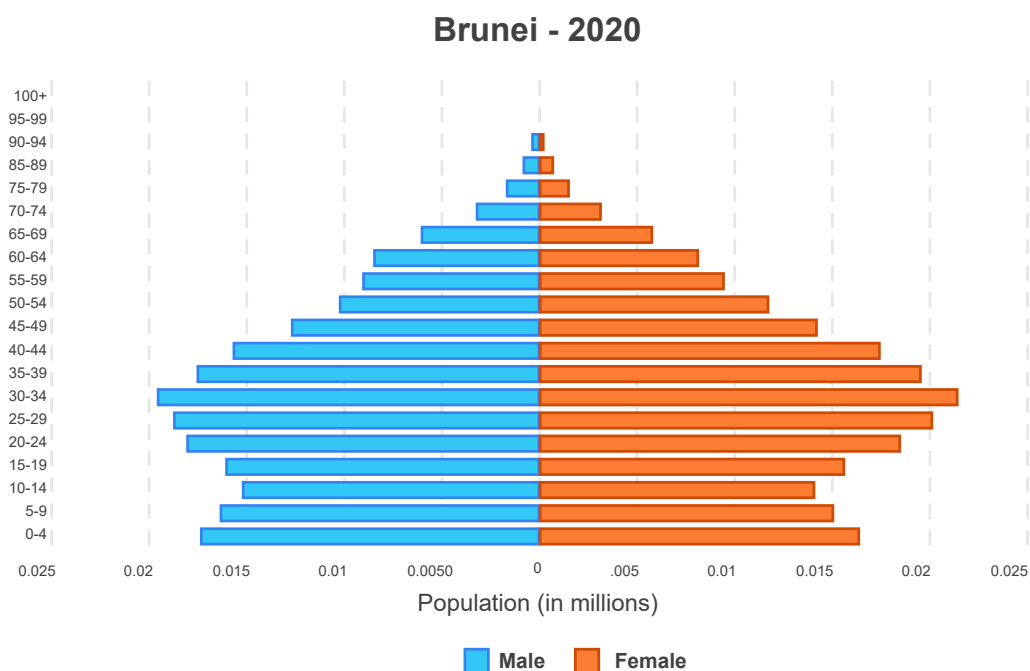


Figure 1.2 Brunei Darussalam's population pyramid for 2020

In 2018, the labor force participation rate was 67% and the employment-to-population ratio was 62.34%. Both these rates are more than 15 to 20 percentage points higher for men than for women. The total unemployment rate in 2018 was 9.32%, and the youth unemployment rate was 28.15%, with the female unemployment rate in this age group being 5.25 points higher than the male rate. The proportion of youths aged 15-24 years not in education, employment or training was 20% in 2017. Employment is heavily reliant on services, followed by industry, and on medium and high-skilled occupations.

Vulnerable employment in Brunei Darussalam as of 2018 accounted for 5.1% of the labor force, with the majority of those workers having own-account status. Own-account and contributing family workers are more likely to experience low job and income security than employees and employers, as well as lower coverage by social protection systems and employment regulation.

Rural population growth was negative 0.1% in 2017. The share of agricultural land in total land area increased by 1 percentage point between 2000 and 2016, while agricultural employment decreased from 0.002 million to 0.001 million people. The share of agricultural employment within total employment fell by approximately 0.9 percentage points due to faster job creation in other sectors.

(Source: https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/documents/publication/wcms_627802.pdf)

1.3. Environment

Brunei Darussalam ranks number 53 of 180 countries in the Environmental Performance Index (EPI), with a score of 63.57 (with 0 being furthest from the high-performance benchmark target of 100). Brunei Darussalam outperforms the average score for Asia and the Pacific in some of the EPI categories, including water and sanitation, heavy metals, air quality, and biodiversity and habitat. However, there is room for improvement, especially in ecosystem vitality (air pollution, climate and energy, forests, fisheries and water resources).

Forest area decreased between 1990 and 2016 by approximately 6.3% of total land area. From 2000 to 2017, the share of terrestrial protected area increased slightly, reaching 46.9% of total land area, while the proportion of marine protected area decreased slightly, down to 0.2%.

Since 2010, access to basic drinking water has remained steady, at an average of 99.5% in 2015, and access to basic sanitation decreased by 0.1%, to an average of 96.3% in 2015. Both are still below the ideal threshold of 100%. Only 0.8% of the labor force was employed in water supply, sewerage, waste management and remediation activities in 2017. Improvement in water supply and sanitation access could provide decent job opportunities in the future.

The carbon dioxide (CO₂) emission levels for Brunei Darussalam increased slightly by an average of 2% from 1990 to 2014. The increase was due to two major sources: electricity generation; and fuel consumption in the transport sector. The level of emissions is significantly lower than both the Asia-Pacific and ASEAN averages since 1990. The PM_{2.5} emission levels for Brunei Darussalam show a slight decrease since 2005. Overall PM_{2.5} emission rates did not exceed the World Health Organization's Air Quality Guideline threshold level, thus indicating low emissions. Brunei Darussalam also shows lower levels of emission than the ASEAN and Asia-Pacific averages.

In 2016, 95% of the population relied primarily on clean fuel and technology, in the sense that these do not create pollution within the home. The share of renewable energy in total energy consumption has not fluctuated with overall consumption. From 2000 to 2010, it remained at 0% and increased only slightly to 0.01% in 2015. However, renewable energy electricity generation has remained steady over the last six years, with solar power being the main source in 2016. The country's employment rate in electricity, gas, steam and air conditioning was only 5.3% in 2017.

According to the World Risk Report, Brunei Darussalam has a medium World Risk Index score. It ranks number 12 of 171 countries because of its medium exposure to natural hazards and limited institutional capacity to cope and adapt. Part of the country's vulnerability relates to the 1.6% of the total population who, as at 2010, live in the 0.4% of total land area that is less than 5 meters above sea level. According to the Emergency Events Database, there was a substantial increase in natural disasters between the 1980s and the 2010s. The natural disasters in that time were mostly floods, landslides, thunderstorms and forest fires. (Source: https://www.ilo.org/wcmsp5/groups/public/---asia/---robangkok/documents/publication/wcms_627802.pdf)

Brunei Darussalam generates around 1.14 kg of solid waste per capita per day, which is among the highest in the ASEAN region. The government aims to reduce this amount to 1.0 kg by 2035. It is estimated that 29% of disposed waste is plastic.

At the current rate of waste generation, the government predicts that the country's main disposal site, the Sungai Paku Engineered Landfill, will run out of capacity by 2030. Moreover, the government estimates that approximately BND1.2 million annually is spent on managing the country's final disposal sites. Taking these issues into account, effectively addressing plastic waste in Brunei Darussalam will require moving from a "use and dispose mentality", including by introducing waste-to-resource technologies, whilst continuously pushing to improve and install 3R (reduce, reuse, recycle) practices and habits across all sectors and communities nationwide. (Akenji, et al., 2019)

2. Policies, strategies, plans, networks (government, civil society, private sector)

The main government agency responsible for management and protection of the environment is the Department of Environment, Parks and Recreation (DEPR), which is part of the Ministry of Development. DEPR is in charge of issuing Environmental Acts and Guidelines, as well as information to the general public.

To effectively implement the 2030 Agenda, Brunei Darussalam has taken an inclusive and whole of nation approach, collaborating and engaging with relevant stakeholders, namely the private sector, non-governmental organizations (NGOs), researchers and academia. A multi-stakeholder 'Special Committee for the Implementation of the SDGs' comprising of senior officers from relevant ministries and agencies was established in 2016 to facilitate the inclusion of SDGs indicators in Brunei Darussalam's development plans as well as to ensure and monitor the implementation of the SDGs in line with national priorities. (MOFE, 2020)

3. Programs and projects (government, civil society, private sector)

Brunei Darussalam has a relatively recent environmental legislation in the form of its Environmental Protection and Management Order (2016), which focuses mainly on permit issuance, environmental impact assessment, and liability in cases of environmental incidents. There is no specific legal act or government order in place regulating the management of non-hazardous waste, including for municipal solid waste and recyclable materials, however this has been identified as one of the regulations to be developed under the said Order. Nevertheless, the country maintains strict laws against littering in public places under its Minor Offenses Act; littering can lead to fines or even imprisonment.

The disposal at sea of plastics is in principle prohibited under the Prevention of Pollution of the Sea (Garbage) Regulations (under the Prevention of Pollution of the Sea Order, 2005). Brunei Darussalam is also listed as a member of The East Asia Civil Forum on Marine Litter, a network of non-profit organizations working to address issues of ocean pollution across the sub-region.

Brunei Darussalam has a legal basis for regulating the transboundary movement of hazardous waste, in the form of its Hazardous Waste (Control of Export, Import and Transit) Order (2013). The importation of plastic waste is strictly prohibited, although the country places no restrictions on the type of plastics and plastic products that can be imported. A 3% excise duty is imposed on imported plastic items, following recent amendments to Brunei Darussalam's customs import and excise duties rules that took effect 1 April 2017.

4. SDG12 reporting/monitoring and evaluation

4.1. Recycling

Tackling waste is an important issue for the country, with current waste generation standing at 1.14 kilogram per capita per day. The Government aims to reduce this to 1.0 kilogram per capita per day by 2035. (MOFE, 2020)

The country encourages citizens to separate recyclable materials, including plastics, at source. This is done through awareness raising and education, for example through brochures and campaigns, as well as through the provision of recycling bins at communal waste collection centers throughout the country. Plastic bottles are cited as the most commonly recovered plastic material, collected both by public and private operators. Other information and education initiatives include maintaining a list of companies that collect and process recyclables. Extended producer responsibility schemes remain voluntary, but the government is making efforts to encourage its wider adoption through targeted education and awareness campaigns. The government also has established a material recovery facility for used tyres, where a private company has been contracted to recycle used tyres, which are converted into fuel oil by pyrolysis and, in the process, separating the rubber from the metal.

4.2. Source Reduction

The government urges manufacturers and consumers to try to reduce the amount of plastic used for packaging and other single-use items through a number of campaigns and initiatives.

In its move to combat plastic pollution, particularly on single-use plastics, the World Environment Day 2008, which carried the theme: 'Kick the Habit – Reduce the use of plastic bags towards a low carbon economy', witnessed the launching of 'Reduce the Use of Plastic Bags and Promote the Use of Reusable Bags Campaign'. The campaign was launched as part of the Government's effort to reduce the amount of plastic waste generated and disposed to the landfill and at the same time to increase the rate of recycling. Following that, DEPR introduced the 'No Plastic Bag Weekend' initiative in 2011, covering Saturdays and Sundays, whereby Fridays were included in 2012.

This initiative is further expanded in 2018 in conjunction with Earth Day Celebration that carried the theme: 'End Plastic Pollution', to cover the rest of the remaining days of the week aimed towards zero plastic carrier bags in participating stores. Carrying the slogan 'It Takes a Nation to End Plastic Pollution', it has resulted in major department stores reporting a steady decrease of a 12% monthly average, with a reduction difference of 77% in plastic bag use between January and December 2018. This initiative was gradually expanded into the 'No Plastic Bag Everyday' initiative starting 1 January 2019, with over 60 participating stores. (MOFE, 2020)

The government is also leading by example through its Plastic Bottle Free Initiative, launched in June 2018 in conjunction with the World Environment Day celebration, which carried the theme “Beat Plastic Pollution”. Under this initiative, the Ministry of Development declared commitment to implement this initiative by practicing green and sustainable habit(s) towards the intention of becoming the first Plastic Bottle Free Ministry, including investing in water dispensers, bringing own tumblers and use of jugs and glass cups during meetings and events. This initiative has been rolled out to other Ministries and Departments in the country since September 2019. In addition to that, the initiative has also been supported by Non-Government Organisations (NGOs) including the ‘Bandarku Bersih’ and ‘Bandarku Bebas Botol Plastik’ Campaigns.

Styrofoam containers are also targeted by the Government, due to its negative impacts not just on the environment but also human health. As part of the ‘Reduce the Use of Styrofoam’ initiative that was launched in 2013, DEPR collaborated with the Ministry of Education via the Science, Technology and Environment Partnership (STEP) Centre to socialise the campaign in schools to curb styrofoam usage in canteens, as well as to encourage the use of more environmentally-friendly alternatives such as reusable containers. Currently, many food and beverage businesses (including small/local establishments) have phased out styrofoam trays, although in most cases they have switched to other kinds of single-use plastic containers, often made of transparent polystyrene.

The Municipal Department is also strictly enforcing proper disposal of waste particularly in public areas, whereby it imposes heavy penalties for those found to be illegally dumping their waste in these areas. (MOFE, 2020)

4.3. Sustainable Use of Primary Resources

The agriculture, fisheries, and forestry sectors each have specific initiatives, programs or regulatory measures in place to ensure sustainability, such as the Brunei Good Agricultural Practice, Good Animal Husbandry Practices, Good Aquaculture Practices, Control and Prevention of Overfishing, Brunei Selection Felling System, and quota system in forestry production. (MOFE, 2020)

4.4. Sustainable Tourism

Amongst the strategies to promote a sustainable tourism sector are to strengthen and ensure the sustainability of current tourism products while introducing more niche tourism that are activity based, such as bird watching, diving, sports, adventure tourism as well as culture and community-based tourism. To date, there has been an increase in community-based tourism particularly those that provide authentic cultural immersion experiences and green destinations such as Eco Ponies Garden in the Tutong District, Sumbiling Eco Village in the Temburong District and Kampong Sungai Bunga in the Kampong Ayer (Water Village), Bandar Seri Begawan.

The community based One Village One Product (OVOP) initiative provides opportunities for villagers to promote their handicrafts and their ethnic cultural show performances to tourists, thus contributing to the socio-economic development of the community. Such community-based tourism activities are jointly coordinated by the Department of Tourism Development and the District Office and promoted as part of tourism packages for both local and foreign tourists to experience the uniqueness and cultural diversity of local communities.

4.5. Awareness-raising and Clean-up Campaigns

Raising environmental awareness is made through activities and programs for various audiences or target groups including the education sector. A variety of mediums used include talks and hands-on activities; educational trips; and dissemination of environment-related information via social media, mass media and radio. Environmental awareness has also been actively advocated by non-governmental and non-profit organizations as well as social enterprises. (MOFE, 2020)

The government has initiated the establishment of eco-clubs in 2006 in a number of schools where the children learn about why and how to take better care of the environment. With the implementation of the ASEAN Environmental Action Plan (AEEAP) 2008-2012 under the ASEAN Socio-Cultural Blueprint 2009-2015, the ASEAN Guidelines on EcoSchools was developed that serves as a reference and as a regional standard for environmentally-friendly model schools in the region. The establishment of eco-schools in Brunei Darussalam is under the purview of the Science Technology Environment Partnership (STEP) Centre, Ministry of Education.

In 2009, DEPR also initiated the Brunei Environment Youth Envoys (Brunei EYEs) network to nurture youth environmental advocates, in collaboration with the STEP Centre, Ministry of Education. EYE members develop awareness-raising campaigns and lead volunteer actions addressing environmental issues.

To reduce marine pollution, the Government has taken various measures to clean up rivers in the country. One such measure is the Brunei River Clean-up Project, which is a continuous cleaning of the Brunei River that involves the daily collection of floating waste along the river and its main tributaries as well as washed up waste on the river banks. To contain and reduce the amount of waste from drifting to the main river body, floating debris booms are set up at various strategic locations along the Brunei River. In addition, the Government also carries out daily clean-up of waste deposited and accumulated underneath houses in Kampong Ayer – a water village on the Brunei River. Beach clean-up campaigns at various scales are also frequently organized by different government agencies, the private sector, local communities and educational institutions, as well as civil society groups. (Akenji, et al., 2019)

5. Key sectors or priorities

According to SDG 12 subtopic and VNR and SWITCH-Asia Country Brief:

- Recycling
- Source Reduction
- Sustainable Use of Primary Resources
- Sustainable Tourism
- Awareness-raising and Clean-up Campaigns

6. Challenges (readiness/mandate, financing, capacity, data etc. monitoring and evaluation, stakeholders)

Brunei Darussalam faces significant data constraints with regard to waste management and recycling; addressing this challenge remains an important first step towards determining future actions for mitigating plastic pollution.

Waste separation, collection and recycling facilities need to be massively scaled up to address existing deficiencies in service provision; this will require determining whether existing waste management systems should continue to be publicly financed or fully privatized, which will help to better foster consensus on ways to more effectively tackle plastic waste. Recyclable materials such as plastics, metals and papers are mainly exported for processing since the country lacks recycling facilities.

One obstacle to the scaling-up of recycling is the challenge of providing end-to-end services. Although waste collection centers allow residents to dispose of recyclables separately, there have reportedly been cases where transport companies have mixed all kinds of waste. Looking at the overall situation for recycling in Brunei Darussalam, an assessment conducted in 2013 concluded that the country was still at an “infant stage”. This characterization appears still to be valid for the situation for plastics.

Smaller businesses, local convenience stores and especially stalls in markets still to a large extent distribute single-use plastic bags. Some participating stores have reported significant cost savings and many of them regard the phase-out of single-use plastics as part of their CSR activities. Surveys have also suggested that Brunei consumers are widely in favor of instituting a ban on plastic bags, although few respondents report making regular use of reusable bags.

7. Opportunities/Potential

Strong public support for plastic waste management initiatives, including buy-in from leading commercial operators provides a strategic opportunity to upscale and expand future activities, such as introducing fees for single-use bags and containers in partnership with other participating retailers.

Civil society organizations in Brunei Darussalam are already engaged in a regional network seeking to advance multi-country solutions to plastic waste; these groups can assist national and local authorities in Brunei Darussalam with driving forward information and education campaigns on plastic waste including by communicating good practices.

8. Case Studies

8.1. Green Brunei

Green Brunei, a social enterprise established in 2012, aims to promote environmental sustainability through youth-led initiatives in the fields of education, conservation and advocacy. Their initiatives to ensure responsible consumption in Brunei Darussalam include:

- Organizing recycling competitions and regular recycling drives
- Setting up a Green Depot in Kuala Belait, as a 'waste bank' that enables local communities to recycle and collect points, which can then be converted to cash. This Green Depot concept will be extended to a second location
- Organizing regular talks and workshops related to waste management

8.2. La Vida

In addition to its other activities, La Vida, a non-profit organization, operates the La Vida Thrift Shop, with the following aims:

- Promote concepts of reduce and reuse by accepting secondhand or unused goods from community donors and selling them at low prices
- Encourage a culture of waste reduction and buying second hand to save cost and the environment through social media channels and sustaining a physical shop front
- Support underprivileged mothers through paid internships at the store. Its future plans include providing part- or full-time employment for these mothers, with travel, training and day care support.

The shop enforces the 'Go Green' initiative and charges for plastic bag use. Proceeds go to fund La Vida's various programs and initiatives aimed at poverty eradication, inclusive education, and character building.

La Vida also hopes to provide a platform for sales of artisan products made by local artists/entrepreneurs using recycled/upcycled items, upcycling workshops, educational platform for the general public as well as students.

APPENDIX B: COUNTRY BRIEF ON SCP FOR CAMBODIA

1. Key Data

- Cambodia is located in Southeast Asia bordering Vietnam in the East, Lao PDR in the North, and Thailand in the West, and has a total land area of 181,035 km². The country's population grew from around 9 million in the 1960s to 16.72 million in 2020 (Source: <https://www.worldometers.info/demographics/cambodia-demographics/>). The capital, Phnom Penh, has 2.2 million inhabitants with reasonable access to modern services like healthcare, education, and energy. However, approximately 80% of Cambodians live in rural areas with limited access to clean and affordable energy and water. (Chapter 7 Sustainable Energy through SCP in Cambodia, www.worldscientific.com)

- In 2019, Cambodia's GDP was about 67 billion USD (Source: <https://www.worlddeconomics.com/GrossDomesticProduct/Cambodia.gdp>) and GDP per capita of Cambodia in 2018 was 1,510.32 USD (World Bank).

- Cambodia's strong economic growth was reflected in its graduation to a lower-middle income country status in 2016. The RGC's Vision 2050 promotes economic inclusion and environmental sustainability to ensure Cambodia becomes an upper-middle income country by 2030 and a high-income country by 2050. Cambodia's rapid development has been a catalyst for transformation of the economy. Policies that prioritize industrialization and modernization of the economy have resulted in a declining share of the agricultural sector in GDP. The significant migration of workers to industry in urban centers, and abroad, has further shifted the balance away from the rural economy. Yet the agricultural sector remains an important source of production and employment. Cambodia is one of the world's 10 largest rice exporters, doubling its exports of milled rice in the period 2013-2017. Cambodia is an open economy with an increasingly attractive investment climate. In 2017 Cambodia exported goods to 147 countries worth 60% of GDP. The leading manufacturing sector - garments and footwear - continues to grow and support positive structural change and growth in value-added. There has also been some diversification of the industrial base, notably to automotive parts and electronics. The service sector has also seen strong annual growth, especially via better performance in domestic trade and transportation. Tourism, retail/wholesale, and real estate sectors, which represent major components of employment and output in the economy, continue robust growth in recent years. (Source: Cambodia's VNR, 2019)

- Poverty in Cambodia is still mainly a rural problem and more a legacy of decades of internal conflicts and bad governance than lack of resources or opportunities. The manifestation of poverty is often linked to lack of access to good-quality natural resources and productive assets, secure land tenure, and access to markets. The rural poor are facing increasing challenges due to rapid decline in natural resources.

(Source: https://sidaenvironmenthelpdesk.se/digitalAssets/1683/1683320_cambodia-environmental-and-climate-change-policy-brief-2013.pdf)

- The structure of population is presented as **Figure 1.1**

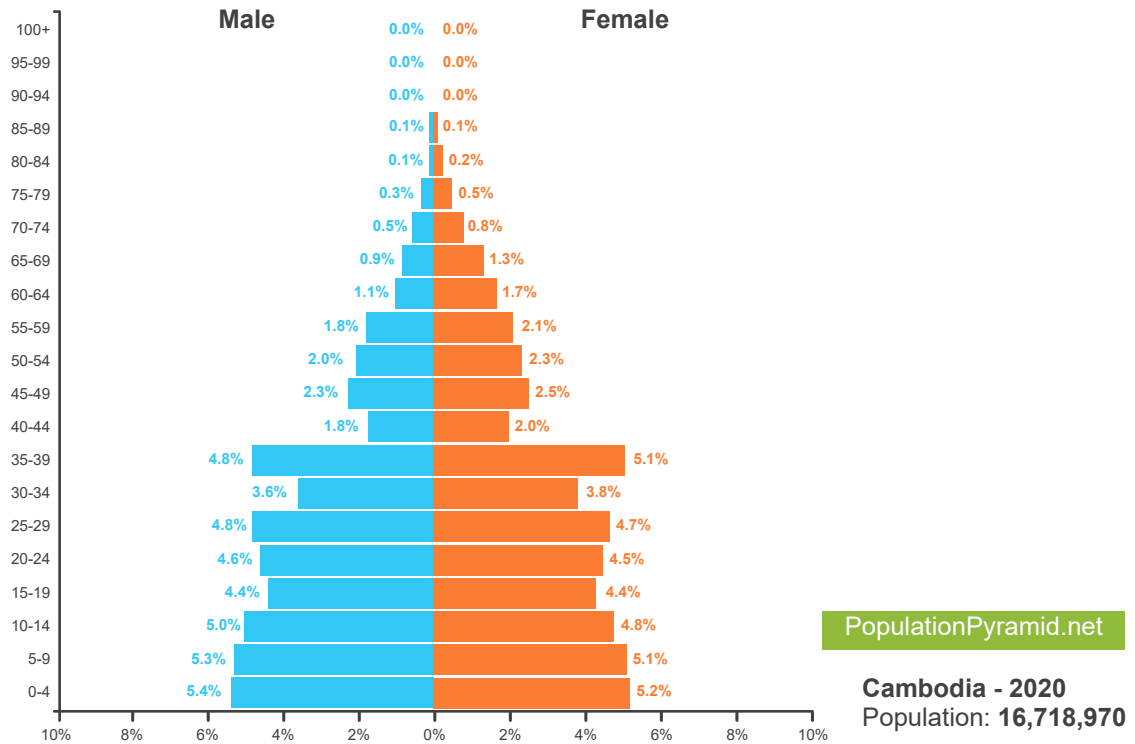


Figure 1.1 The Cambodia's population pyramid for 2020
(Source: <https://www.populationpyramid.net/cambodia/2020/>)

- State of the Environment in Cambodia:

- Environmental problems occur along the coastline including destruction of the natural environment, mismanagement of natural resources, and pollution from recreation areas, residential zones, and industries, as well as pollution from port and maritime activities. However, negative effects occur in different places. Therefore, hotspots along the coastline can be divided into four areas according to the geographical governance namely: Koh Kong Province, Sihanoukville City, Kep City, and Kampot Province. (Source: http://www.wepa-db.net/policies/state/cambodia/seaarea3_9.htm)

- Information from EUROPEAN UNION DELEGATION TO CAMBODIA

(Source: https://eeas.europa.eu/archives/delegations/cambodia/documents/publications/country_env_profile_cam_april_2012_en.pdf)

- Land use, conversion and loss: Land use in Cambodia, including 59% as forest land. Since then the Forestry Administration (FA) has reported a forest cover figure of 57% (2010), despite the obvious rapid expansion of urban areas for residential and industrial land use. In 2008, approximately 2.8 million ha of land were under land concessions and mineral exploration licenses.

- Soil Quality: There are little reliable and recent data on soil erosion. It is without doubt a real problem in Cambodia, both erosion by water, wind and exposure to the sun. This erosion is exacerbated by deforestation, by felling of trees in the general landscape, by typical fallow in the dry season and by the increasing practice of burning rice stubble. In general, most of the soil types identified have a rather low natural fertility and in many provinces a process of soil degradation is apparent due to depletion of essential minerals. Traditionally Cambodian farmers use mainly animal waste and compost to improve and maintain soil fertility. More recently such practices are being supplanted by use of chemical fertilizers. Average household use of fertilizers has now reached 115 kg for each production season.

- Groundwater: The alluvial deposits in the Tonle Sap and Mekong floodplain/delta are believed to be excellent shallow aquifers, with high recharge rates and a water table generally within 5-10 m of the surface. Shallow wells could be used in an estimated 8,000 km² of the country. The current trend is for expanding use of groundwater for industrial use and irrigation, with little regulatory framework in place to govern exploitation rules and rights. There are also significant threats from saltwater intrusion in the south-eastern provinces due to lowering of the water table. Groundwater quality mapping is reportedly underway by MRD but any results are not yet available.

- Water Quality: Arsenic is the most critical chemical groundwater contaminant in Cambodia, affecting a very large area and causing the most severe health consequences for those consuming contaminated water over a long period of time. Arsenic concentrations in Cambodia have been found as high as 3,000 ppb in places, remarkably higher than the WHO drinking water quality standard of 10 ppb. Only some 40% of rural people have access to improved water sources, with the corresponding number in urban areas approximately 82% . Drinking water quality outside cities and towns may be very low and quantities insufficient, especially in the dry season. In 2008, there were only two dams in Cambodia. At present there are at least four projects under development, with the lower Mekong basin mainstream dam projects, all reaches of the Mekong inundated by the mainstream reservoirs would no longer experience the ecologically important transition seasons. All other reaches of the Mekong River would experience a reduction in the duration of transition seasons, which play an important role in triggering biological processes within riverine and floodplain habitats. If all mainstream projects were to proceed, Vietnam and Cambodia are likely to suffer net short to medium term losses because the combined effects on fisheries and agriculture would outweigh any power benefits (MRC, 2010). Furthermore, the loss of fish and associated aquatic life due to dams on the Mekong would likely lead to damaging declines in protein intake and nutritional health in Lower Mekong Basin populations. Moreover, any increase in rural poverty is likely to act as another push factor for rural-urban migration compounding urban poverty issues. (MRC, 2010)

- **Energy:** The main energy source in Cambodia is wood, accounting for 80% of national energy consumption. Approximately 22% of Cambodians have access to electricity, though Phnom Penh (around 10% of the population), uses more than 85% of total electricity consumed. Cambodia considers diesel fuel as the principal source of electricity generation and most of the commercial energy used for power generation, transport, industry, residences and commercial sectors comes from oil. In 2010 electricity imports from Thailand and Vietnam made up over 40% of the country's total supply. The Electricity Authority of Cambodia (EAC) reported total electricity consumption in 2008 as 1859 GWh, with expected annual growth of 12% per year until 2024 and 5% per year until 2050. MIME plans electricity generation and expects that by 2020, 68% will be generated by hydro dams and 15% by coal fired power plants. Alternative energy sources include hydropower, natural gas and solar, with renewable resources in general considered to be relatively abundant. The potential of these resources remains largely untapped. Cambodia is endowed with a high technical potential for hydropower, estimated at 8,000 to 10,000 MW of installed capacity. The technical potential for electricity generation from biomass has been estimated at 18,800 GWh per year, including forest products, agricultural crops and residues, municipal waste and sewerage.

- **Air Quality:** Mixed solid wastes are commonly burned in open areas, causing atmospheric pollution resulting from emission of carbon oxides, SO₂, NO_x, including Dioxins and Furans. There are many sources of air pollution but the predominant one relevant to Cambodia is from the increasing number of vehicles on the road and old generators, which utilise fuels to support industrial activities and services.

- **GHG:** Cambodia wishes to propose a GHG mitigation contribution for the period 2020 – 2030, conditional upon the availability of support from the international community, in particular in accordance with Article 4.3 of the UNFCCC. **Energy industries, manufacturing industries, transport, and other sectors:** Cambodia expected to be a maximum reduction of 3,100 Gg CO₂eq compared to baseline emissions of 11,600 Gg CO₂eq by 2030. **LULUCF:** Cambodia intends to undertake voluntary and conditional actions to achieve the target of increasing forest cover to 60% of national land area by 2030. In absence of any actions the net sequestration from LULUCF is expected to reduce to 7,897 GgCO₂ in 2030 compared to projected sequestration of 18,492 GgCO₂ in 2010. (from Cambodia's Intended Nationally Determined Contribution)

2. Policies, strategies, plans, networks (government, civil society, private sector)

From Cambodia's VNR 2019:

- Cambodia ratified the Stockholm Convention on 23rd May 2001, and the first National Implementation Plan (NIP) of the Convention was prepared in June 2006 and submitted to the Conference of the Parties. According to the Convention, all parties undertake to prepare an updating of implementation plan five years after submission of the original plan. The initial NIP established four action plans, namely: (1) Action Plan on Persistent Organic Pollutants (POPs) pesticides; (2) Action Plan on PCBs; (3) Action Plan on unintentionally produced POPs; and (4) Action Plan on the management of the NIP implementation.

- The Cambodian government response to climate change includes a Climate Change Strategic Plan 2014-2023, sectoral Climate Change Action Plans, and the Nationally Determined Contribution (NDC) to the Paris Climate Agreement in 2015.
- Regarding the hazardous waste management, the MOE has issued a number of sub-decrees including Sub-Decree on Municipal Solid Waste Management, Sub-Decree on Social Environmental Fund, Sub-Decree on the Management of Electrical and Electronic Waste, Sub-Decree on Plastic Bag Management and Sub-decree on the Management of Sewage System and Water Treatment.
- Sustainable Consumption and Production is integrated into the Environment and Natural Resources Code under the Environmental Management and Sustainability Mechanisms. The purpose is to promote the adoption of sustainable consumption and production practice as well as sustainable procurement.
- Resources efficiency is being implemented to ensure sustainable consumption and production which can be achieved with low investment cost and effort. After the approval of environmental code, the sustainable consumption and production will be integrated in different sectors including industry, tourism, energy, etc. Since SCP reflects such a significant shift away from our current 'take-make-dispose' culture, systemic change is necessary. This requires shifting from our traditional model of economic growth to a 'circular economy' approach, which is based on three things including designing-out waste and pollution, keeping products and materials in use, and regenerating natural systems.

3. Programs and projects (government, civil society, private sector)

- Cooperation with the European Union has continued over more than a decade to promote the shift to sustainable consumption and production through SWITCH-Asia utilising the Grants Programme, which in the past has made possible eight projects between 2009 and 2019, aimed at energy efficiency, environmental management, waste management, and resources efficiency in the textile and leather, rice, and rattan industries. (Source: <https://www.switch-asia.eu/countries/south-east-asia/cambodia/>)
- Proliferation of Sustainable Consumption and Production (SCP) in Asia – the Next 5 Countries (SCP Outreach) 2019 – 2023 (Implemented by GIZ)

- The project will support the development and implementation of eco-labels and sustainable consumption and production (SCP) patterns, particularly in the field of public procurement, in five Asian developing countries with the support of Thailand. The project activities will be adapted to the specific country contexts and requirements within the framework of SCP. The activities focus on strengthening institutions, including the provision of technical training courses to government officials, knowledge transfer and drafting integrated policy solutions on a regional level. This includes regional workshops for knowledge transfer between different implementation partners as well as stakeholder meetings to define cross-border core criteria for eco-labels and GPP in the ASEAN Economic Community (AEC). It is planned to support partner institutions in the different countries with the integration of climate friendly and low-carbon criteria into eco-labels through capacity development and awareness raising. This will be done with training courses, train-the-trainer packages and analyzing international GPP best practices.

- The main areas of support are (1) Legal frameworks, communication systems and appropriate incentive mechanisms are established to address the particularly climate-relevant products and services within the framework of public, sustainable procurement and the environmental label system in the target countries, (2) Strategies for sustainable public procurement are prepared, (3) Environmental labels (type I) are supported in the partner countries at the institutional level, and (4) Mutual recognition of environmental labels in the target countries has improved.

- Energy Efficiency Program: Cambodia does not have a national energy efficiency label for electric appliances and all products are imported from other countries, so energy labels are dependent on the country where the products are imported from. (Sustainable Consumption and Production Baseline Research for ASEAN, 2019)

- Recycling Program (Sustainable Consumption and Production Baseline Research for ASEAN, 2019):

- The Ministry of Environment is designated by Cambodia's law on Environmental Protection and Natural Resource Management (1996), as the leading agency with regards to waste management and pollution control. There is currently no official recycling policy, program or infrastructure in Cambodia but there is an informal developed system of waste pickers and craft villages which scavenge and pick out recyclable waste to sell or make into new products. These informal recyclers contribute to Cambodia's recycling rate of 11%. As part of the 2018 Waste Management Strategy and Action Plan of Phnom Penh 2018-2023, the promotion of recycling through waste separation, the involvement of the private recycling sector and encouraging the use of recyclables forms one part of its action areas. The government aims to enhance the city's recycling capacity by facilitating the creation of the domestic recycling industry. Currently, recycling activities are still limited, and the government is looking to attract both investment and private recyclers while raising consumer awareness.

- The project will support the development and implementation of eco-labels and sustainable consumption and production (SCP) patterns, particularly in the field of public procurement, in five Asian developing countries with the support of Thailand. The project activities will be adapted to the specific country contexts and requirements within the framework of SCP. The activities focus on strengthening institutions, including the provision of technical training courses to government officials, knowledge transfer and drafting integrated policy solutions on a regional level. This includes regional workshops for knowledge transfer between different implementation partners as well as stakeholder meetings to define cross-border core criteria for eco-labels and GPP in the ASEAN Economic Community (AEC). It is planned to support partner institutions in the different countries with the integration of climate friendly and low-carbon criteria into eco-labels through capacity development and awareness raising. This will be done with training courses, train-the-trainer packages and analyzing international GPP best practices.

- This action plan seems to be built on Cambodia's national strategy on 3R for waste management, which has been formulated since 2008. The action plan aims to reduce, reuse and recycle waste and products while staying economically feasible. The strategy outlines two targets related to recycling:

- By 2015, solid waste separation for recycling purpose should be between 10 to 20% for household, 30 to 40% for business areas, and 50% for industrial wastes, while organic waste composting is about 20% for household organic wastes (including business centers); and

- By 2020, solid waste separation for recycling purpose should be increased to 50% for households waste, 70% for business areas, and 80% for industrial wastes, while waste composting should be increased double to 40% for household organic wastes, and 50% for organic wastes from business centers.

- However, it is difficult to assess the above targets as there is no formal assessment or survey on 3R practices in the country. Recycling in the country is also limited and the domestic recycling industry is underdeveloped. While as much 19.5% of plastic waste was found to be collected in Phnom Penh and exported for recycling in 2005, the industry is still hindered by a largely monopolistic market, dominated by several major export firms and limited by appropriate recycling infrastructure. The lack of distinctive and/or overlapping roles and responsibilities for district government, municipal authorities and relevant ministries makes it challenging to coordinate actions in addressing plastic waste and enforcing laws and regulations on waste. Budgetary, technical and capacity related constraints and lack of technically competent officers hinder the improvement of waste management and recycling practices. Lastly, data on the recycling industry is often inconsistent and unverifiable.

4. SDG12 reporting/monitoring and evaluation

- The VNR 2019 reviews progress, and to date this has been promising, with a majority of Cambodian SDG targets rated as “ahead” or “on track”. This is especially true of the six prioritized goals (Education, Decent Work and Growth, Reduced, Inequalities, Climate Action, Peace and Institutions, and SDG Partnerships). Moreover, these six each figure within the Royal Government of Cambodia (RGC)’s strategic planning priorities, as set out in the Rectangular Strategy Phase IV (RS-IV) and the National Strategic Development Plan (NSDP) 2019-2023.

- Progress of CSDG 12 in VNR 2019 is shown in **Table 1.1**

Table 1.1 Progress of CSDG 12

	Targets & Indicators	Unit	CSDG target				Actual			Progress
			2015	2016	2017	2018	2016	2017	2018	
12.4	By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed International frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment									Below
12.4.1	Percentage of release reduction of Persistent Organic Pollutants (POPs) to the environment	%	0.0	0.0	0.0	2.0	0.0	0.0	1.0	Below
12.4.2	Percentage of release reduction of mercury (Hg) to the environment	%	-	-	-	2.0	0.0	0.0	2.0	On track
12.4.3	Effectiveness management of hazardous waste and biological and radioactive waste	%	-	-	-	3.0	0.0	0.0	2.0	Below
12.5	By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse									Ahead
12.5.1	National recycling of materials used	1000 ton	163.0	163.0	175.0	178.0	247.0	304.0	290.0	Below

- Cambodia's Intended Nationally Determined Contribution (INDC) includes both adaptation and mitigation actions based on national circumstances.
 - Energy industries, manufacturing industries, transport, and other sectors: Cambodia intends to undertake actions as listed in Table 1.1, the impact of which is expected to be a maximum reduction of 3,100 Gg CO₂eq compared to baseline emissions of 11,600 Gg CO₂eq by 2030.
 - LULUCF: Cambodia intends to undertake voluntary and conditional actions to achieve the target of increasing forest cover to 60% of national land area by 2030. In absence of any actions the net sequestration from LULUCF is expected to reduce to 7,897 GgCO₂ in 2030 compared to projected sequestration of 18,492 GgCO₂ in 2010.

5. Key sectors or priorities

- Cambodia's priorities have long been focusing on economic growth and poverty reduction in mainly four sectoral pillars: agriculture, garment, tourism and construction.
- Sustainable energy: renewable energy, energy efficiency, and providing energy access, and waste-to-energy solutions.
- Enhancing capacity in infrastructure, water resources management, and agriculture which is adaptive to climate change.
- Increase of industrial productivity through using resources more efficiently and sustainable transportation.
- Overall, Cambodia seeks to diversify sectors and job creation to create value added and revenue while transforming the economy into a more developed and sustainable one. Such sectors include waste management (focus on recycling processing), energy, agri-food processing (focus on fish and aquaculture products), finance, and increased use of product-services combinations, e.g., in the context of a sharing economy. Technological advancement in the current stage of industrial revolution 4.0 will result in the creation of new kinds of jobs and businesses. The digital economy is advancing very quickly thanks to the high shares of telephone and internet users.
- Governance: strengthening the capacity of relevant public institutions at central and sub-national levels.
- Equality: reduction of poverty and the social gap through enhanced market participation, social protection and quality public services.

(Source: Country Profile Cambodia, SWITCH-Asia SCP Facility)

6. Challenges (readiness/mandate, financing, capacity, data etc. monitoring and evaluation, stakeholders)

From Country Profile Cambodia, SWITCH-Asia SCP Facility:

- Energy is a critical development challenge in Cambodia. Currently, only 40% of the population has access to reliable electricity. The RCG's Rural Electrification Fund which was set up to provide a sustainable supply of various types of energy at a reasonable price, has been supported by international development assistance and foreign direct investors, the latter mainly from China (e.g., hydropower).
- Waste management and recycling infrastructure is weak. Some of the recyclable waste is exported to Thailand and Vietnam for reprocessing. The remainder, especially in rural areas, is burnt due to the lack of dumpsites or waste collection services, or ends up as litter in the environment and waterways.
- Unsustainable practices in its main trading sectors (agriculture, garment, tourism) have resulted in advanced environmental pressures, while aspiring to grow the economy in view of further poverty reduction with a growing population and urbanisation. Challenges include the lack of sustainable urban transportation.
- Economic growth has come at a cost of over exploitation of Cambodia's fisheries and forests over the last decades. In addition, climate change has been causing adverse effects on the ecosystem and its socio-economic development.
- Agriculture plays an important role in the national economy, both in its contribution to poverty reduction, improvement in people's livelihoods and job creation. An accelerated and upscaled diversification and productivity of the agriculture sector is key to replace the widely used traditional production methods, which have negative environmental impacts, but clean agricultural technology is unaffordable.
- The mobilisation of resources for green growth remains a challenge due to high interest rates, low domestic savings, and rising household debt. Mobilizing science and technology cooperation and developing quality, competent and productive human resources are key to support green sector opportunities.
- Governing and developing capacity for green growth: lacking inclusivity, limited inter-sectoral collaboration, and weak public awareness.

From VNR 2019:

- Cambodia faces challenges in financing the sheer ambition of the SDG agenda and public expectations of improved public services, alongside declining overseas aid.
- The country remains exposed to the impacts of severe climatic events and global warming. This along with the need to combat environmental degradation in a rapidly developing middle income country.
- The main challenges to achieve CSDG 12 concern institutional arrangements and coordination because there are different ministries responsible for reduction plan implementation, measuring, reporting and verification. Another challenge is that CSDG indicators are limited to environmental related work while the main focuses of SDG delivery should be on designing-out of waste and pollution; keeping products and materials in use and regenerating natural systems.
- The use of hazardous substances, especially mercury substances are not yet well managed in an environmentally sound manner and there is no specific government institution responsible for mercury management. Financial and technical supports are still needed to achieve the targets.

7. Opportunities/Potential

SDG 12 opportunities from VNR 2019:

- Cambodia's economy remains buoyant – economic growth, private sector investment and public revenues remain strong, providing a solid basis for delivery. Driving these trends are structural changes in the economy towards high value-added activities, and Cambodia's young and dynamic population.

SDG 12 opportunities from SWITCH-Asia Country Profile:

- SWITCH-Asia can build on above ambitions to transform Cambodia's economy while remaining competitive in a growingly climate and environmental-aware ASEAN and global supply chains.
- Scale-up efforts to electrify the country by 2020 with sustainable energy, and support with energy consumption reduction efforts.
- Support inter-disciplinary nature of SCP by support of multi-sectoral cooperation.
- Train media to report on SCP and to create awareness among the public, particularly involve private enterprises in greening the development of the private sector (awareness rising, sector-specific capacity development).

- Further exploration of innovative finance as well as sustainable consumption will help to create an enabling environment for green investment to set market signals for the domestic economy and to foster new green job growth.
- Expand cooperation with international organisations and institutions that would support and provide recommendations on implementing measures, good practices, creating statistical data and monitoring and evaluation on material footprints and domestic material consumptions in the future.
- Further exploration of innovative finance will help SMEs as well as those involved in the agricultural sector access clean technology.

8. Case Studies

8.1 Case study of the SWITCH-Asia project “Waste-to-Energy in the Rice Milling Sector”

The Cambodian rice milling industry faces challenges to compete with neighbouring countries due to the high cost of processing and logistics — within which energy prices play a significant role. The rice milling sector in Cambodia potentially has 1.6 million metric tonnes of rice husk available that could be converted into energy. However, currently only about 10% of the rice husk is utilised as fuel biomass for waste-to-energy (WtE) technologies. Of the over 100 Cambodian RHG systems in use today, there are significant concerns over the negative environmental impacts from low-quality RHG systems. The main goal of the “WtE in rice milling sector” project, implemented from January 2012 to December 2015, was to promote sustainable production (SP) of milled rice through the replication of existing RHG technologies. The project promoted a standardised RHG technology and its application by 150 rice mills (30 rice mills with existing WtE installations and 120 new installations).

Three project components were implemented:

1. Technological improvements and the establishment of essential business services that support increased application of standardised WtE technologies over nine target provinces.
2. Development and implementation of a national standard for WtE technology and a licensing procedure that will encourage millers to switch to WtE.
3. Essential investment in business planning and the promotion of WtE, so that rice millers and WtE manufacturers have better access to investment credit. As banks and financial institutions (FIs) see the benefits, they will be better able to provide tailored financial packages to the sector.

Under Component 1, the project carried out Internal Management System to test some tools and templates on rice milling production at a number of selected mills (in terms of book and record keeping, operation and management of the mill, sales inventory, administration tasks, etc.). Training was also provided during testing and the project reached out to other relevant organisations (rice export and import organisations) in Cambodia to disseminate the templates and tools in order to capture a broader audience and introduce the applications.

Based on the project's experiences, basic safety procedures, operation and maintenance procedures and handling have proved to be a real challenge for most of the mills to abide by, which requires a gradual process and steady approach in order to change the present behaviour. The rice milling sector will need further supported in order for them to seamlessly adopt the proposals and create the necessary change.

During 2015, the project's focus was on blackwater assessments, disposal and management, and wastewater treatment plant improvements for three rice mills. A number of new activities related to turning waste into another source of biomass energy (e.g., pellets of rich husk char and other organic solid waste) and formulating a mixture of rice husk char with organic and slurry waste to create an organic fertiliser for agriculture crops. ([More project information is available on: http://www.switch-asia.eu/projects/w2e-in-rice-milling-sector.](http://www.switch-asia.eu/projects/w2e-in-rice-milling-sector))

(Chapter 7 Sustainable Energy through SCP in Cambodia, www.worldscientific.com)

8.2 Case study of the SWITCH-Asia project "Mainstreaming Energy Efficiency through Business Innovation Support" (MEET-BIS Cambodia)

The MEET-BIS project promoted SP by SMEs in Cambodia by ensuring that they have access to affordable energy efficient and renewable energy technologies through scalable, commercially viable business innovation packages. The project did not target SMEs directly, but aimed to mobilise Cambodian suppliers of state-of-the-art and proven clean technology products, as well as (inter) national FIs that can offer financial services to SMEs to invest in these energy efficient technologies, if required. The project built on the experiences of the MEET-BIS Vietnam project, which was implemented from 2009 to 2013, also part of the SWITCH-Asia Programme. Trying to promote energy efficiency in a country with a low price of electricity (USD 0.06 per kWh) is a well-known challenge. As a first step, a baseline survey was conducted to investigate the experience of SMEs and identify the main obstacles encountered by SMEs regarding energy efficiency issues. The main barriers are too busy with other business issues, Lack of authoritative information, Cost of implementing new measures, Too much information available to select the best option.

To demonstrate of energy efficiency to SMEs, an audit was carried out in a garment factory to assess its energy saving potential, as well as showing the payback periods of the potential investments in new technology. The project strategy was to develop partnerships with suppliers of energy efficiency products at the beginning of the project, lead the market research, execute the marketing and sales campaigns, and build capacity of suppliers.

To facilitate these marketing and sales campaigns, MEET-BIS developed a Business Support Toolkit — based on a needs assessment of the partner suppliers — linked to the marketing and sales cycle, and specifically targeted to the SME sector. MEET-BIS as facilitator: market creator, business connector, capacity developer, international matchmaker. And MEET-BIS as innovator & initiator: developing marketing and sales tools for suppliers to approach SMEs profitably. An initial version of the Business Support Toolkit Manual in English and Khmer was provided to the suppliers. They were also supported with commercial and promotional materials specifically targeted towards their energy efficient and renewable energy products, which leverages their marketing approach to potential customers.

In terms of access to finance, two memoranda of understanding (MoU) were concluded with Aceda Bank and Mega Leasing Ltd. With the two FIs, five pilot financing models were developed: (SMEs) banks, lease firms, donor energy and climate funds, vendor leasing and ESCO structures, and crowdfunding type structures. Upon the conclusion of the MEET-BIS project in 2015, one pilot on product finance has been implemented with a leasing firm. At the policy level, an MoU was signed with the Ministry of Mines and Energy, who made a valuable contribution to the project implementation. Besides capacity building, the project also organised events in order to start the sales process for suppliers. Eight events have been held (workshops, business connection events, and sales training), involving and attracting 201 participants from project stakeholders, plus two seminars engaging 114 SMEs. Awareness has been raised among 765 SMEs through surveys, energy efficient and renewable energy technologies promotion, and providing information via newsletters. A total of 115 SMEs showed interest in energy efficient and water saving products and services by attending the seminars or by approaching the suppliers' sales agents at meetings organised by MEET-BIS project. Seven SMEs decided to invest in the energy efficient technologies.

APPENDIX C: COUNTRY BRIEF ON SCP FOR INDONESIA

1. Key Data

1.1. Economics

Indonesia, the largest economy in Southeast Asia, has seen a slowdown in growth since 2012, mostly due to the end of the commodities export boom. During the global financial crisis, Indonesia outperformed its regional neighbors and joined China and India as the only G20 members posting growth. Indonesia's annual budget deficit is capped at 3% of GDP, and the Government of Indonesia lowered its debt-to-GDP ratio from a peak of 100% shortly after the Asian financial crisis in 1999 to 34% today. In May 2017, Standard & Poor's became the last major ratings agency to upgrade Indonesia's sovereign credit rating to investment grade.

Poverty and unemployment, inadequate infrastructure, corruption, a complex regulatory environment, and unequal resource distribution among its regions are still part of Indonesia's economic landscape. President Joko Widodo – elected in July 2014 – seeks to develop Indonesia's maritime resources and pursue other infrastructure development, including significantly increasing its electrical power generation capacity. Fuel subsidies were significantly reduced in early 2015, a move which has helped the government redirect its spending to development priorities. Indonesia, with the nine other ASEAN members, will continue to move towards participation in the ASEAN Economic Community, though full implementation of economic integration has not yet materialized.

(Source: <https://www.cia.gov/the-world-factbook/countries/indonesia>)

Table 1.1 GDP Growth Rate and Inflation, % per year

GDP growth				Inflation			
2018	2019	2020	2021	2018	2019	2020	2021
5.2	5.0	2.5	5.0	3.2	2.8	3.0	2.8

(Source: www.adb.org/sites/default/files/publication/575626/ado2020.pdf)

Table 1.2. GNI per Capita and % Increase from Previous Year

GNI per Capita (USD)				%Increase			
2016	2017	2018	2019	2016	2017	2018	2019
3,400	3,530	3,850	4,050	-0.87	3.82	9.07	5.19

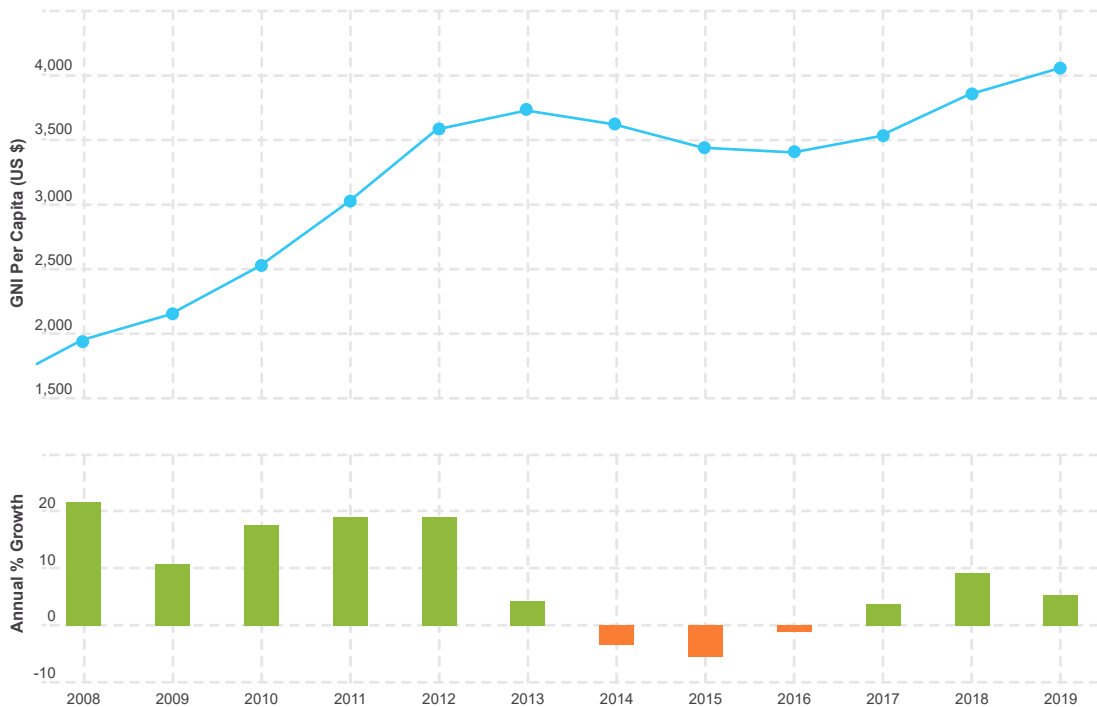


Figure 1.1. Indonesia's GNI per Capita and Growth Rate (2008-2019)
 (Source: www.macrotrends.net/countries/IDN/indonesia/gni-per-capita)

1.2. Social

Its population is majority urban and growing, with a fertility rate of 2.4 children and life expectancy at 69.1 years. Around 67% of the population is of legal working age (15–64 years). This is the population pyramid for Indonesia.

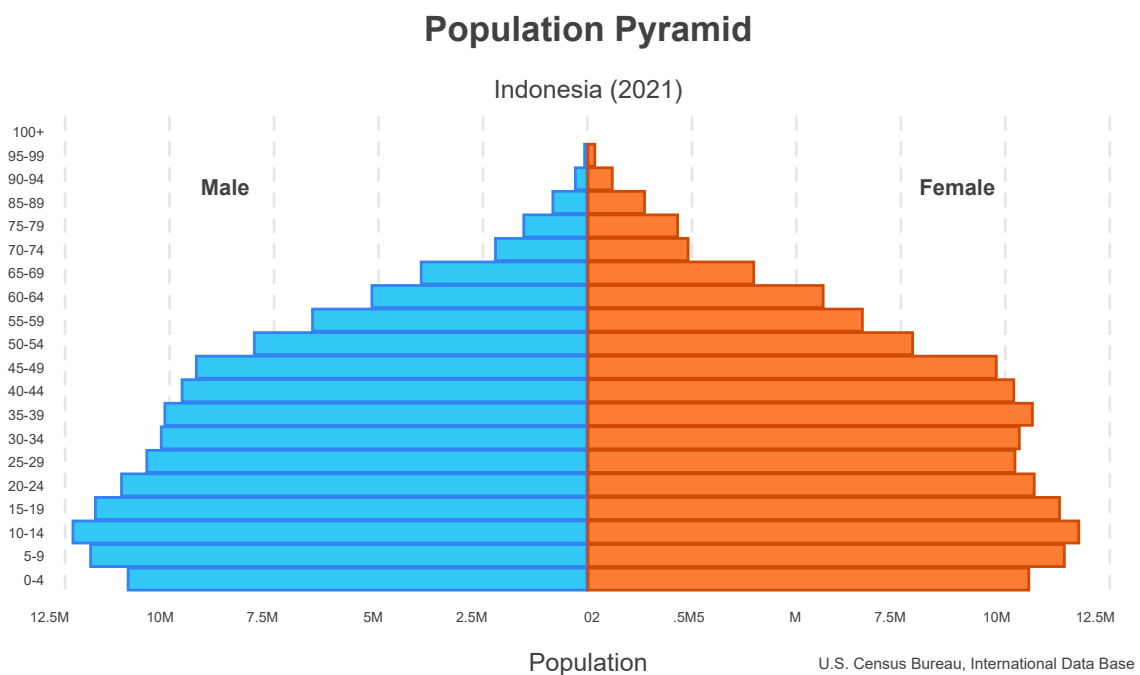


Figure 1.2. Indonesia's population pyramid for 2021

As of 2017, the labour force participation rate is 67.3% and the employment-to-population ratio is 63.4%. Both of those rates are more than 30 percentage points higher for men than for women. The total unemployment rate is 5.8%, and the youth unemployment rate is 19.2%, with the female youth rate 2.4 percentage points higher than the male rate. Formal employment is heavily reliant on services (at 46.2%), followed by agriculture (at 31.4%) and industry (at 22.4%) and on medium-skilled occupations.

Vulnerable employment in Indonesia accounts for 57% of the labour force, with the majority of those workers having own-account status. Own-account and contributing family workers are more likely to experience low job and income security than employees and employers, as well as lower coverage by social protection systems and employment regulation. Rural population growth was a negative 0.4% in 2015. In 2015, 33% of total employment was in the agriculture, forestry and fishing sector.

(Source: https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/documents/publicationw-cms_627808.pdf)

In 2015-2018, adjusted net attendance rate at primary education increased from 79.4% to 83.3%, Gross Enrollment Rate at Junior Secondary School increased from 91.17% to 91.52%, at Senior Secondary School increased from 78.02% to 80.68% and Tertiary level increased from 25.26% to 30.19%. Gender inequality at all levels is almost non-existent, while access to Primary and Junior Secondary School is almost equal across income groups. Almost half of youth participates in formal and non-formal education.

1.3. Environment

Indonesia ranks 107 out of 180 countries in the Environmental Performance Index (EPI), with a score of 65.85 (with 0 furthest from the high-performance benchmark target of 100). Indonesia outperforms the average score for Asia and the Pacific in most of the environmental categories, especially agriculture, biodiversity and habitat, and climate and energy. Still, there is significant room for improvement in most of the environmental areas, especially in ecosystem vitality (in water resources, forests, and fisheries).

The share of agricultural land area increased slightly between 1991 and 2014, reaching 31.5% of total land area. But the share of agricultural employment declined by 20.7 percentage points in that same time due to a loss of 2.3 million jobs and faster job creation in other sectors. The share of forest area declined by approximately 15 percentage points between 1990 and 2014, to 50.6% of total land area. During the same period, the share of terrestrial protected area increased slightly, to 14.7%. In 2014, the proportion of marine protected area amounted to 5.8% of total territorial waters.

Since 1990, the percentage of the population with access to improved water supply increased 17.9 percentage points, to 87.4% in 2015. There was a 25.6-percentage point increase in access to improved sanitation between 1990 and 2015, reaching 60.8%. Both, however, are still below the ideal threshold of 100%.

According to the World Bank, municipal solid waste generation was 0.52 kg per capita per day in 2008 and is expected to increase to 0.85 kg per capita per day by 2025. According to Cekindo, Indonesia is characterized as having little treatment of incoming waste, irregular soil cover applications, inadequate leachate treatment, landfill gas emissions and many waste pickers. The country had an estimated 1.2 million waste pickers in 2008. Most of the waste in 2000 was organic (at 63%), followed by plastics (at 10%), then paper, glass, metal (a combined share of 23%) and other (at 4%). Only 0.2% of the country's workforce was employed in water supply, sewerage, waste management and remediation activities in 2015. Furthermore, according to estimates, Indonesia is the world's second largest contributor of plastics to the oceans at 0.48-1.29 million t/year (Akenji, et al., 2019).

In 2014, only 56.6% of the population relied primarily on clean fuel and technology, in the sense that they do not create indoor pollution within the home. The share of renewable energy in total energy consumption, however, has not kept pace with overall consumption. In 2000, it was 45.6% but fell below 40% in 2009 and continued to decline to 38.1% in 2014. Renewable energy generation increased between 2011 and 2013 but has since been in a downward trajectory, with hydropower, geothermal and bioenergy as the main sources of renewable energy in 2015. According to the ASEAN Centre for Energy, the Government of Indonesia aims to promote the use of coal in the electricity sector because it is domestically available and relatively cheap when compared with other energy sources. Yet, Indonesia has large geothermal potential, which could provide opportunities for future exploitation. Mini hydropower is considered an important resource for rural electrification. In 2016, more than 205,000 people were employed in the renewable energy sector, with 75% of them in liquid biofuels and 22% in large hydropower facilities. The country's share of employment in electricity, gas and water supply was only 0.2% in 2015.

According to the World Risk Report, Indonesia has a high World Risk Index score. It ranks 36 (out of 171 countries) due to its very high exposure to natural hazards and limited adaptive capacity to respond. Part of the country's vulnerability is due to the 7.4% of the total population who lived in the 2.7% of total land area below 5 meters above sea level as of 2010. According to the Emergency Events Database, there was a substantial increase in natural disasters between the 1960s and the 2010s and associated damage costs fluctuated. The natural disasters in that time were mostly tropical cyclones, storms, floods, landslides, droughts, and forest fires which resulted in more than 20,000 deaths.

(Source: https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/documents/publication/wcms_627808.pdf)

2. Policies, strategies, plans, networks (government, civil society, private sector)

(Source: Scoping Paper on GE and SCP)

Indonesia's main umbrella for green economy initiatives is stated in the long-term national development planning of 2005-2025 (Law No. 17/2007). This law states that long-term development should be carried out to achieve four main goals i.e., 1) competitive Indonesia, 2) just and distributed development, 3) green and everlasting Indonesia, and 4) strong and self-reliant archipelagic country based on national interests. These long-term national development goals are then pursued through setting up national priority development. Among 14 national development priorities are related to green economy initiatives. These include food security (which include adaptation to climate change), energy, and environmental and disaster management.

The progress toward green economy is gaining strong momentum with the establishment of new Environmental Law. The Law No. 39/2009 on Environmental Protection and Management strongly encourages 'greening Indonesia' through various mandates and mechanisms such as financing and development planning mechanism as well as the use of economic instrument to achieve sound environmental management without sacrificing economic growth.

Other existing initiatives on green economy which have been established for quite period of times are those initiated by the ministry of environment. One of the longest existing initiatives is the establishment and promotion of calculating green GDP at both national and regional levels. Indonesia's green GDP, which is measuring conventional GDP minus resource and environmental depreciation, has been established since late 1990s. The initiatives which were initially supported by foreign donors, has led to establishment of crucial institution dealing with such issues such as green accounting division at Central Statistic Agency. The green GDP program was then duplicated at various regional levels such as those in Kalimantan and other provinces as well as at sectoral level such as green GDP for forestry sector. In 2006, the ministry of environment has calculated green GDP for thirty provinces in Indonesia.

The Ministry of Environment along with other institutions has also helped to disseminate the use of economic valuation for environment and natural resources. This valuation techniques which emphasize the important of non-market values of environmental services has now been widely adopted at various levels as a tool for valuing the true value of environmental services and to reduce overconsumption of natural resources and to prevent further environmental degradation.

In agriculture sector, green economy initiatives have been developed to encourage sustainable agricultural practices. Several existing initiatives within agriculture sector include:

- Measurement of agriculture productivity based on water utilization
- Application of net carbon absorption system
- Policy to support farming system on dry land
- Policy to encourage plantation which use carbon absorption trees

- Provision of special allocation fund for adaptation and mitigation of environmental problems and climate change
- Policy to support agricultural activities which minimize energy import
- Programs to develop more “Energy Self-sufficient Village” or Desa Mandiri Energy which encourage the use of local renewable energy resources
- Programs to support seaweed farming as carbon absorption activities
- Policy to support Indonesia Sustainable Palm Oil System

Similarly, within the forestry sector, green economy initiative is directed toward sustainable forest management. The current bold initiatives include “replanting trees movement” or “one man one tree programs” and utilization of forest area for restoration ecosystem business. The ministry of forestry currently allocates more than 2.4 million ha for this forest restoration business. This initiative has been implemented in cooperation with private sectors.

Other programs which have been initiated by the KLH (Institutional Ministry of Environment, Indonesia):

- Promoting and implementing 3R (Reduce, Reuse, Recycle) to various institutions and communities at large
- Investment program for hazardous waste. The government provides incentives and subsidies for investment to manage hazardous wastes
- Programs to promote and disseminate green economic concepts through various national and regional events

In the energy sector, green economy initiatives are implemented in various strategies and programs. Strategies toward green economy in energy sectors are two-folds, supply side strategy and demand side strategy. The supply side strategy aimed to implement mandatory provision of renewable energy, increase the use of renewable energy, and increase the use of clean fuel (fuel switching). The demand side strategy is aimed to implement energy efficiency commitment, promote fuel switching, promote energy saving, utilize clean energy technology, and promote efficient culture and way of life.

To achieve such strategies, several policy instruments are developed. These include legal instrument through the use of Energy Act, Electricity Act, Nuclear Act, Geothermal Act and government regulation on energy conversion. In addition to legal instrument, the policy on green energy is also strengthened by Fiscal instrument. These include: Presidential Instruction on incentive provision for energy conservation; Tariffs and taxes exemption for activities related to utilization of renewable energy; Pricing policy and subsidy switching from fossil energy toward renewable energy.

Other two instruments that also enacted to support green economy initiatives are related to institutional support and financing support. Within institutional support, department of energy and mineral resource is in the process of establishing new directorate general within the ministry that deals with renewable energy and conservation energy. The ministry also works with stakeholders association to promote renewable energy utilization.

In terms of financial support, the government has allocated special budget for mitigation program both from national budget as well as from clean development mechanism (CDM).

Currently several programs have been developed to implement the green economic policy in energy sectors. These include:

- Program on developing and accelerating geothermal utilization
- Bioenergy development
- Developing renewable energy non-fossil
- Increase energy efficiency utilization
- Developing and implementing clean energy technology
- Completion and harmonization of rules and regulations related to renewable energy
- Increase local content and supporting industries for renewable energy
- Intensify community self-reliance on energy and village energy self-reliance programs
- Intensify research and development on renewable energy; Intensify training and education on renewable energy.

One key example of recent efforts to address plastics and plastic waste led by the Indonesian government includes its launch of the country's National Action Plan on Marine Debris (2017-2025) in June 2017. This action plan, which was developed by 13 government ministries, calls for efforts to reduce 70% of marine plastic debris (from 2017 baseline) by the end of 2025. It consists of five pillars: "Improve behavioral change", "Reduce land-based leakage", "Reduce sea-based leakage", "Reduce plastics production and use", and "Enhance funding mechanisms, policy reform and law enforcement".

The country's willingness to allocate finance for the issue can be also seen from the recent announcement that the government has pledged to spend up to USD1 billion for cleaning up its rivers and seas. Other efforts to be noted include the recent application of plastic bag tax (IDR200/bag, USD0.01) for a trial period of three months in 2016 at retailers in 23 cities. The main legal framework for management of municipal solid waste is the Waste Management Law of 2008 (No. 18/2008).

3. Programs and projects (government, civil society, private sector)

At local levels, there is not much initiatives have been developed regarding green economy initiatives. Nevertheless, several communities have been practicing "green life style" based on local wisdom and preserved traditional ways of life. Such an example can be found in traditional community of Baduy people in Banten Province. This tribe has been long known for its strict rule on "energy efficiency" by limiting resources utilization from nature and strict rule on conservation. The tribe bans electricity as well as other "modern appliances" to be used in daily life. The tribe is also known for its consistency in practicing sustainable agriculture by not using pesticides, and other chemical components to increase agriculture productivity.

In addition, several municipalities are now trying to adopt green economy strategy in their city development. For example, the city of Bogor which has been well known as the “City of one million mini vans public transport”, since 2005 has initiated a decent public transport using bio-diesel.

Private sector initiatives of green economy in Indonesia are vary. The most notable initiatives are those related to real estate development in Java and other provinces. As UNEP defines, green economy involves transition to reshape and refocusing policies, investment and spending toward green sectors. This type of transition has been found in the development of “new cities” in peripheral Jakarta and Surabaya whereby private sectors have been spending significant amount of investment for waste management, green infrastructure, water treatment, and renewable energy.

Other private sector initiatives are also found related to promoting green economy and green building. One company is actively involved in green community campaign using media such as radio television. The private company provides reward and incentives for communities which have been selected and evaluated fulfilling green economy criteria such as waste management, green infrastructure, and others. This type of campaign has been augmented involving more communities and other private institutions. Several civil society organizations have also been found actively involved in promoting green economy. Their activities ranging from waste management program to more complex activities such tapping renewable energy resources.

WWF-Indonesia is performing analysis and review of Indonesia’s Intended Nationally Determined Contribution gradually by involving government, private sectors as well as civil society organizations (CSOs). The analysis and review aim to result in mitigation actions and policy strategies for reducing GHG emissions in the agricultural sector. Based on analysis of sustainable business models, WWF-Indonesia is targeting establishment of a platform that accommodates corporates collaboration to progress collectively in implementing sustainability practices. WWF-Indonesia is engaging with interested companies and other initiatives such as the Indonesia Business Council for Sustainable Development (IBCSD) to establish such platform with a sub working group focused on palm oil. WWF will also develop tools to support this process, including Sustainable Retail Scorecard and Sustainable Retail Guideline.

Developing from WWF-Indonesia’s ‘Beli Yang Baik’ campaign that was initiated in 2015, consumers work performed under IKI SCP Project aims to increase understanding of sustainable consumption and production practices among Indonesian consumers. The strategy is to partner with community groups to increase the campaign outreach. One of them is the Earth Hour community, a locally based youth group that actively distribute messages and perform educational activities on green lifestyle. Under the IKI SCP Project, the community is extending ‘Beli Yang Baik’ campaign to target university students in 7 cities (Jakarta, Bogor, Tangerang, Bandung, Cimahi, Surabaya, Sidoarjo, Malang). Another engaged community is The Indonesia Organic Community (KOI) that consists of small and medium scale producers of organic products. WWF-Indonesia is supporting the community’s ‘Local for Local’ campaign that targets both the producer members and their customers to understand the importance of consuming products that are produced locally and organically with minimum waste.

The last community partner for the project is Burgreens, a social enterprise that aims to educate consumers on the benefits of plant-based eating for environmental and human health. Burgreens initiated the 'Live Greener' campaign that aims to educate young professionals, community leaders and environment sustainability enthusiasts on the overall aspect of sustainable living which covers food, fashion and home living. Two other initiatives in this project are to engage with groups of social gathering commonly known in Indonesia as 'arisan' and to raise consumer awareness on SCP using digital platform to distribute information regarding SCP and green shopping guideline. For this we are targeting collaborations with existing online shopping platforms such as Gojek, Tokopedia, Happy Fresh, Bukalapak, JD.id, Shopee, etc. whose users continues to increase.

4. SDG12 reporting/monitoring and evaluation

4.1. Sustainable Use of Biodiversity and Primary Resources (from VNR)

4.1.1. Agriculture (SDG 2)

The mitigation policies in the agriculture sector include: (1) The application of agricultural cultivation technology through the Rice Intensification System, integrated crop management, and the use of low emission rice varieties; (2) Utilization of organic fertilizers and biopesticides in the form of subsidized organic fertilizer and procurement of Processing Units Organic Fertilizer (UPPO); and (3) Utilization of manure/urine and agricultural waste for biogas.

However, in terms of food provision, the country still faces challenges and problems such as (1) conversion of agricultural land for other uses continues while expansion of agricultural land remains limited; (2) degradation of the quality of water resources and competition of water use for other purposes; (3) food agriculture business is dominated by small-scale farmers who are old with relatively low formal education, thus they have limited access to technology, information, markets, and business financing; (4) increasing frequency and intensity of natural disasters related to climate change; (5) the proportion of yield loss and food waste is still large; (6) logistical infrastructure and food distribution are unequal, particularly in the eastern region of Indonesia, causing food insecurity in the region; and (7) limited partnerships between small and large scale agricultural enterprises.

4.1.2. Fisheries and Other Marine Sources (SDG 14)

During the period of 2015-2018, there was an increase in marine protected areas every year. Marine protected areas increased from 17.30 million ha (2015) to 19.30 million ha (2018). This consistent increase shows that Indonesia is optimistic about achieving the target of 20 million ha of marine protected area by 2019.

In the effort to encourage the use and management of sustainable fisheries resources, Indonesia has divided fisheries management into 11 Fisheries Management Areas (WPP), which are stipulated in the Minister for Marine Affairs and Fisheries Decree No.18 Year 2014. Moreover, the Fisheries Management Plan (RPP) for all WPP has been determined through the Ministerial Decree of Marine and Fisheries Affairs.

4.1.3. Forestry (SDG 15)

The forestry and peat land sector is the largest emission contributor in Indonesia, but the field also has a considerable ability to reduce emissions. Policies in the form of mitigation actions in the fields of forestry and peat land include: (1) Control of forest and peat land fires; (2) Forest and land rehabilitation; (3) Moratorium and postponement of new permits to primary forests and peat lands; (4) Decrease in deforestation; (5) Increase in implementation of sustainable forest management principles, both in natural forests (decreasing forest degradation) and in plantations; and (6) Peat land restoration.

During the period of 2011-2017, Indonesia's forest and land cover area experienced decline. Nationally, the proportion of forest and land cover decreased from 52.22% (2011) to 50.18% (2017). This attributed to various factors, both human activities and natural disasters which exert pressure on the area of forest and land cover in Indonesia.

Environmental damage, especially in terrestrial ecosystems was caused by the existence of legal violations in the natural resources sector and the environment, such as illegal logging, forest and land fires, illegal mining, and non-procedural forest exploitation. In addition, the shrinking of the ideal habitat for endangered species on four major islands (Sumatra, Java, Kalimantan and Sulawesi) was driven by an increase in the area of monoculture plantations which increasingly suppress forest cover and can result in increased biodiversity loss if not immediately addressed.

4.2. Source Reduction (Plastic Waste) (from CE&Plastics)

Municipal bans on plastic bags have already been introduced in selected cities; Banjarmasin City and Bogor City for instance have established ban that have resulted in a notable reduction of disposable plastic bags (Banjarmasin city: introduced in 2016, resulting in a reduction of 80%; Bogor City: introduced in July 2018, resulting in a reduction of 41 tons of disposable plastic bags each month). Bogor City has indicated that it intends to extend this regulation to traditional markets in the future.

At the local level, most governments face obstacles with carrying out responsibilities for waste management. Waste collection is primarily led by local communities, with a number of grass-roots initiatives (e.g. Waste Banks) picked-up/ supported by local governments. However, there is a lack of collection service in some areas, as well as insufficient inter-municipal cooperation.

Consequently, local governments are in critical need of developing an integrated waste system that extends from points of collection to recycling and final disposal, in addition to increasing related technical skills. Moreover, as most recycling is conducted by the informal sector, local governments face difficulties with setting up a formal system for separate collection, due to the high number of informal collectors. As mentioned, the country has established several key policies and strategies on waste management, recently also targeting plastics issues. However, research has revealed that policies are sufficiently translated into practice, mainly due to lack of skills and knowledge and the need to develop more evidence-based policymaking.

Private sector actors in Indonesia recognized the urgency of the issue and have started to take actions, particularly accelerating the technology improvement such as for product design and effective waste recycling and collection. However, there exists insufficient capacity with regard to plastics waste prevention, as well as less responsibilities for industrial and commercial waste. Some discussions have highlighted making EPR mandatory for producers including brand owners and manufacturers.

4.3. Cleaner Production and Energy Efficiency (SDG 7 & 13) (from VNR)

Energy security focuses on the supply clean energy and optimization of gasses and coal usage, and also minimize import dependency in particular energy resources. In 2018, natural gas lifting reaches 1,140-thousand-barrel oil equivalent per day (BOEPD) or 99.1% from 2018 target, which is aligned with the production from the several natural gas fields built that have operated. Development of city gas network is also increasing, reaching 463.619 households through city gas network in 2018.

Average of primary energy intensity is 500 BOE (Barrels Oil Equivalent) per billion rupiah and final energy intensity around 325 BOE/billion rupiah. The big difference shows that there is an inefficiency in the process of energy conversion. Moreover, losses during energy transmission and distribution, especially in electricity energy is still high. In 2018, capacity factor from all type of electricity generator is 62.6%. Losses and own use during electricity transmission and distribution is 9.6%, decreasing from the previous year. Electricity transmission is more effective, therefore cost of production can also be more efficient. Besides inefficiency in electricity provision, inefficiency is still a challenge in crude oil conversion into fuel. Average of refinery fuel and losses of national oil lifting reaches 84,000 barrels per day or around 8.1% for oil lifting production, while efficiency of natural gas conversion process into LNG in LNG refinery is 84% on average.

The saving of energy consumption is still low, while it has a potential savings of 10- 15% of total energy consumption. Energy audit has been conducted for identifying energy waste points and measures to improve energy efficiency use for strategic manufacturing industries, such as steel, aluminum, pulp/paper, mining, and textile.

Challenges in quality of energy provision and electricity includes (1) High usage of fossil energy and low renewable energy in energy mix; (2) Slow development of energy infrastructure; (3) Unequal access of electricity in which few households still have no electricity; (4) Uncompetitive renewable energy prices and subsidies not on target yet; (5) Decreasing national energy reserve; and (6) Energy resources are considered as commodity, not as development capital.

Potential of energy savings per year from manufacture industry is relatively high, about 10-15%, but it needs extra effort to maximize this potential. Problems in increasing energy efficiency includes: (1) Lack of incentive to industrial stakeholder for efforts in energy saving; (2) Availability of financial instrument/fiscal such as project financing and interest rate subsidies; (3) Availability of energy user data and financial institution with inadequate human resources for research on energy efficiency investment; and (4) Coordination barriers between Ministries/Institution and Sub-National Government in promoting energy savings for street lighting and government buildings.

4.4. Sustainable Transportation (from VNR)

The mitigation policies carried out by the Ministry of Transportation include actions in the land, sea, air and railway transportation sectors, such as, (1) Provision of bus stimulus assistance for several cities; (2) Installation of ATCS (Area Traffic Control Systems) in national road segments; (3) Optimization of aviation efficiency; (4) Rejuvenation of Performance Base Navigation (PBN) of air transport; (5) Reforestation and utilization of new and renewable energy in of airport environments; (6) Construction of solar cell technology on shipping navigation aid instrument (SBNP); and (7) Construction of dual railroad lanes along northern Java, in Jabodetabek urban area, and the Trans Sumatra railway line.

4.5. Awareness-raising and Clean-up Campaigns

In terms of sorting and recycling of packaging waste, the Packaging and Recycling Alliance for Indonesia (PRAISE) works for recycling, public education and awareness raising activities. Voluntary approaches have been taken by the private sector as part of their Corporate Social Responsibility activities. (from CE&Plastics)

Several civil society organizations have also been found actively involved in promoting green economy. Their activities ranging from waste management program to more complex activities such tapping renewable energy resources. One of the NGOs, for example, is very well known for promoting “micro hydro” which is basically tapping renewable energy for electricity using cost-effective mechanism. The “micro hydro” even though initiated by the NGOs, once is running, it could be managed totally by the community. Other NGOs in Central java for example, is actively promoting “garbage bank” whereby people would be able to have saving account by recycling garbage. Similar initiatives are found in small-scale program for waste, water and energy management in various villages in the country. (from Scoping Paper on GE and SCP)

4.6. Corporate and Industry Involvement (from VNR)

The discussion of Goal 12 in Indonesia is focused on the implementation of sustainable consumption and production patterns in Indonesia, which is measured by several indicators, such as: (1) the number of “Proper” participants who achieve a minimum blue rank; and (2) the number of companies that apply SNI certification of ISO 14001.

The company performance rating program (Proper) is a program to assess the level of company’s role in environmental management. There are five Proper categories, namely Gold, Green, Blue, Red and Black, which are in order of company performance from the best/consistent to the lowest. During the period of 2002-2016 there was an improvement of the proportion of companies that are contributed positively to environment, from 60% (2002-2003) to 85% (2015-2016). In the 2015-2016 period there were 12 companies with the title of Gold, 172 Green, 1,422 Blue, 284 Red, while only 3 companies received the Black category. SNI ISO 14001 is an internationally agreed specification in implementing requirements for environmental management systems. During the period of 2010-2017 the number of companies in Indonesia who have received ISO 14001 certification has increased from 1,028 (2010) to 2,197 companies (2017).

Mitigation actions in the industrial sector consists of, among others, the implementation of energy conservation/diversification and the application of modifications in the process and technology in the cement industry. Energy conservation/diversification implementation activities consist of 4 activities, namely: (1) Energy conservation in energy-consuming industries; (2) Implementation of EnMS and system optimization in energy-wasteful industries; (3) Implementation of EnMS and energy efficiency in pulp & paper, steel, textile and food industries; and (4) Conservation of energy in the cement industry.

5. Key sectors or priorities

National Policy Priorities and their relationship with green economy initiatives from scoping paper on Green Activities and Sustainable Consumption and Production:

Priority	Focus
Food Security	<ul style="list-style-type: none"> • Land, Area Development, and Agricultural Spatial Plan • Infrastructure • Research and Development • Investment, Finance, and Subsidy • Food and Nutrition • Adaptation to Climate Change
Energy	<ul style="list-style-type: none"> • Restructuring of State Enterprises • Energy Capacity • Alternative Energy • Oil and Gas Derivative Production • Gas Conversion
Environmental and Disaster Management	<ul style="list-style-type: none"> • Climate Change • Environmental Degradation Control • Early Warning System • Capacity Building on Disaster Mitigation and Forest Fire

SWITCH-Asia Country Profile:

In addition to responding to the challenges, there are key sectors and activities that will promote overall effectiveness SCP efforts and the long-term success of the SDG implementation including:

- In order to move away from carbon intensive growth, green banking and financing is important to scale up and provide more opportunities, especially for SMEs.
- National development priorities of pro-poor, pro-growth, pro-environment and pro-jobs intersect through sustainable tourism, making it a priority as well.
- With rapid urban population growth and already high urban population rates, resource efficiency in cities is a strategic area that affects majority of the country's population.
- The textile industry in Indonesia contributes a large percentage to the country's GDP while the batik industry in particular occupies a position in its national heritage, making its long-term sustainability a priority.
- Other key sectors include: sustainable food production and consumption including food waste, waste management handling and disposal; reducing plastic waste and marine litter; Green Public Procurement and eco-labelling; and energy efficiency.

6. Challenges (readiness/mandate, financing, capacity, data etc. monitoring and evaluation, stakeholders)

SDG 12 challenges from VNR:

- The need for intervention of operational policies regarding the implementation of the sustainable consumption and production principles in the business cycles and processes of government, private sector, and society, in a comprehensive manner including in terms of funding
- The need to eliminate the negative relations between economic growth, which often drains the quality of environment and natural resource reserves
- The need to implement sustainable production and consumption patterns to replace unsustainable development practices (decoupling) into sustainable development

SWITCH-Asia Country Profile:

- With SMEs making up a large percentage of businesses in Indonesia, inadequate technical capacity as well as a lack of access to finance to adopt clean technologies continues to be an issue.
- The financial sector has not yet been aligned with the goals of a low-carbon economy while the country continues to deal with growing natural resource demands.
- The overall investments required to place Indonesia's economy on a green and sustainable development pathway fall short.
- Eco-labelling efforts have either not yet fully implemented or have a very limited outreach and/or low number of certified products.

A discussion of the limitation and other challenges facing existing initiatives from scoping paper on Green Activities and Sustainable Consumption and Production:

First of all, it is widely acknowledged that supports from local government units are sometimes not encouraging. Some local governments are still pursuing development in the old ways relying on extracting natural resources without taking into account the costs associated with it. Conflicts over mining right on protected forest, for example, are still unresolved matters in several areas. This issue has been an ongoing battle for example in natural resource rich regions such as Sulawesi and Papua. Local regencies that obsess with increasing regional revenues are still pursuing the policy to allow mining on protected forests. This policy is off course a setback for national program on green economy.

Secondly, bureaucratic bottlenecks are also difficult to be eliminated. Green investment, as any other investment, requires support from government institution. It is in this area that Indonesia is still facing a big challenge. Obtaining business permit is not only taking a long period of time but also facing a complicated process through various institutions. This is not only costly for investors but also discourage further investment in green economy.

The third limitations and challenges are in the area of laws and regulations. These things are now become “a double-edge sword” for green economy initiative in Indonesia. On one side, the more laws and regulations enacted for environmental management, the better since green economy initiatives have more legal basis for their implementation. But on the other side, these laws and regulations are sometimes conflicting among each other creating disharmony of legal basis. Conflicting regulations are also creating distrust among institutions leading to more difficult implementation of green economy initiatives.

Fourth, even though fiscal policies to support green economy initiatives have been improving, some fiscal policies related to environmental management are still lacking. Current Acts on fiscal policies do not provide enough room for “earmarking” of revenues derived from environmental programs to be returned for environmental related activities. Similarly, fiscal support is still lacking to support green forestry sector.

Finally, green economy is challenging issue in developing country like Indonesia where poverty is still a big problem to be eradicated. With number of people living in poverty is still more than 25 million people; green economy is sometimes not a priority for common people. Therefore, people awareness is still lacking. This making it difficult to scaling up green economy programs throughout the country and throughout various community levels.

7. Opportunities/Potential

SDG 12 opportunities from VNR:

- Increasing driver of responsible consumption and production by creating demand through green public procurement policy for central and local government start at 2019 and educating sustainable lifestyle for communities in public facilities
- Developing Indonesia SCP resource poll as good practice sharing platform for stakeholder collaboration
- Strengthening SCP communication to public in improving communities of practices

SWITCH-Asia Country Profile:

- SWITCH-Asia could facilitate policy dialogues within and between the Indonesia SCP-related bodies such as the Ministry of Environment and Forestry, Ministry of National Development Planning (BAPPENAS) among other stakeholders.
- Scale-up technical and financial assistance to induce and enable eco-innovation among SMEs towards resource efficiency.
- Move forward with the Indonesian SCP National Blueprint 2030 through the lenses of the SDGs in general and SDG12 in particular.

- Explore the potential of the concept of Voluntary Agreements in Indonesia, where command and control approaches have only been developed to a limited extent.
- Build awareness through education, including by introduction of SCP-related issues into curricula, programs to train teachers, teaching materials and guidelines as well as through linking SCP to school management and using schools as hubs for informal education.

Major gaps and opportunities (Plastic Waste) from Gap-Analysis in ASEAN Member States:

- Reduce institutional fragmentation and establish clearer institutional responsibilities, among national government ministries as well as between the national and sub-national levels
- Strengthen technical skills and increase financial resources of local governments to implement and enforce national waste management laws and policies
- Increase the budget allocation and capacity building from central government to local government
- Encourage private sector investments for improving waste management systems and increase waste collection fees
- Develop upstream policies on product design, and plastic packaging and strengthen related legislation
- Establish strategies on Extended Producer Responsibility for the packaging sector to stimulate actions by the private sector
- Encourage dialogue among stakeholders along packaging value chains concerning design and recycling for a shift towards circular economy
- Take measures to integrate informal sector workers in collecting and sorting packaging waste
- Develop strategies for reducing plastic waste through sustainable consumption and production, including public awareness raising and regulations
- Developing metrics for monitoring and estimating the volume and flow of plastics waste leakage
- Customize recycling technology to local contexts
- Develop structured learning programs for students on good waste disposal practices
- Raise public awareness on the issues, including by encouraging wide public participation in regular community-led voluntary clean up campaigns at beaches, river and mangrove forests

8. Case Studies

8.1. Implementation of Integrated Risk Reduction Villages

Oelbetino Village of one of eight villages assisted by CARE International Indonesia (CII) in the Partners for Resilience (PfR) program. At the beginning of the program, the types of disasters identified in the village were tornadoes, droughts, livestock diseases, diarrhea and malaria, and also landslides. These threats have the potential to disrupt the community's livelihoods because the majority of residents work as farmers and ranchers. Dependency on natural resources makes people more vulnerable to these threats. The common strategies used by Oelbetino residents to reduce disaster risk include making village barns, planting protective trees around the land and applying water-efficient agricultural patterns.

Together with CARE and CIS Timor, residents formulated a joint action plan to reduce disaster risk affecting their sources of livelihood. This was followed up by small scale mitigation plans and actions by 7 farmer groups such as 1) protection of water springs and erosion control; 2) water supply and irrigation; 3) permanent agriculture (permaculture); and 4) cattle fattening. Now, some farmers have independently continued these practices, especially permaculture through the development of critical land for horticulture crops.

Results and impacts:

1. The changes of agricultural system

Before adopting the permaculture system, agriculture was based on shifting cultivation, by burning the forest to clear the land. This of course not only has a negative impact on the environment but also increases the risk of forest fires.

2. Additional income

The community received vocational training such as terraces farming techniques and organic fertilizer production. These trainings have brought change to people, both from the aspect of knowledge and also skills, greatly affecting their livelihoods.

Challenges and learning:

1. The need to improve advocacy capacity for community groups to guard Integrated Risk Management (PRT) Villages in formulation of village development plans

2. The need for wider replication at district level reached through a regional approach. The Oelbetino PRT Village has been integrated with the Village Fund. This means that there is a contribution from public funds to the sustainability of this program. The good practice shown in Oelbetino Village has also been replicated by a neighboring village.

8.2. Building with Nature Indonesia

The Building with Nature program is essentially a philosophy or way of thinking, which takes into account various natural mechanisms and incorporates them in the infrastructure planning. Thus, the basic principle of this program combines a nature-based technical approach (such as mangrove restoration) with hard engineering (such as dams and seawalls). Through the combination of these approaches, development is meant to harness the forces of nature, rather than clashing with them.

The application of the Building with Nature concept has been conducted in the northern coast of Demak, Central Java, with the support of an Indonesian-Dutch consortium. Through this innovative approach, the consortium along with the Local Government has strived for a safer coastal area where the local economy can thrive and the previously vulnerable community can become more resilient to the threats of disasters.

The Building with Nature program has become a best practice in the application of Integrated Risk Management (PRT) due to its effects on not only the environmental aspects of things, but also on efforts to raise the income and capacity of the community.

The Building with Nature work mechanism promotes the formation of inclusive community groups which are engaged with local governments in implementing BioRights mechanisms. A number of programs have been conducted by these groups, such as capacity building for group members in planning, execution, observation, evaluation and reporting, vocational education for local communities, erection and maintenance of dams and community involvement in policy development.

These programs have resulted in, among others, the improvement in the quality of the environment, the acknowledgement of community interest, elevation in community capacity, a rise in community income, a new found awareness in the environment and preparedness in facing the risks of disasters. Moreover, we have also learned that the approach needs much preparation, planning and integration, also a longer timeframe to ensure the community receives effective education.

Besides being integrated with the Village Fund and in line with Village Regulations, the Building with Nature program has also been replicated by members of the consortium, namely the Ministry of Maritime Affairs and Fisheries (KKP) and the Ministry of Public Works and Public Housing in a number of other regions throughout Indonesia. The concept is also being developed in Asia, where Indonesia has been playing its part in sharing past experiences.

APPENDIX D: COUNTRY BRIEF ON SCP FOR LAO PDR

1. Key Data

- The Lao People's Democratic Republic (Lao PDR) is a land-locked, ethnically diverse, and mountainous country with an estimated population of around 6.5 million. Strong economic growth has enabled Lao PDR to move from the ranks of low income economies to a "lower middle-income" country from 2010. Lao PDR aims to graduate from Least Developed Country (LDC) status by 2020. With economic growth still heavily reliant on natural resources, the Government is diversifying to move towards more inclusive and sustained growth. More than half of the population are under the age of 25 years. To benefit from the demographic dividend to the economy, the Government is prioritizing the enhancement of skills and knowledge among youth. (Lao's VNR 2019)

- The economy of the Lao PDR has been growing rapidly since the government began to decentralise control and encourage private enterprise through the New Economic Mechanism (NEM) in 1986. Currently, the economy grows at about 8% per year, and the government is pursuing poverty reduction and education for all children as key goals. The country opened a stock exchange, the Lao Securities Exchange, in 2011, and has become a rising regional player in its role as a hydroelectric power supplier to neighbours such as China, Vietnam, and Thailand.

- GDP of Lao PDR was 17.95 billion USD in 2018. And GDP per capita of Lao PDR in 2018 was 2,542.49 USD (World Bank).

- Lao PDR has relatively little industry, no heavy industry and much of the country's industry is comprised of small companies. These small establishments are involved primarily in the production of textiles and handicrafts. Laos is well known for the high quality of its aesthetically attractive textiles. Lao SMEs play an important role in the country's economic development. The industries which contribute most to Lao economic development are mainly electricity generation, mining, garments, wood, coffee, and other agricultural products. In addition, tourism has become an important sector for the Lao economy. The agriculture and forestry sector saw average annual growth of 4.1% over the period 2005–2010, accounting for 23.5% of total GDP, while the industry sectors of mining and hydropower grew by 12.5% annually over the same period, and account for 33.2% of total GDP. The service sector also grew by 8.4% per year over the same period, accounting for 37.4% of GDP. (Chapter 8 Sustainable Consumption and Production in Lao PDR, www.worldscientific.com)

- Since 1975, the numerous ethnic groups are often distinguished into three categories according to the geographic areas they occupy: The lowland ethnic groups known as Lao Loum (68%), the midland groups known collectively as the Lao Theung (22%), Lao Sung, including the Hmong and the Yao (9%), and the ethnic Vietnamese/Chinese (1%). (Chapter 8 Sustainable Consumption and Production in Lao PDR, www.worldscientific.com)

- The structure of population is presented as **Figure 1.1**

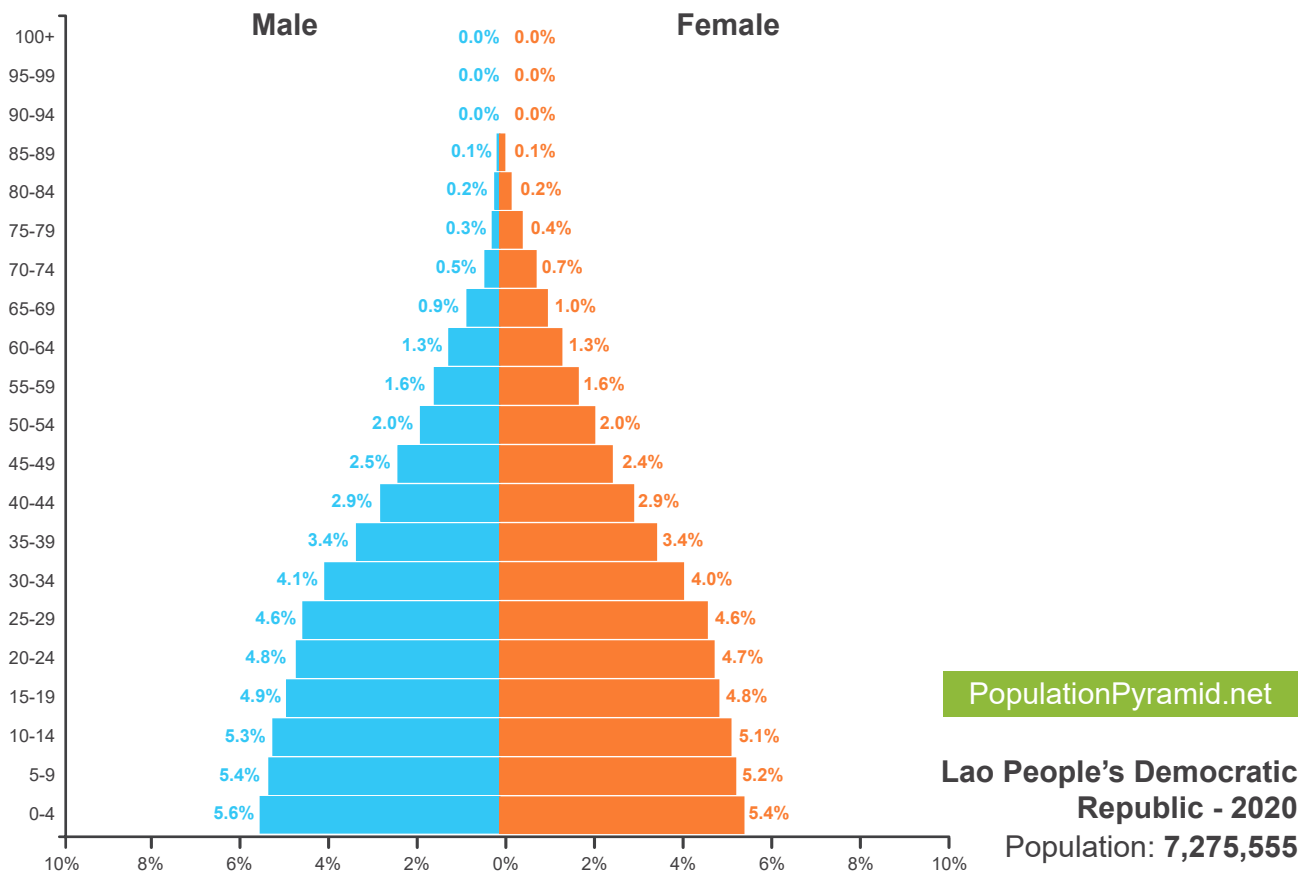


Figure 1.1 The Lao PDR's population pyramid for 2020

(Source: <https://www.populationpyramid.net/lao-peoples-democratic-republic/2020/>)

- State of the Environment in Lao PDR:

- Forest cover in the country has declined from 49.10% in 1982 to 40.34% in 2010. This is down from some 70% forest cover several decades prior. When combined with further industrial activity, the decline in forest cover transformed the country from a net sequester of CO₂ in 1990 to a net emitter in 2000. The main causes of forest reduction are the shifting of rice cultivation in the northern part of Laos and the unsustainable forest exploitation in the past to cover economic balance. (Chapter 8 Sustainable Consumption and Production in Lao PDR, www.worldscientific.com)

- It is estimated that surface and groundwater flows from Lao watersheds, including vast areas of land with low productivity, contribute 35% of the total average flow of the Mekong River, with 80% of these flows supplied during the wet season. The Mekong is the main river of the country, with a total distance of 1,860 km flowing from north to south, forming a long border with Thailand. Laos is estimated to take up 25% of Mekong basin, which supplies 270 billion m³ of fresh water per year nationwide. There are 39 tributaries and sub-tributaries in the Mekong basin in Laos. Water provides the country with resources for irrigation, fisheries, plantations, livestock, and hydropower potential (~ 23,000 MW in capacity), as well as urban and rural water supply. With a huge volume of fresh water, solely 5.7 billion m³ has been used annually. Water is predominantly used for agriculture (82%), followed by industry (10%), and the rest for household purposes.

(Source: <https://laos.opendevelopmentmekong.net/topics/environment-and-natural-resources/>)

- Lao PDR has a high potential for renewable energy, especially from its hydropower resources. It is the most important energy resource in the country. The technical potential was estimated at around 26,000 MW. In Lao PDR, hydropower schemes with a capacity below 15 MW are classified as small-scale schemes. Only 10% of the produced electricity is used domestically. The government's energy strategy focuses on renewable energy resource development for the following technologies: biofuels, small-scale hydropower plants, solar, biomass, biogas and wind, and other alternative fuels for transportation. (Chapter 8 Sustainable Consumption and Production in Lao PDR, www.worldscientific.com)

- Rapid changes to land management practices and natural resource use in Laos has led to the increased use of agricultural chemicals to facilitate the expansion of agricultural land, tree plantations, and mineral extraction. For example, the rapid development of large-scale industrial rubber and pulpwood plantations, with low labor inputs, has been facilitated through the use of substantial amounts of fertilizers and herbicides. These agricultural chemicals caused health problems for workers and concerns about sourcing drinking water from polluted sources, such as streams.

(Source: <https://laos.opendevelopmentmekong.net/topics/environment-and-natural-resources/>)

- The expansion of urban and consumer lifestyles has resulted in the rise of waste generation in the country. On average, generation of municipal solid waste is 0.70 kg per capita per day, higher than in Indonesia and the Philippines. Landfills are the main method for solid waste disposal, while open burning is also practiced. There are one main landfill in Vientiane capital, and four secondary landfills in Luang Prabang, Thakhek, Savannakhet, and Pakse. There are also small landfill sites in provincial towns. Of 141 District towns, only 14 are controlled landfills. Community dumps are poorly managed; some garbage has been disposed by burning or tossing in vacant spaces, drainage channels, and rivers. Hazardous waste like batteries, paint cans, and aerosols are also mixed with general solid waste, but there is no proper measure to keep track of potential leachate into soil, surface and underground water.

(Source: <https://laos.opendevelopmentmekong.net/topics/environment-and-natural-resources/>)

2. Policies, strategies, plans, networks (government, civil society, private sector)

- The National Green Growth Strategy of Lao PDR is in the consultation phase and will aim to guide the country’s response to SCP. As Lao PDR moves forward with the National Socio-Economic Development Plan (NSEDP) and sectoral strategies, collaboration and coordination across line ministries as well as between central and local authorities will be essential for interventions to reach to the whole population, mainly the poorest communities. (Lao’s VNR 2019)

- The 2006–2020 Lao Tourism Strategy is a master plan document to define policy, guidelines, and the overall goal of the development and promotion of tourism which will be in line with the party congress resolution, national socio-economic plan and strategy in order to strengthen and develop tourism to become an industrial sector that generates foreign exchange revenue for the country. Sustainable development of tourism destinations is mentioned together with the objectives of providing more employment, promoting cultural conservation and preservation of the nation’s good norms and customs, including the protection of abundant natural resources, promotion of local products in order to contribute to poverty reduction of all ethnic groups. (Chapter 8 Sustainable Consumption and Production in Lao PDR, www.worldscientific.com)

- Lao PDR intended Mitigation Activities to be implemented in 2015-2030 presented in **Table 1.1**

Table 1.1 Intended Mitigation Activities to be implemented by Lao PDR in 2015-2030

No	Name of activity	Objectives of the activity	Estimated CO ₂ e reductions
1	Implementation of “Forestry Strategy to the year 2020” of the Lao PDR	To increase forest cover to 70% of land area (i.e. to 16.58 million hectares) by 2020. Once the target is achieved, emission reductions will carry on beyond 2020.	60,000 to 69,000 ktCO ₂ e (once the target has been met, by 2020 onwards)
2	Implementation of Renewable Energy Development Strategy	To increase the share of renewable energy to 30% of energy consumption by 2025. (Note that large scale technologies with installed capacity equal to or greater than 15MW are not included in this policy’s target.) For transport fuels the objective is to increase the share of biofuels to meet 10% of the demand for transport fuels by 2025.	1,468,000 ktCO ₂ e (by 2025).

No	Name of activity	Objectives of the activity	Estimated CO ₂ e reductions
3	Implementation of Rural Electrification Programme	To make electricity available to 90% of households in rural area by the year 2020. This will offset the combustion of fossil fuels to produce power where there is no access to the electricity grid.	63 ktCO ₂ /pa (once the target has been met in 2020)
4	Implementation of transport focused NAMAs	In one NAMA feasibility study, road network development is identified as a first objective which will reduce the number of kilometres travelled by all vehicles. The second objective is to increase the use of public transport compared to the business as usual (BAU). In addition to a reduction in GHG emissions the activity will lead to a reduction in NO _x and SO _x emissions which will have significant co-benefits such as improvement in air quality which in turn will have positive impacts on human health.	Road network development is 33 ktCO ₂ /pa, and 158 ktCO ₂ /pa for public transport development
5	Expansion of the use of large scale hydroelectricity	The objective of this activity is to build largescale (>15 MW) hydropower plants to provide clean electricity to neighbouring countries. Approximately total installed capacity of the hydropower plants will be 5,500 MW by 2020. In addition, 20,000 MW of additional hydroelectric capacity is planned for construction after 2020.	16,284 ktCO ₂ per annum (2020-30)
6	Implementation of climate change action plans	To build capacity to monitor and evaluate policy implementation success, with a view to producing new policy, guidance and data. The objective is to develop and implement effective, efficient and economically viable climate change mitigation and adaptation measures.	To be estimated as part of the implementation plan

(Source: Intended Nationally Determined Contribution, 2015)

3. Programs and projects (government, civil society, private sector)

SWITCH-Asia projects in Laos (Chapter 8 Sustainable Consumption and Production in Lao PDR, www.worldscientific.com):

- ASEAN Energy Manager Accreditation Scheme (AEMAS) (2010-2014): Established EMAS National Councils in Indonesia, Malaysia, Myanmar, the Philippines, Thailand, and Vietnam with a total membership of 74 organisations. Lao PDR and Cambodia memberships are under preparation. Brought about a total reduction in CO₂ emissions of up to 55,000 tonnes.
- ICS Programme Laos PDR (2013-2017): The project aims at introducing cleaner and fuel-efficient ICS by the end of 2016, aiming for 50% of the market share of cook stoves.
- Eat Greener —Changing Food Consumption Patterns: A Sustainable Approach towards Economic Development in Lao PDR (2014-2015): The Project sought to boost national, ASEAN and European consumption of Lao sustainable food products (organic rice, tea, etc.). Increased demand for Lao greener processed food products will increase their market share and have a positive impact throughout the value chain stakeholders in a sector with high poverty alleviation potential.
- Promotion and deployment of energy efficient air conditioners in ASEAN (2013-2016): The project aims at increasing the market share of higher efficient ACs in ASEAN through harmonisation of test methods and EE standards, adoption of common Minimum Energy Performance Standards (MEPS), and changing consumer purchasing attitudes in favour of energy-efficient ACs.
- Sustainable Product Innovation in Vietnam, Cambodia, and Laos (SPIN-VCL) (2010-2014): The project set up a sustainable product innovation network to improve innovative power of industry, and improve environmental and societal quality of products made in Vietnam, Cambodia, and Laos. Activities included marketing skill training sessions for SMEs, marketing access via fairs and product catalogues.
- Sustainable Rattan Industries (2009-2011): This project supported the sustainable rattan industry by introducing CP, a credible chain-of custody certification and by establishing links to European and other international markets, thereby delivering a measurable improvement of the sector's environmental performance. Direct results include 22,000 villagers increased their income by 5–45%; the world's first FSC certified rattan and 19,000 ha under responsible forest management 220 SMEs were introduced to CP.

United Nations Environment Programme (UN Environment Programme)

- Sustainable Consumption and Production (SCP) Course Outline for National University of Laos (2017): As part of the Small Scale Funding & Agreement (SSFA) between United Nations Environment Programme (UNEP) and TERI University, an SCP curriculum has been developed for the undergraduates at National University of Laos. The methodological approach followed for developing the course outline includes review of literature and relevant documents from UNEP, SWITCH-Asia, World Bank, ADB, OECD, and GIZ that were specific to SCP, related course outlines from distinguished universities and learning platforms such as University of Queensland and UNEP E-Learning Course, presentation on “The role of education in realizing more Sustainable Consumption and Production (SCP) patterns and the development of a national SCP curriculum” during the Inception mini-workshop held on 4th October 2017 and inputs from technical sessions and formal/informal discussion held during the ToT.

Others

- Energy Efficiency Program (Sustainable Consumption and Production Baseline Research for ASEAN, 2019):

- Laos is still developing an energy efficiency standard and labelling program with the help of other Asian countries such as Japan and Thailand. Laos has no manufacturing capability for electrical and electronic products, including lighting products and imports these products from neighbouring countries such as Thailand, China and Vietnam. Facing energy shortage due to rapid economic growth, Laos is taking a key step to tackle the energy supply shortage through demand-side management. The residential sector is a major energy consumer in Laos, and in 2015, it made up 40.2% of the country’s energy consumption. High energy consumption is mainly due to the usage of low energy efficient electric appliances. The Electricite du Laos (EdL), a state-own utility, is implementing the Demand-Side Management and Energy Efficiency (DSM/EE) Phase II project with financial support from the World Bank and contracting the International Institute of Energy Conservation (IIEC) as the project consultant.

- In August 2018, a workshop was held in Vientiane with several Laos ministries as well as ACE to discuss the improvement of the standard and labelling (S&L) system proposal (air conditioner-related), creation of the draft of regulations, and preparation of the S&L operation system. As of 2019, nothing has been announced yet.

- Recycling Program (Sustainable Consumption and Production Baseline Research for ASEAN, 2019):

- Enacted in 2012, the Environmental Protection Law (EPL) No 29/NA is the basic law on environmental protection and states that general waste should be separated to allow reuse and recycling. There are no other policies and regulations that support waste-to resource approaches or the principles of 3Rs. The Ministry of Natural Resources and Environment (MoNRE) and the Ministry of Public Works and Transport (MPWT) oversee solid waste management and recycling in Laos, while the main responsibilities are delegated to provincial authorities and district offices. At the provincial level, the national ministries have more of a regulatory, supervisory and supporting role, as the Urban Development Administrative Authorities (UDAA) oversee solid waste management issues. At the local level in capital city, the Vientiane City Office for Management and Service (VCOMS) is responsible.

- There are no official statistics for national recycling rates but in 2011, a survey conducted in Vientiane found a 8.7% recycling rate. The informal waste management sector has both informal and formal stakeholders. The informal sector consists of waste pickers, scavengers and VCOMS workers who collect and sell recyclables while working within the premises of waste collection and transfer facilities and landfills. Waste pickers and scavengers often collect recyclables from source and sell them on the same day to buying centres. And because, just like India and other developing countries, the waste pickers are not part of the formalized economy, they are usually deprived of the mechanisms that protect them from world market fluctuations or declining prices. That makes them very vulnerable to exploitation. The VCOMS workers, who collect recyclables from mixed waste, recover soiled plastics which sell for a lesser cost than clear and clean plastics.

- The formal sector includes recycling buying centres, recycling workshops and processing companies, which are legally licensed to operate and conduct profit-driven activities with recyclables. Recyclables sold to buying centres are either processed by local small and medium enterprises that carry out some sort of processing/treatment of recyclables or exported to neighbouring countries for final processing or treatment, in particular China and Vietnam. While these enterprises can churn out raw materials for other industries, the manufacturing processes of these companies tend to be relatively simple and rudimentary, and thus adding limited value to the recyclables value chain.

4. SDG12 reporting/monitoring and evaluation

- The efficient use and sustainable management of natural resources and the development of ecotourism are prioritized through the NSEDP. Nowadays, Lao PDR is still developing system and framework to assess progress toward SDG 12. (Lao PDR' VNR 2019)

- Intended Nationally Determined Contribution (NDC) 2015: Lao PDR is committed to the implementation of its National Strategy on Climate Change (NSCC) and its sectoral climate change action plans, for the national, regional and global benefit. The INDC will be implemented in a coordinated manner with the NCCS, climate change action plans and the sectoral plans. The current climate change action plans run until 2020 and Lao PDR will start devising the next set of action plans to continue to implement the NCCS before the end of the year 2020. The Intended Mitigation Activities to be implemented by Lao PDR in 2015-2030. (NDC, 2015)

5. Key sectors or priorities

- The efficient use and sustainable management of natural resources, including sustainable land management, has been identified as a priority for Lao PDR and is a cross-cutting issue linked to biomass and livestock power generation, food and agriculture processing, energy and other sectors that are resource-dependent and contribute to Lao PDR's GDP growth. Inadequate use and management of these resources may exacerbate social and economic inequalities, thus slowing progress on sustainable development.

- Ecotourism has been defined as a national priority in the Eighth NSEDP. It is part of at least two Green Growth indicators while SWITCH-Asia currently has one grant project operating in this high-impact and rapidly growing area.

- Sustainable Public Procurement (SPP) and Eco-labelling tools are needed to improve supply chain management and consumer decisions, in particular with regard to resource efficient SMEs in textiles and garment sectors.

- Waste management, specifically with regard to including food, plastics and pollution control, is another cross-cutting issue that overlap with the same sectors affected by sustainable natural resource management, including at the individual/household level.

- The forestry industry, and in particular timber processing, is set to become an increasingly important sector in Lao PDR. The development of this industry should promote efficiencies in the in terms of inputs/output flows and of the sustainable management of timber resources.

(Source: Country Profile Lao PDR, SWITCH-Asia SCP Facility)

6. Challenges (readiness/mandate, financing, capacity, data etc. monitoring and evaluation, stakeholders)

- Measurement of progress is difficult as most targets under SDG 12 lack robust measurement systems, especially those that can be implemented locally.
- Existing policy frameworks are not fully aligned with SCP, while the National Green Growth Strategy is still being developed.
- While Lao PDR has done substantial efforts to localised SDGs, the awareness of policymakers and public understanding of the SDGs is weak, in particular SDG 12, and their relationship to the long-term development of the country.
- Small and Medium Enterprises (SMEs) and Government entities lack sufficient access to the best available technologies, environmental practices and innovations.
- Insufficient financing raises the risk of inefficient and ineffective sustainable development strategies and activities.

(Source: Country Profile Lao PDR, SWITCH-Asia SCP Facility)

7. Opportunities/Potential

SDG 12 opportunities from VNR 2019:

- The national policy framework on sustainable consumption and production should fit with existing frameworks. To this end, MoNRE is in the process of identifying Green Procurement guidelines and indicators that will fit into the Lao context.
- SMEs will need to develop their human resources and skills, while Government entities and SMEs will need access to the best available technologies and environmental practices, innovations and marketing tools.

SDG 12 opportunities from SWITCH-Asia Country Profile:

- Pursuing innovative finance, including introducing government to hybrid business models e.g. subsidised service delivery by entrepreneurs; Public-private Partnership can help bridge the gap for decentralised systems, e.g. those used for small-scale energy and safe drinking water.

- Enhanced integration of SCP into government agendas is both important and possible with numerous supporting mechanisms available to aid building of coordination bodies. Engaging with regional green growth initiatives such as those by ASEAN or the Asian Development Bank can also provide resources to support these activities.
- Education and training activities can support both general and technical capacity needs around SCP, tailored to support different audiences such as rural residents, SMEs and policy makers; multistakeholder engagement can help identify the most effective platforms.
- The upcoming launch of the Green Growth Strategy and its subsequent rollout at sector level present good opportunities for stimulating line ministries to uptake SCP policies.
- Expansion of labelling and standards will not only improve safety but also resource efficiency, particularly with regard to energy, which is crucial as Lao PDR's energy needs continue to grow with its economy.

8. Case Studies

8.1 SWITCH-Asia Case Study: Sustainable Rattan Project (Chapter 8 Sustainable Consumption and Production in Lao PDR, www.worldscientific.com)

The first phase of Sustainable Rattan project was implemented by WWF Laos in partnership with local communities and national stakeholders, such as Lao National Agriculture and Forest Research Institute (NAFRI), Lao Forest Research Centre, Department of Forestry, Ministry of Commerce and Industry, and Faculty of Forestry at Lao National University, with donor support from IKEA, a global furniture company. Phase I was a three year project (2006–2008) that implemented a sustainable rattan harvest and production model in the Vientiane and Bolikhamxay provinces to support local livelihoods, conserve nature, and capitalise on the rapidly growing rattan export market by establishing full-scale production and manufacture of rattan products within the country. The second phase of the project which focused on cleaner production and sustainable rattan harvesting was co-funded by the EU SWITCH-Asia Programme, titled “Establishing the sustainable production system for rattan products in Vietnam, Laos, and Cambodia.” Overall, the project strengthened small- to medium-sized rattan enterprises by improving the processing and supply chain, including the introduction of certification, and implemented and enforced national and regional policy to support sustainable rattan management, marketing and regional/international trade.

Results achieved by the SWITCH-Asia project “Sustainable Rattan”:

- Systematic involvement and training of all actors along the rattan supply chain, from village producer groups to buyers.

- 12 contracts with international retailers were signed and 46 were drawn up after the project completed.
- 22,000 villagers increased their income by 5–45%.
- The world's first FSC certified rattan plantations of 19,000 ha were under responsible forest management.
- 220 SMEs were introduced to CP practices.
- Policies were reviewed and piloted to support community-based rattan processing and to promote a green rattan industry.
- 38 SMEs started to amend their production systems taking into consideration environmental and social standards.
- 5,774 households (rattan pre-processors) improved rattan production skills.

8.2 SWITCH-Asia Case Study: ICS Project (Chapter 8 Sustainable Consumption and Production in Lao PDR, www.worldscientific.com)

As in many countries, the fuel mix used in Lao kitchens consists of a variety of sources primarily comprised of biomass, wood, and charcoal. Charcoal prevails in 88% of kitchens in the intervention area, with an average monthly consumption of 40 kg, for some 10 USD/month. Wood is used in 48% of households and, with a large variation, this is in the range of 150 kg/month. Wood is normally collected rather than purchased, a task that requires 13.5–16 hours per month. Availability and affordability of wood and charcoal are highly variable. Charcoal is the preferred fuel for several speciality meals, and is therefore used regardless of the availability of clean cooking options, even in higher-end households.

Over the last decades, there have been attempts to design new, energy efficient cook stoves in Lao PDR with some success. One such is the ICS project, carried out by Oxfam Novib in close collaboration with SNV Netherlands Development Organisation and a local NGO, NORMAI in 2013 with funding from the EU SWITCH-Asia Programme and Blue Moon. The project is actually a continuation of an initiative started in 2010, to support further ICS uptake. The ICS project is one of the few initiatives in the Mekong sub-region that aims at mass dissemination of ICS, while contributing towards poverty alleviation in Lao PDR through the development of a SCP chain of fuel-efficient cook stoves. The ICS also reduces the use of wood and charcoal and lower greenhouse gas emissions.

The ICS project's key objectives for 2013–2017 include:

1. 15 producers sustainably produce 100,000 ICS.
2. 150 SMEs retailers successfully promote the ICS.
3. Lao Women's Union assumes its role as promotional partner.
4. Five testing agencies are operational.
5. A national standard of stoves is endorsed.
6. Establishment of a multi-stakeholder partnership.

Achievements as per December 2014 are as follows:

1. 16 producers are actively producing ICS.
2. 375 retailers are selling ICS in their local shops.
3. The Lao Women Union conducted 26 demonstration workshops.
4. The Ministry of Science and Technology operates three test labs.
5. National standards are under preparation.
6. Multi-stakeholder meetings conducted twice a year.

The improved cook stove was tested for its EE and offered to project staff and officers from the Ministry of Science and Technology. Three test labs across the country are now operating; the tests evaluated fuel savings realised by ICS compared to various stoves commonly seen on the market. The version of 'Tao Payat' improved cook stove has the potential to save 18–39% fuel. Apart from the economic benefit, the social benefit, which is sometimes hard to quantify, is better indoor air quality resulting in housewives' health improvement due to less smoke, while ICS also creates jobs for villagers, producers, and traders who are working in charcoal production supply chains. Further benefits are the energy saving potentials, which can be quantified in terms of greenhouse gas emission reduction.

APPENDIX E: COUNTRY BRIEF ON SCP FOR MALAYSIA

1. Key Data

1.1. Economics

The country's GDP has grown rapidly over many decades; between 1970 and 2020 it increased by 5.8% annually. The per-capita GDP (PPP) amounts to USD 29,619.7 (World Bank, current international \$, 2019).

Malaysia is an exporter of natural and agricultural resources, and at one time was the largest producer of tin, rubber, and palm oil in the world. However, Malaysia has successfully transformed its economy from a producer of raw material into a multi-sector economy. In efforts to diversify exports structure, Malaysia has pushed to increase tourism, a sector that has grown into Malaysia's third largest source of income.

Domestic demand continues to anchor economic growth, supported mainly by private consumption, which accounts for 60.9% of GDP in 2020. Nevertheless, exports – particularly of electronics, oil and gas, and palm oil – remain a significant driver of the economy. In 2020, gross exports of goods and services were equivalent to 61.5% of GDP. The oil and gas sector supplied about 22% of government revenue in 2020, down significantly from prior years amid a decline in commodity prices and diversification of government revenues.

Malaysia's imports include electronics, machinery, petroleum products, plastics, vehicles, iron and steel products and chemicals. Its exports include electronic equipment, petroleum and liquefied natural gas, timber and wood products, palm oil, rubber, textiles and chemicals. Major export partners of Malaysia are China (16.2 %), Singapore (14.5 %), the United States (11.1 %), Hong Kong (6.9 %), Japan (6.3 %), Thailand (4.6 %) and South Korea (3.5 %). Major import partners include China (21.5 %), Singapore (9.3 %), the United States (8.7 %), Japan (7.7 %), Taiwan (7.2 %), South Korea (5.7 %) and Indonesia (4.6 %).

Table 1.1. GDP Growth Rate and Inflation, % per year

GDP growth				Inflation			
2018	2019	2020	2021	2018	2019	2020	2021
4.8	4.3	-5.6	5.5	1.0	0.7	-1.2	1.3

(Source : <https://www.adb.org/sites/default/files/publication/575626/ado2020.pdf>)

Table 1.2. GNI per Capita and % Increase from Previous Year

GNI per Capita (USD)				%Increase			
2016	2017	2018	2019	2016	2017	2018	2019
9,260	9,684	10,733	10,914	-1.5	4.6	10.8	1.7

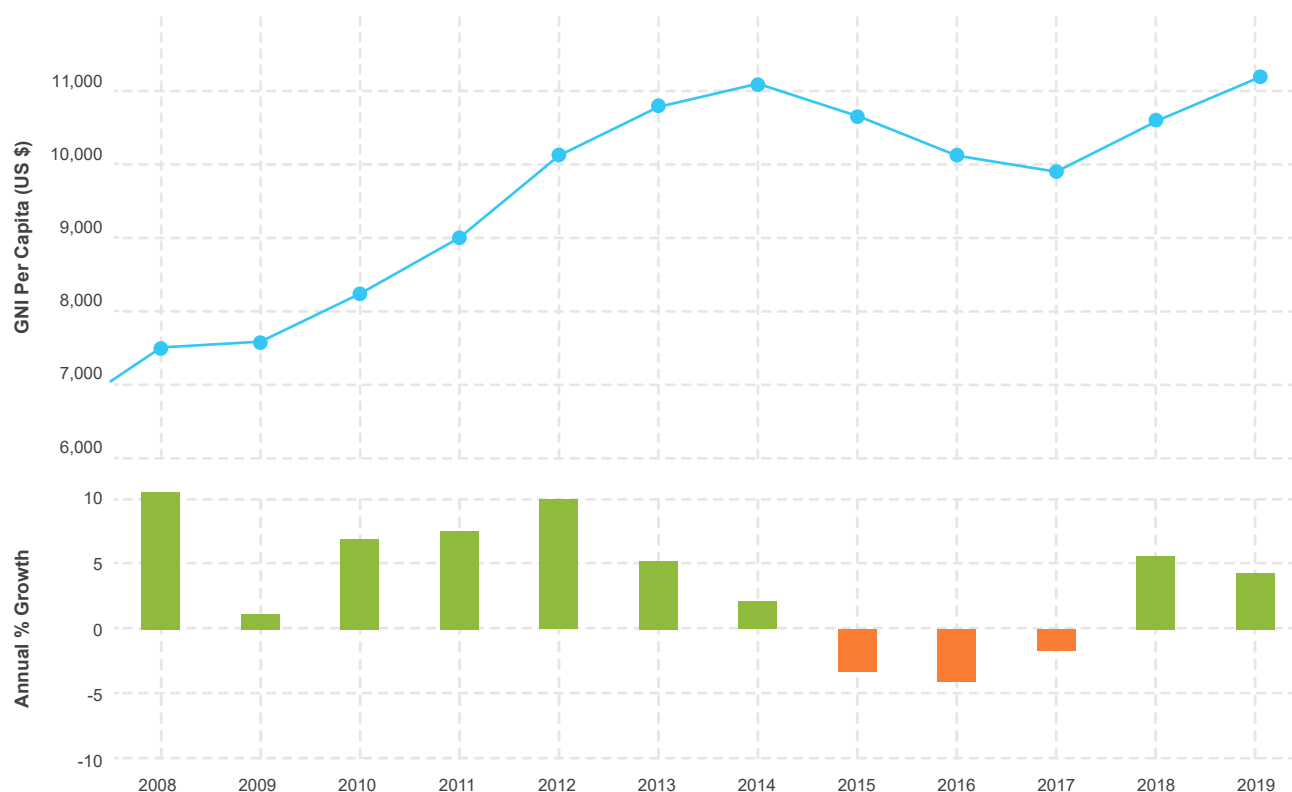


Figure 1.1. Malaysia’s GNI per Capita and Growth Rate (2008-2019)

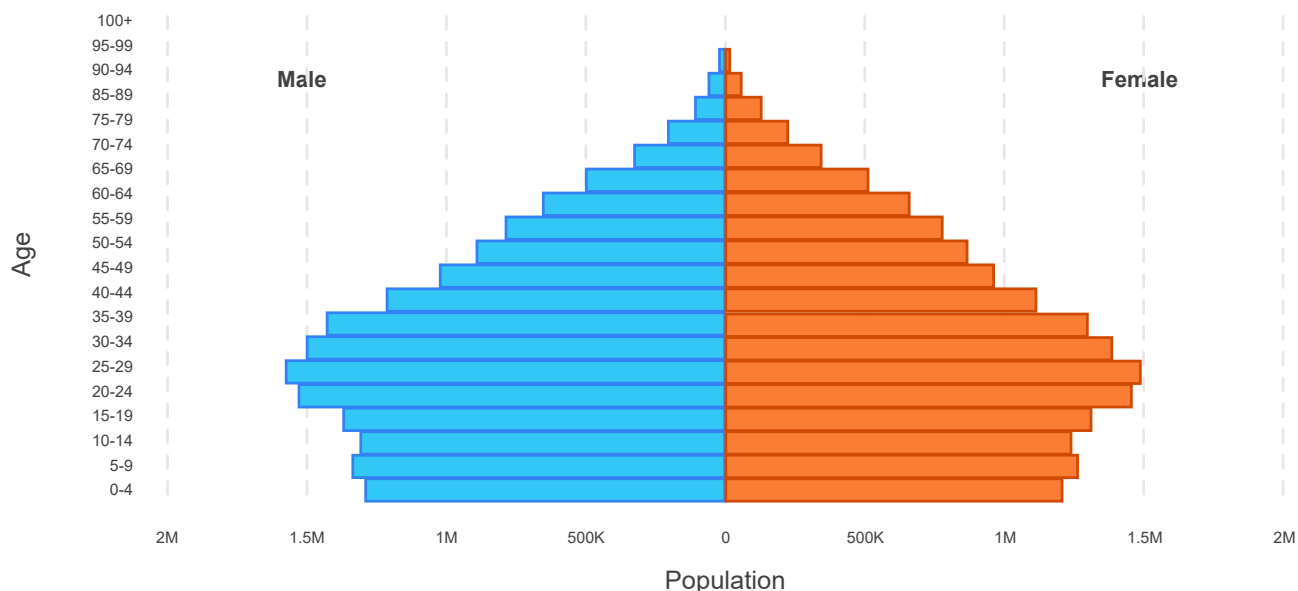
(Source: <https://www.macrotrends.net/countries/MYS/malaysia/gni-per-capita>)

1.2. Social

Malaysia has a population of 32 million, 70% of which live in urban areas (Akenji, et al., 2019). Its population is mostly urban and growing, with a fertility rate of 1.9 children and life expectancy at 74.9 years. Around 69% of the population is of legal working age (15–64 years). This is the population pyramid for Malaysia.

Population Pyramid

Malaysia (2021)



U.S. Census Bureau, International Data Base

Figure 1.2. Malaysia's population pyramid for 2021

As of 2019, the labor force participation rate is 68.7% and the employment-to-population ratio is 66.4%. Both of those rates are more than 27% age points higher for men than for women. The total unemployment rate is 3.3%, and the youth unemployment rate is 10.5%, with the female youth unemployment rate 2% age points higher than the male rate. Formal employment is heavily reliant on services and medium-skilled occupations.

Vulnerable employment in Malaysia as of 2017 accounts for 21.8% of the labor force, with most of those workers having own-account status. Own-account and contributing family workers are more likely to experience low job and income security than employees and employers, as well as lower coverage by social protection systems and employment regulation. Rural population growth was a negative 1.1% in 2015. In 2016, 11.4% of total employment was in the agriculture, forestry, and fishing sector.

(Source: <http://pqi.stats.gov.my/searchBI.php?kodData>
<https://newss.statistics.gov.my/newss-portalx/ep/epFreeDownloadContentSearch.seam?cid=89485>
https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/documents/publication/wcms_625981.pdf)

1.3. Environment

Malaysia ranks 63 of 180 countries in the Environmental Performance Index (EPI), with a score of 74.2 (with 0 furthest from the high-performance benchmark target of 100). Malaysia outperforms the average score for Asia and the Pacific in most of the EPI categories. Still, there is room for improvement, especially in ecosystem vitality (in forests, agriculture, fisheries, and climate and energy).

The share of agricultural land area increased by 3% age points between 1991 and 2014, reaching 23.9% of total land area in 2014. The share of agricultural employment in total employment declined by 14% age points in that same period due to a combination of a loss of 237,000 jobs in agriculture and job creation in other sectors. Forest area remained steady between 1990 and 2014, at approximately 67.5% of total land area. During that same period, the share of terrestrial protected area slightly increased, reaching 18.4%, while the proportion of marine protected area amounted to 2.3% of total territorial waters.

Since 1990, the percentage age of the population with access to improved water supply has increased 7.9 percentage points, to 98.2% in 2015. There was a 9.8-percentage point increase in access to improved sanitation between 1990 and 2015, to 96%. Both rates, however, are still below the ideal threshold of 100%.

In 2014, more than 95% of the population relied primarily on clean fuel and technology, in the sense that they do not create indoor pollution within the home. According to the Green Jobs Mapping Study, Malaysia is highly dependent on fossil fuels, although there is a push to generate renewable energy and promote energy efficiency. The share of renewable energy in total energy consumption has not kept pace with overall consumption. In 2000, it was only 6.7% but fell below 4% in 2011 and then slightly increased, to 4.8% in 2014. Renewable energy generation gradually increased between 2011 and 2015, with hydropower the main source in 2015. In 2016, approximately 99,200 people were employed in the renewable energy sector, with 53% of them in liquid biofuels and 28% in solar photovoltaic.

According to the World Risk Report, Malaysia has a middling World Risk Index score. It ranks 86 (of 171 countries), although it has high exposure to natural hazards, it has the institutional capacity to cope but restricted capacity to adapt. Part of the country's vulnerability is due to the 5.1% of the total population who lived in the 1.3% of the total land area below 5 meters above sea level in 2010. According to the Emergency Events Database, there was a substantial increase in natural disasters and associated damage costs between the 1970s and the 2010s. The natural disasters in that time were mostly tropical cyclones, storms, floods, landslides, droughts, and forest fires which resulted in more than 650 deaths (1970–2016).

According to the World Bank, municipal solid waste generation in Malaysia in 2002 was 1.52 kg per capita per day and is expected increase to 1.9 kg per capita per day by 2025. Most of the waste in 2000 was organic (at 63%), followed by plastics (at 12%). Landfills take 90% of the waste, while 5% is recycled, 2% is incinerated and the remainder is dumped illegally. Only seven of 176 landfill facilities are sanitary. A big concern is the large amount of e-waste, classified as schedule or hazardous waste in Malaysia. According to the Green Jobs Mapping Study, approximately 134,036 metric tons of e-waste was generated in 2009 and is expected to rise to 1.11 million metric tons in 2020.

(Source: ILO. Malaysia Employment and Environmental Sustainability Fact Sheets 2017. Accessed from: https://www.ilo.org/wcmsp5/groups/public/—asia/—ro-bangkok/documents/publication/wcms_625981.pdf)

Malaysia hosts a sizeable plastics industry, consisting of around 1,300 manufacturers employing a workforce of some 74,000 (2012). The annual consumption of plastics is estimated to 63 kg/capita. Apart from domestic demand, in 2016 the Malaysian plastics industry also exported 2.26 million tons of resin equivalent to a value of RM30 billion (USD7.15 billion).

Landfill disposal is currently the most common waste management method in Malaysia. Most landfills are small facilities where environmental protection standards and maintenance quality vary considerably. Open dumpsites, where waste is illegally disposed of, are still used in many areas. Around 165 landfill sites are currently in operation, but only eight of those facilities are sanitary landfills. A waste-to-energy plant for municipal solid waste was in operation in Kajang (near Kuala Lumpur) between 2009 and 2015 but has been demolished. A new waste-to-energy facility is reportedly under construction in Kuala Lumpur; with operations set to start in 2019, the site will have the capacity to treat 1,000 tons of waste/day.

Following China's import ban on most types of waste plastics in early 2018, Malaysia became one of the key export destinations for shipments from the EU, Japan and the US. In the first half of 2017, Malaysia imported 128,000 tons of plastic waste from G7 countries; one year later this figure had increased to 461,000 tons. Some of these imports are conducted by formally licensed recycling businesses, however a significant share is handled illegally and treated in ways that violate national environmental regulations.

Malaysia is also facing issues with establishing source segregation systems for municipal solid waste. Due in part to poor segregation, a high share of domestic plastic waste is currently buried in dumpsites and landfills. The country is thus confronted by a unique challenge: despite maintaining a large plastic recycling industry, with significant levels of associated expertise, Malaysia primarily treats imported waste – yet growing volumes of domestic post-consumer plastic continue to constrain the country's existing waste management system.

(Source: Akenji, Lewis; Bengtsson, Magnus; Kato, Mizuki; Hengesbaugh, Matthew; Hotta, Yasuhiro; Aoki-Suzuki, Chika; Gamaralalage, Premakumara; Liu, Chen. (2019). Circular Economy and Plastics: A Gap-Analysis in ASEAN Member States. European Commission Directorate General for Environment and Directorate General for International Cooperation and Development (Brussels); Association of Southeast Asian Nations (Jakarta).)

2. Policies, strategies, plans, networks (government, civil society, private sector)

Malaysia started its journey towards sustainable development in the 1970s, when the New Economic Policy (NEP) to eradicate poverty and restructure societal imbalances was launched. All subsequent five-year national development plans have underscored the elements of sustainable development, encompassing sustainable economic growth; growth with equitable distribution to all sections of society; balanced development; access to basic infrastructure and utilities; access to education and healthcare services; and mainstreaming of environmental conservation. In 2009, Malaysia formulated the New Economic Model (NEM) which further cemented its commitment to pursue sustainable development based on three goals, namely, high income, inclusivity, and sustainability. These mirror the three elements of the 2030 Agenda for Sustainable Development (the 2030 Agenda), encompassing economic, social, and environmental elements. The NEM provides the basis for Malaysia's development plans until 2020. The current plan, the Eleventh Malaysia Plan 2016-2020 (11MP), is thus premised on the three goals of NEM. The 11MP theme is "Anchoring Growth on People", where people are the centerpiece of all development efforts, complemented by ensuring that no section of society is left behind in participating and benefiting from the nation's development. Critically the 11MP is aligned to most of the global Sustainable Development Goals (SDGs).

Green growth is the game changer in bringing Malaysia towards a sustainable socio-economic development path, where improvements in quality of life are in harmony with the sustainability of the environment and natural resources. (Eleventh Plan)

Malaysia is progressing to a high-income, developed nation that is inclusive and sustainable by 2020. The Government has initiated a number of national transformation programs such as the Government Transformation Program (GTP) and the Economic Transformation Program (ETP). Other national policies have recognized the importance of promoting sustainable development.

In the process to embrace and implement the 17 SDGs in a systematic and measurable manner, Malaysia has put in place an enabling environment through the following initiatives:

- established a multi-stakeholder, participatory governance structure helmed by the National SDG Council chaired by the Prime Minister;
- held several national SDG symposiums and focus group sessions to promote awareness and participation of stakeholders;
- conducted studies on data readiness and gap analysis;
- undertaken a mapping exercise involving nongovernment and civil society organizations and the private sector to align SDGs with 11MP initiatives;
- formulated a National SDG Roadmap to guide implementation of the 2030 Agenda and the SDGs; and
- implementing SDG initiative under the framework of the 11MP.

Malaysia also drafted its Roadmap Towards Zero Single-Use Plastics 2018-2030. This national plan, adopted in October 2018, was developed by the Ministry for Energy, Science and Technology, Environment, and Climate Change (MESTECC), in consultation with various stakeholders. The main features of the roadmap include:

- Establishment of a Joint Ministerial Committee for implementation, co-chaired by the ministers of MESTECC and the Ministry of Housing and Local Government (KPKT)
- MESTECC tasked with setting up a permanent secretariat to coordinate, monitor and facilitate implementation
- Sequenced activities in three stages: 2018-2021, 2022-2025, and 2026-2030
- Emphasized need for R&D with the aim of providing opportunities for the local industries to embrace new ecofriendly alternatives that could facilitate penetration to a wider global market
- Focusing on the reduction of single-use plastic via 4 approaches: Refuse, Reduce, Reuse and Recycle
- Concentration initially on shopping bags, food trays and straws
- Envisaged complementary Circular Economy roadmap for bottles and other single-use plastics, to be drafted in 2020
- Subsequent drafting of new legislation and technical guidelines
- Outlines leading a Global Environment Facility (GEF) proposal targeting regional marine debris

Domestically, the government of Malaysia is making efforts to stem the inflow of unwanted waste shipments through import regulations and enhanced customs inspections. In October 2018, the government temporarily banned the import of most types of waste plastic. The government has declared its intention to permanently ban import of waste plastics and in May 2019 announced that it would send back 3,000 tons of illegally traded plastic waste to the countries of origin.

According to media reports, the Malaysian government is also clamping down on illegal plastics recycling facilities, including by shutting down 139 such plants between July 2018 and February 2019. Several people complicit in these activities have also been prosecuted.

The Green Technology Master Plan, which is an outcome of the Eleventh Malaysia Plan (2016-2020), lists a number of objectives for waste management and resource circulation, including an increase of recycling rate from 17.5% in 2016 to 22% in 2020 and 28% in 2030, an increase from 14 sanitary landfill facilities to 23 by 2020, and the construction of 3 waste-to-energy plants by 2030.

Malaysia's Solid Waste Management and Public Cleansing Act (Act 672) were approved in the year 2007 after a decade of deliberation in the country's parliament. The Act effectively transferred responsibility for solid waste management from local authorities to the federal government to ensure a consistent system and service level across the whole country. Enforcement began in 2011 within eight states as well as the country's federal territories.

Act 672 also supports privatization in the solid waste management sector and provides a strong legal basis for the government to act both with regard to promoting recycling activities and shifting towards a circular economy. In addition, the act allows for the establishment of producer take-back (extended producer responsibility) systems and deposit-refund schemes and vests the government with powers to mandate the use recycled materials as well as to restrict the use of certain materials among manufacturers.

3. Programs and projects (government, civil society, private sector)

The Eleventh Plan and other people-centric policies provide an excellent framework for SCP in private households.

- Consumer protection - The Consumer Protection Act 1999 (Act 599) and the National Consumer Policy (2002) under the Ministry of Domestic Trade, Co-operatives and Consumerism (KPDNKK) refer explicitly to sustainable consumption.
- Wellbeing and quality of life - Several programs promote these such as the Malaysian Family Wellbeing Index of the National Population and Family Development Board and Malaysia People's Housing (PRIMA) program under the Ministry of Urban Wellbeing, Housing and Local Government (KPKT).
- Inclusiveness - This includes programs like Program Bantuan Rumah, Program Perumahan Rakyat, Rumah Mesra Rakyat Malaysia and Bantuan Rakyat Malaysia.
- Healthy lifestyles - The Ministry of Health (MOH) promotes healthy lifestyles with programs such as Healthy Communities Mighty Nation (KOSPEN); the National Nutrition Policy of Malaysia (2005) promotes healthy eating. The Malaysian Good Agricultural Practices (MyGAP) program under the Ministry of Agriculture and Agro-based Industry (MOA) promotes the purchase of fresh produce.
- Consumer education - Several agencies and consumer NGOs run education and awareness programs covering the household consumption clusters energy, water, waste and food.
- Responsible citizens - The Malaysia Education Blueprint 2013-2025 aims at the development of universal values, a strong Malaysian identity and Malaysians to become global citizens.

The Local Government and Housing Ministry has also reaffirmed plans to build a waste-to-energy plant in every state to resolve the country's mounting rubbish problem. However, the timeline for this is not yet decided.

State governments have also taken the lead on reducing the use of plastic shopping bags. In 2009, local authorities in Penang banned plastic bags in retail outlets every Monday. The following year, Selangor state introduced a similar ban on Saturdays. The Penang state government has since extended its ban to all days of the week. In 2017, two of the Federal Territories - Kuala Lumpur and Putrajaya - introduced a ban on conventional plastic bags and food containers. Biodegradable and compostable options are encouraged as alternatives. Shopping premises in Malacca introduced a "No Plastic Bag Day" on Fridays and Saturdays, which in January 2016 were extended to a total ban on plastic bags made from petroleum products at all supermarkets and shopping malls.

4. SDG12 reporting/monitoring and evaluation

4.1 Sustainable Use of Biodiversity and Primary Resources (from VNR)

4.1.1. Agriculture (SDG 2)

Malaysia is stepping up efforts to improve self-sufficiency levels (SSL) in food production and preparing for the impacts of climate-related disasters to ensure food security. Sustainable agriculture development is guided by the National Agrofood Policy 2011–2020 and National Commodity Policy 2011–2020. Production of major agrofood commodities also showed encouraging growth between 2011 and 2016, at an average rate of 3.9% annually. As of 2015, Malaysia achieved SSL targets for paddy, vegetables and fruits, and achieved above 100% SSL for poultry and eggs.

These achievements were made possible from the use of quality seeds, breeds and fries, wider adoption of effective technologies among farmers, and establishment of new large scale food production areas. Malaysia also has been proactive in maintaining genetic diversity and undertaking research in climate-resistant crops and farmed animals. The country adopted a series of certification schemes of good agricultural practices, such as Malaysia Good Agricultural Practices (myGAP), Malaysia Organic (myOrganic), and Malaysia Sustainable Palm Oil (MSPO) certifications, among others, to ensure sustainable production and keep fresh produce safe.

4.1.2. Fisheries and Other Marine Sources (SDG 14)

Malaysia has introduced policies and measures to sustainably manage marine and coastal areas, including the National Coastal Zone Physical Plan (NPP-CZ) and the Coral Triangle Initiative Malaysia National Plan of Action (CTI-NPOA).

As of 2016, Malaysia has established 63 marine protected areas covering 16,492.92 km², or 3.36% of the coastal and marine areas. Development in the protected areas is guided by their own management plans, covering the conservation and rehabilitation of the resources as well as the provision of alternative livelihoods for local communities. Emphasis also is given to maintaining the health and resilience of marine ecosystems through the establishment of permanent monitoring stations to monitor marine water quality and coral reef health. Likewise, initiatives have been taken to restore and rehabilitate areas at risk of degradation and to overcome the loss of marine habitats, especially within marine protected areas.

Critically, the Environmental Impact Assessment (EIA) is a key measure to control land-based pollution and protect marine and coastal ecosystems. A successful Mangrove Planting Program was initiated in 2005 to protect against tsunamis and enrich coastal and marine biodiversity, as well as to mitigate pollution caused by solid waste disposal. In addition, an extensive network of marine monitoring stations has been established across the country to monitor marine water quality. Malaysia also is well-prepared to manage any potential oil spill in its waters, guided by the National Oil Spill Contingency Plan.

Various programs are being implemented to ensure sustainable fisheries and aquaculture activities in the country, including enforcing zoning regulations for fishing areas and promoting good aquaculture practices through certification schemes. Illegal fishing practices, overfishing and harmful fishing practices are mitigated through the National Action Plan of Management of Fishing Capacity and the National Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated (IUU) Fishing.

4.1.3. Forestry (SDG 15)

Malaysia has taken commendable steps to protect its biodiversity with the formulation of various policies and legislation such as the National Policy for Biological Diversity 2016–2025, National Forestry Policy 1978 (Amendment 1992), Second National Mineral Policy 2009, Wildlife Conservation Act 2010 (Act 716), National Parks Act 1980, Biosafety Act 2007, and others. The National Policy for Biological Diversity 2016–2025 provides the framework for continuous conservation, sustainable utilization and sharing of biodiversity benefits in a fair and equitable manner.

Various forms of protected forest areas include national and state parks, Ramsar sites, permanent reserve forests, and water catchment areas. To address the issue of forest fragmentation, transboundary projects also have been initiated, including the Central Forest Spine in Peninsular Malaysia and the Heart of Borneo, which involves Sabah and Sarawak states. Conservation action plans for iconic species – that is, for tigers, elephants, and tapirs – also being undertaken. Further, Malaysia is updating a National Red Data List for threatened species and implementing innovative methods to pool resources to combat poaching, illegal wildlife trade and encroachment into protected areas. The National Conservation Trust Fund for Natural Resources (NCTF) also has been established to fund initiatives related to conservation efforts. Malaysia has initiated efforts in developing resource mobilisation plan to support conservation programmes.

4.2 Source Reduction (Plastic Waste)

In 2011, the federal government launched a nationwide “No Plastic Bag Day Campaign” scheduled for every Saturday. Wet markets, restaurants and night markets were exempted from this initiative. Consumers were advised to bring their own bags or to purchase alternative bags, such as paper bags or reusable bags made of synthetic fibers; those who opted for single-use plastic bags were charged MR0.20 (USD0.06). A 2013 evaluation of this effort found that around half of the consumers paid the bag fee while the other half either used reusable bags or no bag at all.

The Malaysian Investment Development Authority (MIDA) provides tax incentives for green industry activities in the area of energy, transportation, building, waste management and supporting services activities projects. MIDA also provides tax incentive for manufacturers of biobased or biodegradable plastics, biomass products and recycling products.

Malaysia also has in place a set of ecolabelling criteria (technical standards) for biodegradable and compostable plastic packaging materials (ECO001) as well as similar standards related to biomass-based products for food-contact applications (ECO009). These ecolabelling standards also include criteria for products constructed of recycled plastics (ECO018) as well as those made of recycled rubber (ECO014). The standards were developed by SIRIM, an industrial research and technology organization under the Ministry of International Trade and Industry (MITI).

4.3 Cleaner Production and Energy Efficiency (SDG 7 & 13) (from SCP Blueprint)

International and Malaysian standards provide guidelines for environmental, energy, quality, and sustainability reporting. Large companies are mandated to present reports in specific contexts. These include sustainability reports requested by Bursa Malaysia and energy reports for enterprises subject to the EMEER regulation. The MyCarbon system to disclose carbon emissions to the Ministry of Natural Resources and Environment will become mandatory for larger enterprises. However, less than half of the designated companies comply.

Costs of energy efficiency (EE) technologies in buildings such as lighting, insulation or cooling have decreased considerably over the last years. Solar power will soon be the cheapest form of electricity. Already now, the generation cost of solar power in Malaysia is lower than the electricity price per kWh currently paid by households. However, green technologies in the building sector have not seen a significant uptake so far by the Malaysian market and are locked in the pilot and demonstration trap. EE in the Malaysian building sector has been left to voluntary initiatives in an elite niche. Initiatives by the Government are temporary and not mainstreamed. To apply EE at least in government-controlled building segments is not realized. Tangible results in terms of large-scale EE improvements in the national building sector have yet to be seen. The move to EE building in Malaysia will require a comprehensive and consistent approach like in developed countries.

4.4 Sustainable Transportation (from SCP Blueprint)

The Land Public Transport Commission (SPAD) has published in 2013 the National Land Public Transport Master Plan (NLPTMP), which takes a calibrated approach to transformation, balancing quick-win initiatives with long-term structural changes. There are several public transport plans at state level such as the Penang Transport Master Plan and the Iskandar Malaysia Transport Vision. The reconciliation of national and state planning will lead to better connectivity. Although the National Automotive Plan 2014 (NAP14) assumes an unrestricted growth of motor vehicles, this shall also include EEV.

The transport sector has been so far not successful in becoming low carbon and less resource intensive. Current trends in Malaysia show that the number of private motor vehicles could increase exponentially which will cause massive pollution, traffic jams and road bottlenecks. More land space will be required for parking and additional roads and highways. The Eleventh Plan addresses these threats by promoting low carbon mobility through utilization of EEV and public transportation as elements of the green growth strategy. The target is a modal split of 40% public transport in greater Kuala Lumpur and of 20% in other major cities.

4.5 Sustainable Tourism (from SCP Blueprint)

Several policies address sustainable tourism such as the Tourism Industry Act (1992), the National Ecotourism Plan, the New Economic Model, the Economic Transformation Program, the Eleventh Plan, and state level policies. The existing hotel star rating, used by most hotels, can be enhanced easily with a SCP component. Registered homestay operators are provided guidelines and training for quality operation, which constitute good conditions for a certification system following best practices. Tourism sites are governed by regulations administered at state and local level.

4.6 Awareness-raising and Clean-up Campaigns

In the current integrated curriculum for secondary schools eleven out of the 16 core subjects contain SCP related content. However, these are mainly focused on cognitive knowledge. There are minimal learning outcomes aimed at turning this knowledge into daily life practice. A small proportion of schools participate in extracurricular programs such as Sekolah Lestari, the 3R program and CSR projects involving industry and NGOs. All 27 teacher education institutes offer environmental education to teacher trainees. The standard curriculum for secondary education is currently under revision until 2017.

Various courses on SCP related topics exist across universities, training providers, expert organizations, NGOs and government affiliated institutions. Yet, stakeholders from industry, civil society and government feel there is insufficient supply of training to meet their needs. Many training initiatives rarely build on previous experiences and programs. End users are confused with different packaging of similar training contents. Access is limited to individual training providers' resources.

4.7 Corporate and Industry Involvement (from SCP Blueprint)

Some Malaysian industries are already practicing SCP through environmental reporting, energy management, cleaner production and emission prevention. They are benefitting from these practices with higher profits. The responsible use of resources reduces waste and emissions. Safer and better working environments increase productivity and retention of employees. Good management practices improve credit standing and access to finance. These industries demonstrate the effectiveness of SCP to meet the export requirements of competitive global markets.

Over a dozen agencies are involved with industries through policies and initiatives covering the industry life cycle. Regulations exist for pollution control, energy management and occupational health and safety. There are over 6000 voluntary industry standards in Malaysia. Publicly listed companies are mandated to provide sustainability reports. Tools to raise productivity of SMEs have been successfully tested in pilot and demonstration projects. Economic support is plentiful: over 50 financial incentive programs support SCP related areas.

5. Key sectors or priorities

Key SCP Initiatives in Malaysia from VNR:

- *Government Green Procurement (GGP)*: This focuses on government purchases of environmentally friendly products and services to spur demand for green industries. The GGP is intended to create demand for green products and services, encouraging industries to raise both the standards and quality of their products to meet green requirements. GGP guidelines have been adopted in stages in 2014 and widely implemented at federal level in 2017. By the end of 2016, Government procurement of green products and services stood as RM 429million.
- *SCP in Education*: Integrating SCP in the formal education syllabus to inculcate a sustainable lifestyle among students has become increasingly important. The Ministry of Education has aligned the SCP curriculum with the national education curriculum and has developed a guidebook for teachers on global sustainability, which include SCP.
- *Recycling rate for solid waste*: By 2020, the recycling rate is intended to rise to 22% from 17.5% in 2016
- *Tourism*: The National Ecotourism Plan 2016–2025 provides a general framework for developing the country's ecotourism potential
- *Transport*: The Government is formulating a National Transport Policy, with an emphasis on low-carbon mobility
- *Built Environment*: The Malaysian Carbon Reduction and Environmental Sustainability Tool (MyCREST) was adopted in 2016 to quantify carbon emissions and sustainable impacts of the built environment

SWITCH-Asia Country Profile:

- Greening supply chains in all sectors is needed to ensure enhanced environmental performance, minimize waste and achieve cost saving benefits.
- As the tourism industry provides an important source of income, employment and wealth to the country, there is a need to support sustainable tourism practices to protect its long-term environmental and economic sustainability.
- Green Public Procurement (GPP) is a priority in Malaysia for both the financial savings from improved efficiency as well as the environmental benefits.
- Standards and eco-labelling programs are becoming more important as they provide reliable information on green products available in Malaysia and have potential to drive sustainable demand for the promotion of green technology.
- Sustainable lifestyles and behaviors are promoted by Malaysia as priorities because of their ability to contribute to resource efficiency, saving energy and water and in line with low carbon economy goals.
- Improving sustainable practices in the batik industry, especially with regard to manufacturing, is important as the industry continues to grow quickly and remains culturally central to Malaysia.
- Other priorities include: sustainable food production and consumption including food waste, waste management handling and disposal, alternative renewable energy and low carbon manufacturing strategies.

6. Challenges (readiness/mandate, financing, capacity, data etc. monitoring and evaluation, stakeholders)

SWITCH-Asia Country Profile:

- While Malaysia has completed a National SCP Blueprint, technical capacity is needed to move forward with its implementation.
- There also remains a lack of clear-cut mandate, responsibilities and monitoring in the SCP implementation among Malaysian Government Ministries and agencies.
- Stakeholder engagement, especially from civil society, remains low with regard to SCP-related policy formulation.
- SMEs in Malaysia have limited access to finance, making it difficult to invest in clean technologies.
- As agriculture is the biggest land user behind forestry, unsustainable production methods have negative impacts on land and other resources, including land and soil degradation, pesticide pollution and loss of biodiversity.
- Buildings consume a large percentage of energy and account for a significant portion of Greenhouse Gas Emissions in Malaysia due to a lack of implementation of certifications and guidance.

Challenges (Plastic Waste) from Gap-Analysis in ASEAN Member States:

- Low awareness among citizens and low willingness to separate recyclables at source
- Lack of consistent, sufficiently detailed and reliable data on waste generation, composition, collection routes, and treatment
- The need for coordination of a large number of actors, both governmental and private, at various administrative levels
- Lack of detailed policies on implementation of Act 672

7. Opportunities/Potential

Moving forward, Malaysia will implement the 2030 Agenda under the framework of 11MP, whereby the means of implementation include (from VNR):

- localizing SDGs at sub-national levels by replicating the national multi-stakeholder governance structure at state levels;
- mobilizing resources and funding through partnerships with stakeholders including crowd sourcing, social entrepreneurship, and Corporate Social Responsibility programs besides public sector funding under 11MP; and
- strengthening data readiness and filling data gaps to develop a comprehensive dataset for SDG implementation

SWITCH-Asia Country Profile:

- SWITCH-Asia SCP Facility should facilitate policy dialogues within and between the Malaysian Government SCP-related bodies as well as organizations from civil society, academia and the private sector.
- SWITCH-Asia can further support and strengthen Malaysia's active implementation of the SCP National Blueprint 2030 in achieving synergy with the 2030 Sustainable Agenda.
- Related projects and policies can be connected to currently existing, larger SCP initiatives, including in initiatives on sustainable lifestyle and education, ecotourism, SCP outreach, sustainable textiles, and sustainable cities as well as to 10YFP and international programs, to find synergy and multiply the impacts.
- Further build capacity of government, business, consumers, and civil society on SCP, including integration of SCP concepts into the education system and building awareness on eco-labelling among consumers.
- Expand the use of media to promote SCP awareness among the public.
- Provide financial and technical assistance to SMEs to induce and enable eco-innovation towards resource efficiency.

Major gaps and opportunities (Plastic Waste) from Gap-Analysis in ASEAN Member States:

- Sharing of experiences on cross-ministerial policymaking; models for how to effectively coordinate and align the work of separate ministries and government agencies
- Awareness raising and capacity strengthening of plastics and packaging manufacturers, especially SMEs
- Support to the drafting of a packaging law, drawing from the experiences of countries that already have such legislation in place
- Guidance on how to implement EPR for selected types of plastic packaging
- Guidance on how to exclude or include plastics in the system for green public procurement
- Guidance on how the government can stimulate a dynamic national innovation system around bio-based plastics, involving also private financial lenders and other non-government funding sources

8. Case Studies

8.1 Clean Batik Initiative (from SWITCH-Asia):

Batik small and medium-sized enterprises (SMEs) operate with excessive use of water, wax, chemical dyes, and bleaching agents that are harmful to the workers and the environment. There is no demand-led stimulus for the batik SMEs to switch to a cleaner method of production due to low environmental awareness of the batik consumers.

The project aims to improve the environmental indicators of the batik industry in Indonesia and Malaysia and to create environmentally conscious consumers in order to drive the demand of eco-friendly products from batik SMEs that will, in turn, provide incentives for cleaner production. It aims to do so through:

- Increasing practices and use of environmentally friendly technologies by batik SMEs by promoting sustainable alternatives in production processes that use fewer materials and generate less pollution per unit of goods produced;
- Promoting trade in clean batik and switching consumption behavior of consumers or segmented consumer groups in favor of products that are less environmentally damaging;
- Contributing to the development of an enabling policy environment to create a setting that stimulates batik SMEs and batik consumers to change their behavior.

8.2 Environmental Declaration Scheme for Construction and Building Materials (from SWITCH-Asia):

The project aimed at developing guidelines, tools and the supporting mechanism for product foot printing and labelling that meet the needs of the local and international market and creating the recognition and preference for sustainable products from SMEs in the Malaysian construction and building materials sector.

The Way Forward:

- Developed carbon footprint labelling scheme which was based on international standards, such as the ISO series of standards on environmental management, GHG protocol of the World Resources Institute and PAS 2050 guidelines on carbon foot printing, ensuring global market acceptance;
- 13 companies had met the requirements of the audit process and received license to use the SIRIM carbon footprint logo;
- 10 product categories that have been identified / labelled for the pilot program, namely wall coatings, sanitary ware, plumbing pipes, ceilings ceramic tiles, floor finishing, wall panels, masonry units, structural steel, architectural steel and architectural roofing provide impetus to other manufacturers to improve their environmental performance.

APPENDIX F: COUNTRY BRIEF ON SCP FOR MYANMAR

1. Key Data

- Summary Statistics ([Source: https://www.focus-economics.com/countries/myanmar](https://www.focus-economics.com/countries/myanmar))

Summary Statistics	
Region	South-Eastern Asia
Land area (sq km)	676,577
Population	53,000,000
Capital city	Nay Pyi Taw
Currency	Kyat (MMK)
GDP (2019)	\$69,200,000,000
GDP Growth Rate (2019)	6.8%
GDP per capita (2019)	\$1,305
Unemployment Rate (2019)	4.0%
Inflation Rate	8.8%

- Myanmar has the lowest electrification rate of the region (~34%) which means that more than 60% do not have access to a modern form of electricity. Further, due to low maintenance, electricity losses are high. Four cities - Yangon, Mandalay, Nay Pyi Taw and Sagaing – use more than 70% of Myanmar’s total electricity generation. Expansion of sustainable energy is key, though knowledge on maintenance and ways to finance off-grid renewable energy solutions for low-income customers is limited. (Source: SWITCH-Asia Country Profile Myanmar)
- Data availability and reliability is limited. Only 60% of baseline data exists across all SDG indicators. (Source: SWITCH-Asia Country Profile Myanmar)
- Currently Myanmar’s annual electricity consumption is only 180 kWh per capita per annum and access to electricity is relatively low, i.e., 27% in 2011-2012 and 31% in 2015-2016 per house holds. (Source: Myanmar’s Intended Nationally Determined Contribution-INDC)
- The largest part of the total 51.4 million population (2014 census) is concentrated in the Ayeyarwady basin area, so it sustains many significant socio-economic sectors and many livelihoods. (Source: Myanmar’s Intended Nationally Determined Contribution-INDC)

- The population is concentrated in two main areas: The Delta area (~50,400 km²) which is most exposed to recurring tropical storms, cyclones and floods and potential storm surge, and the 'Dry Zone' area, which is exposed to chronic droughts. In 2014, 70% of the population that resided in rural areas and depended on rain-fed agriculture, livestock and fishery and forest resources. (Source: Myanmar's Intended Nationally Determined Contribution-INDC)
- According to the National Implementation Report of the Department of National Planning in 2012-2013, the agriculture sector contributed 32.9% of national GDP. (Source: Myanmar's Intended Nationally Determined Contribution-INDC)
- The economy of Myanmar and its society is therefore highly sensitive and vulnerable to climate change, climate variability and natural disasters. (Source: Myanmar's Intended Nationally Determined Contribution-INDC)
- From the World Bank Report: Myanmar Living Conditions Survey 2017: Socio-Economic Report (Source: <http://documents.worldbank.org/curated/en/151001580754918086/Myanmar-Living-Conditions-Survey-2017-Socio-Economic-Report>):
 - One in four people are still considered poor and another 32.9% of the population have consumption levels that put them at risk of falling into poverty.
 - Human capital accumulation through education is low and unbalanced with poor households lagging behind. Poorer children face considerably larger barriers to education: They have lower access to schools, face greater financial constraints to continuing education, and possess greater household responsibilities that deter them from going to school.
 - Access to comprehensive healthcare services and healthcare utilization are relatively low in rural areas, where most of the poor live. The poor are also significantly less likely than the non-poor to use healthcare services, particularly private services, when faced with an illness or injury, instead resorting to self-medication or other less-reliable methods.
 - Poverty is associated with a higher likelihood of lacking improved water and sanitation access, which can increase the risk of enteric diseases for small children.
 - Although the poor use clean energy sources for lighting (37.7% are using solar panel for lighting), 83% of households in the bottom consumption quintile rely heavily on firewood and 5% on charcoal for cooking, increasing their risk of contracting respiratory diseases.
 - Access to formal financial institutions such as banks and microfinance organizations is significantly higher in urban areas than in rural areas.
 - Only 17% of households in Myanmar have a bank account, with poorer households significantly less likely to own an account. A lack of savings puts the poor and the vulnerable at greater risk of a debt trap, as they are more likely to borrow rather than use savings in order to cope with a negative shock.

- While unemployment is low, labor underutilization is significant in 2017, particularly among the poor. About 14% of the working-age population could be contributing more to productive activities in Myanmar.
- State of the Environment in Myanmar
 - While the industrial sector is a key element of Myanmar's economic development plans, the sector is not operating sustainably. Pollution, insufficient waste management and mass tourism contribute to advanced environmental degradation. (Source: SWITCH-Asia Country Profile Myanmar)
 - Myanmar's economic growth has resulted in high pollution levels (waste water, solid waste, GHG emissions, air pollution). The accelerated development of industries is considered crucial in Myanmar's effort to become an industrialized modern nation. Economic development has resulted in the expansion of urban areas, agriculture and mining, leading to an increase in deforestation. Water quality has deteriorated due to contamination by unregulated and environmentally unsound mining operations along the river. (Source: SWITCH-Asia Country Profile Myanmar)
 - Polluting industries like mining and garment are among the country's main trading industries. (Source: SWITCH-Asia Country Profile Myanmar)
 - Outdoor air pollution in Myanmar is among the highest in the world, due to inefficient modes of transport, inefficient combustion of household fuels for cooking, lighting and heating, coal-fired power plants, industrial agriculture and waste burning. (Source: SWITCH-Asia Country Profile Myanmar)
 - Tropical Cyclone Nargis caused the loss of 138,000 lives in 2008 and devastated infrastructure, causing long-term adverse socio-economic impacts. The estimated total cost of loss and damage due to Nargis to the national economy is estimated to be over USD4bn. (Source: Myanmar's Intended Nationally Determined Contribution-INDC)
 - Myanmar's forest area declined from 39.7 million hectares in 1989 to 30.5 million hectares in 2010, with an average annual loss of 438,000 hectares of forest per year. This is an annual decline of 1.1%, which accelerated to 1.9% between 2006 and 2010 (Source: <https://www.adb.org/sites/default/files/publication/177586/ewp-467.pdf>)

2. Policies, strategies, plans, networks – government, civil society, private sector

- On the policy level, urban development in Myanmar suffers from conflicting and non-aligned planning activities and low capacity in implementing development plans. (Source: SWITCH-Asia Country Profile Myanmar)

- In terms of policy development, the Government, for example, has made environment one of the seven strategic pillars of its National Comprehensive Development Plan (2011-2030); it has promulgated the Environmental Conservation Law (2012); and it is resolute in mainstreaming environment into the national policy and development agenda. This will take place under the guidance of the National Environmental Conservation Committee and Myanmar Climate Change Alliance established by the Union government's cabinet in 2013. (Source: Myanmar's Intended Nationally Determined Contribution-INDC)
- Myanmar is now developing its National Climate Change Strategy and associated action plans. These will present a vision for achieving climate resilient, low-carbon, resource efficient and inclusive development as a contribution to sustainable development. To support this vision, Myanmar is also developing its Green Economy Framework again with associated action plans. (Source: Myanmar's Intended Nationally Determined Contribution-INDC)
- With respect to adaptation, in 2016 Myanmar will start the elaboration of the National Adaptation Plan (NAP) to provide more detail to guide its on-going adaptive efforts. (Source: Myanmar's Intended Nationally Determined Contribution-INDC)
- Mitigation Actions: (Source: Myanmar's Intended Nationally Determined Contribution-INDC)

Sector	Intended Implementation Plan
<i>Forestry Sector</i>	
National Permanent Forest Estate Target	<p>The Government of Myanmar is following the implementation plan as set out in the <u>30-Year National Forestry Master Plan (2001-30)</u>. To develop its capacity to meet such ambitious targets, Myanmar has set about a number of activities under the plan at the national and regional level:</p> <ul style="list-style-type: none"> • In 2011, Myanmar joined the UN-REDD Program (United Nations collaborative initiative on Reducing Emissions from Deforestation and forest Degradation in developing countries). The REDD+ Core Unit was established in the Ministry of Environmental Conservation and Forestry (MOECAF), and has the task of coordinating and guiding REDD+ related actions at national level. Myanmar developed its REDD+ Readiness Roadmap in 2013 and prioritized the activities for the implementation. In 2015 a new proposal was submitted for UN-REDD Support for the Implementation of the Myanmar REDD+ Readiness Roadmap.

Sector	Intended Implementation Plan
	<ul style="list-style-type: none"> In 2014, Myanmar joined the <u>European Union’s Forest Law Enforcement Governance Trade (FLEGT) program</u> which provides capacity building on legal aspects related to forestry.
<i>Energy Sector</i>	
Hydroelectric Power	<p>The Government of Myanmar is currently developing policies in this area, for example:</p> <ul style="list-style-type: none"> The <u>Long-Term Energy Master Plan</u> (draft) which estimates that by 2030 total installed hydropower capacity could reach approximately 9.4 GWe. The <u>National Electrification Master Plan</u> (draft) is being developed alongside the Energy Master Plan. The Electrification Master Plan forecasts, 38% of the primary electricity generation capacity will be hydropower resource in 2030. The specific installed capacities will be confirmed once the draft policies and plans described in section 2.2 are finalized and harmonized. <p>Environmental Impact Assessment and all related tools, including social safeguards, and measurable monitoring framework.</p>
Rural Electrification	<p>The Ministry of Livestock, Fisheries and Rural Development has received co-funding from a number of international development partners to develop mitigation actions in this sub-sector (such as the drafting of the <u>Comprehensive Village Development Plan</u>). As a final result of the overall action, 6 million people in rural areas will have access to electricity generated by a variety of sources, at least 30 % of which will be sourced from renewables such as of mini-hydro, biomass, solar, wind and solar mini-grid technologies.</p>

Sector	Intended Implementation Plan
Industrial Processes	<p>The project "<u>Improvement of Industrial Energy Efficiency</u>" (Global Environment Facility (GEF) project #5321) is being carried out by the Government of Myanmar in partnership with UNIDO. The Government of Myanmar and the industrial private sector in Myanmar are providing USD13.8m towards the project which is also being supported a grant from the GEF Trust Fund (the total project cost is USD16.5m).</p> <p>The objective is to promote sustained GHGs reduction in the Myanmar Industry by improving policy and regulatory framework, institutional capacity building for industry energy efficiency; implementation of energy management system based on ISO 50001; and optimization of energy system in industry.</p> <p>This is an example of a project which will be carried in accordance with the <u>National Energy Efficiency and Conservation Policy, Strategy and Roadmap for Myanmar</u> which is currently being drafted (please see section 2.2 for further details).</p>
Cook-stoves	<p>MOECAAF, as part of the <u>Comprehensive Plan for Dry Zone Greening (2001-2031)</u>, has distributed approximately 286,000 cook-stoves during 2001-2015, and plans to distribute an additional 260,000 cook-stoves between 2016 and 2031.</p> <p>The project falls under the <u>National Forestry Master Plan</u> and <u>National Energy Policy</u>, in order to reduce the use of wood from natural forests for cooking by 2030 (please see section 2.2 for further details).</p>

- Institutional Arrangements and Planning for Implementation: (Source: Myanmar's Intended Nationally Determined Contribution-INDC)

Policy Area	Specific Elements
Climate Change & Environment	<p>The <u>National Climate Change Strategy and Master Plans (2018-2030)</u> are under development and has been adopted in 2019. The strategy will devise the means to achieve the overall vision, and will set out a detailed implementation framework to address climate change in each sector.</p> <p>A <u>National Climate Change Policy</u> has been developed in 2019.</p> <p>The National Climate Change Policy, Strategy and Master Plan have been developed by the MCCA program and MONREC. The program is funded by the European Union's Global Climate Change Alliance Programme (approximately USD5m), and implemented by UN-Habitat and UNEP. The program, which runs from 2013-2017 is designed to increase awareness of climate change in Myanmar, to strengthen institutional capacity to develop policies address it, and to develop eco-system-based adaptation practices. The program is supported by a <u>Technical Working Group</u>, with representatives from all relevant ministries, cities, academia, Civil Society Organisations (CSOs) and technical partners. A <u>Climate Change Unit</u> within MONREC has been established to provide technical support with respect to climate change mitigation and adaptation.</p> <p>A MCCA has been established by the Union Government's cabinet, which is chaired at Ministerial level.</p> <p>The <u>Green Economy Policy Framework</u> is under development and will be ready in 2021. The framework's development is supported by the WWF.</p> <p>The <u>National Environmental Policy</u> has been adopted in 2019 and <u>National Environmental Strategic Framework and Master Plan</u> are also currently being developed with UNDP support.</p> <p>The <u>Environmental Conservation Law (2012)</u> is being implemented, and includes provisions to address climate change, as well as make provisions for Environmental Impact Assessments for development projects.</p> <p>The <u>State of Environment Report 2015</u> is being finalized for publication.</p>

Policy Area	Specific Elements
Forest Management	<p>The <u>National Forestry Master Plan</u> was implemented in 2001 and will expire in 2030, upon which the next strategy will be designed and implemented. As part of implementing the Master Plan, each district in Myanmar produces a 10 year management plan so that overall goals can be met by 2030.</p> <ul style="list-style-type: none"> • In 2011, the <u>National Biodiversity Strategy and Action-Plan</u> was published as a complementary strategy to the Master Plan, and it was here that the level of ambition of increasing Protected Area Systems to 10% of national land cover was made. • In the catchment areas of rivers, streams, lakes and dams, forest plantations, agroforestry practice, community forestry have been done and also to reduce soil erosion, contour bunds, sediment trapping dams, conserving natural springs and bioengineering measures are being done. • Developing a coastal zone management plan to effectively conserve terrestrial and under water resources including mangrove forests. Also cooperating with international organizations providing technology and funding to reduce the risk of climate related disaster risk for local communities. The National Strategy Action Plan (NSAP, 2015) has been published as well. • Myanmar joined the UN-REDD Programme in November 2011, submitted its REDD+ Readiness Roadmap document in 2013, and developing country program and taking actions in line with the REDD+ roadmap.
Energy	<p>The <u>National Energy Policy (2014)</u> is the overarching national policy which provides the framework for energy development and planning in Myanmar.</p> <p>The <u>Long-Term Energy Master Plan</u> is in the final stage of drafting and is expected to be approved by the end of 2016.</p>

Policy Area	Specific Elements
	<p>The <u>National Energy Efficiency and Conservation Policy, Strategy and Roadmap for Myanmar</u> draft is finalized and is expected to be approved in 2015.</p> <p>The <u>National Electricity Master Plan</u>, draft is finalized. It aims to harmonize the medium and long-term decisions on primary energy source selection and transmission system planning.</p> <p>The <u>Myanmar National Rural Development and Poverty Alleviation Programme</u> includes a <u>Rural Electrification Plan</u> which is currently being drafted and expected to be finalized in 2017.</p>
Other Key Sectors	<p>Policies such as the <u>National Transport Master Plan and National Implementation Plan on Environmental Improvement in the Transport Sector</u> are being developed. Cities, like Yangon, are studying options for sustainable transport development for example, and CSOs are engaged in proposing solutions to challenges for implementation.</p> <p>To promote sustainable urbanization, the Government of Myanmar is drafting a <u>National Urban and Regional Development Planning Law</u>, a <u>National Housing Policy</u>, <u>National Urban Policy</u>, and is expanding its urban planning capacity. Approximately 75 township-level planners are being trained to achieve policy goals, they are the first in Myanmar to receive such training.</p> <p>The <u>National Waste Management Strategy and Master Plan (2018-2030)</u> has been developed in 2020.</p> <p>The <u>Ministry of Agriculture and Irrigation</u> is researching alternative wet and dry paddy production techniques. This is an example of how Myanmar is resolving the need to mitigate climate change whilst also adapting to it. To reduce GHG emissions from the burning of crop residues in fields, the Ministry of Agriculture and Irrigation is implementing effective mitigation actions such as energy from crop residues, promoting the use of organic fertilizers, and methods to shorten the time of composting agricultural by-products. The bio-char program is also being planned and will reduce GHG emissions to atmosphere as a result of less anaerobic decomposition in the production process. At the same time, this will increase crop production.</p>

Policy Area	Specific Elements
	<p>Research and development is vital to find the means and methods of reducing GHG emissions from agriculture sector. To perform the systematic research necessary Myanmar requires the support of technical experts, access to tools and relevant apparatus. Technology transfer and assistance from experienced countries will therefore be required. The major requirement for research works related to GHG emission reductions will be considered and prioritized in Myanmar's national comprehensive development strategy.</p>

3. Programs and projects - government, civil society, private sector

- Several initiatives in support to industrial energy efficiency have been supported by the Global Environment Fund. With the SME Development Law (2015) committees to promote SME development were created. Green financing for SMEs is made available through the Central Bank of Myanmar, the Small and Medium Industrial Development Bank, Myanmar Insurance, and international organizations. With support of the WWF, a Green Economy Policy Framework is currently being developed and is expected to be completed in 2021. In the context of Myanmar's Intended Nationally Determined Contribution (INDC) which was submitted to UNFCCC in 2015, Myanmar has designed a Myanmar Climate Change Strategy & Master Plan (MCCSMP) (2018-2030), six sectoral action plans, as mandated by the National Climate Change Policy. Those provide a roadmap to guide Myanmar's strategic responses to address climate related risks and opportunities over the next 15 years and beyond. (Source: SWITCH-Asia Country Profile Myanmar)
- Cooperation with the European Union has continued over more than a decade to promote the shift to sustainable consumption and production through SWITCH-Asia utilizing the Grants Programme, which since 2010 has made possible five projects, aimed at energy efficiency, environmental management, resources efficiency in the textile industry and logistics sector. (Source: SWITCH-Asia Country Profile Myanmar)
- THA BAR WA - Environmental declaration scheme for construction and building materials
 - Theme: Construction
- SMART MYANMAR I - Catalyzing sustainable water and energy management in food and beverage industries
 - Theme: Agri-food
- SMART MYANMAR II - SMEs for Environmental Accountability, Responsibility and Transparency
 - Theme: Textiles and Leather

- SCALE - Upscaling improved cook stove dissemination in Myanmar
 - Theme: Cook Stove

- AEMAS - Establishment of the ASEAN Energy Management Scheme
 - Theme: Multi-industry

- SUSTAINABLE FREIGHT AND LOGISTICS - Sustainable freight transport and logistics in the Mekong Region
 - Theme: Transport and Logistics
 (Source: SWITCH-Asia Country Profile Myanmar)

- UNDP supported the Government of Myanmar with policy and technical advice, workshops and trainings through the Country Programme (2018 – 2022)

(Source: <https://www.mm.undp.org/content/myanmar/en/home/library/poverty/annual-report-2018.html>)

 - The progress made in 2018 reflects UNDP's commitment to supporting sustainable management and use of Myanmar's natural resources. This includes promoting the participation and rights of local communities in environmental and natural resources governance arrangements.
 - With UNDP's technical leadership, Myanmar submitted its 6th National Report (6NR), which brings together concrete measures being undertaken for the implementation of the Convention on Biological Diversity (CBD). The CBD is a legally binding treaty with the overall objective of encouraging actions for a sustainable future.
 - In 2018, UNDP supported resilience building initiatives to mitigate climate and disaster risks. With UNDP technical support, a National Earthquake Preparedness and Response Plan and a Yangon Region Earthquake Preparedness and Response Plan were drafted.
 - To build the resilience of the people living in the dry zone, the Myanmar Government, with support from UNDP and the Adaptation Fund, is implementing a project to improve access to fresh water, strengthen agricultural practices, diversify income sources, enhance climate risk information dissemination and actively involve communities in long term solutions.
 - Four years into the project, communities in the dry zone are reaping the benefits. UNDP supported the protection and rehabilitation of over 8,062 ha of degraded land in 5 townships (Shwebo, Monywa, Myingyan, Nyaung U and Chauk), and demonstrated soil conservation practices on 1,600 ha of land.
 - Approximately 17,680 households benefitted from climate-resilient agriculture practices and 7,197 households benefitted from climate-resilient livestock production practices.
 - The project provided 12 deep tubes wells, 20 shallow tube wells, 56 communal water tanks and rehabilitated 136 water retention ponds. New local water groups (38) were established and capacitated to operate and maintain this infrastructure sustainably.

4. SDG12 reporting /monitoring and evaluation

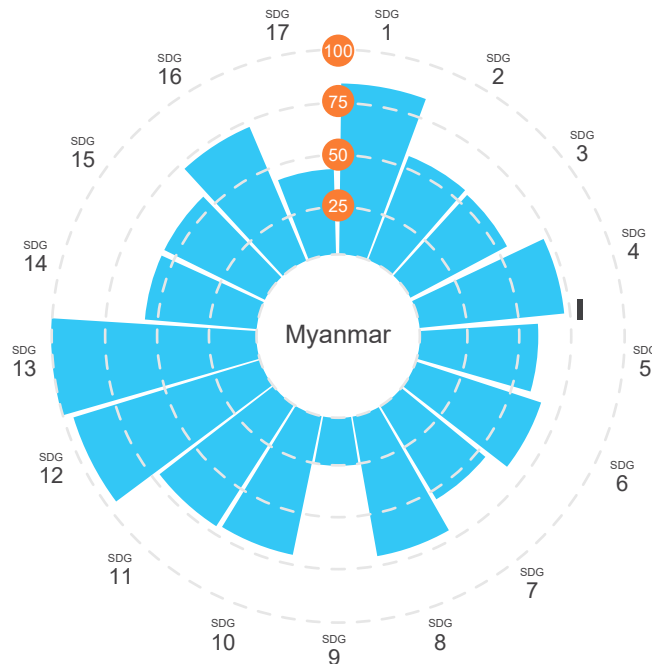
Central Statistical Organization and UNDP (2017), Measuring Myanmar's starting point for the Sustainable Development Goals SDG Indicator Baseline Report:

- In 2010, material footprints per capita (1.6 tons) and per GDP (4.1 kg) were lower in Myanmar compared to the Regional and World averages.
- In 2010, domestic material consumption per capita (3.1 tons) was lower in Myanmar, whereas domestic material consumption per GDP (7.8 kg) was higher in Myanmar than the regional and global averages.
- Myanmar's accession to the "Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal" took place at the beginning of 2015.

GOAL 12	Indicator	Year	Myanmar	Southeast Asia	World
12.2.1	Material footprint	2010	82,100,000 tons	3,875,900,000 tons	69,618,800,000 tons
12.2.1	Material footprint per capita	2010	1.6 tons	6.5 tons	10.1 tons
12.2.1	Material footprint per unit of GDP	2010	4.1 kg	17.1 kg	21 kg
12.2.2	Domestic material consumption	2010	159,111,727 tons	4,114,400,000 tons	71,274,500,000 tons
12.2.2	Domestic material consumption per capita	2010	3.1 tons	6.9 tons	10.1 tons
12.2.2	Domestic material consumption per GDP	2010	7.8 kg	3.4 kg	1.3 kg
12.4.1	Number of parties to international multilateral environmental agreements on hazardous and other chemicals and waste that meet their commitments and obligations in transmitting information as required by each relevant agreement	2016	Yes	-	183(1)
12.6.1	Number of companies publishing sustainability reports	2016	0	-	-

(Source: https://www.mopfi.gov.mm/sites/default/files/SDG%20Indicator%20Baseline%20Report%20v9_0.pdf)

- Sustainable Development Report 2020:



▲ AVERAGE PERFORMANCE BY SDG

(Source: Sustainable Development Report 2020)



(Source: Sustainable Development Report 2020)

Value Year Rating Trend

SDG12 - Responsible Consumption and Production

	Value	Year	Rating	Trend
Municipal solid waste (kg/capita/day)	0.8	2000	●	●
Electronic waste (kg/capita)	1.0	2016	●	●
Production-based SO2 emissions (kg/capita)	3.2	2012	●	●
SO2 emissions embodied in imports (kg/capita)	0.0	2012	●	●
Production-based nitrogen emissions (kg/capita)	9.3	2010	●	●
Nitrogen emissions embodied in imports (kg/capita)	0.0	2010	●	●

(Source: Sustainable Development Report 2020)

5. Key sectors or priorities

- Incorporate more sustainable practices in the agri-food processing industry. Examples: farm to fork, from more sustainable land-use (crop diversification, sustainable/climate-smart agriculture practices) to responsible consumption concepts (cooling chain and preservation techniques, food loss prevention, marketing strategies). (Source: SWITCH-Asia Country Profile Myanmar)
- Increase sustainable practices in the tourism sector, build knowledge around financial models for sustainable tourism and the construction of the required infrastructure, and to further develop ecotourism assets. (Source: SWITCH-Asia Country Profile Myanmar)
- To improve waste management, including industrial waste and post-consumer plastics.
- Delivering sustainable consumption and production practices in Myanmar requires capacity building as well as coordination throughout the government and wider community. Education and public administration are critical enablers. (Source: SWITCH-Asia Country Profile Myanmar)
- Improve transparency and accountability: improved governance, economic incentives and stringent enforcement can improve closing current gaps, e.g., the fight against illegal trade in timber and mining, for example through the development of technical capacities for tracing. (Source: SWITCH-Asia Country Profile Myanmar)
- Overall, develop an effective strategy and review of incentives/disincentives hampering conservation of natural assets. (Source: SWITCH-Asia Country Profile Myanmar)

- Four Priority Level Sectors: (Source: Myanmar’s Intended Nationally Determined Contribution -INDC)
 - First priority level sector: resilience in the agriculture sector, developing early warning systems and forest preservation measures
 - Second priority level sector: public health protection and water resource management
 - Third priority level sector: coastal zone protection
 - Fourth priority level sector: energy and industry sectors, and biodiversity preservation
- Myanmar’s Country Programme (2018 – 2022) focus areas for Sustainable Inclusive Growth (Source: <https://www.mm.undp.org/content/myanmar/en/home/library/poverty/annual-report-2018.html>)
 - Environmental Governance; Environmental Policy
 - Climate Change Mitigation and Adaptation
 - Biodiversity conservation, Integrated Land and Seascape Management
 - Building resilience and Disaster Risk Reduction
 - Rural Renewable Energy
 - Building Capacity of Micro, Small and Medium Enterprises, Livelihoods and Women’s Economic Empowerment

6. Challenges – readiness/mandate, financing, capacity, data etc. monitoring and evaluation, stakeholders

- Despite several relevant long-term strategies and action plans, legislative frameworks and enforcement of regulations are insufficient to safeguard the environment. (Source: SWITCH-Asia Country Profile Myanmar)
- Myanmar Sustainable Development Plan 2018-2030:
 - Myanmar’s rich biodiversity underpins a range of critical sea, air and land-based ecosystems. If managed well through the use of sustainable land and marine use practices, these vast and complex systems have the potential to contribute to a more stable climate, boost agricultural productivity, contribute to energy security and sustain growth for generations to come.
 - Myanmar is a country blessed with great development potential; however, our infrastructure gap remains significant. Without dramatically increased investment in a range of modern infrastructure from a variety of financing sources, this infrastructure gap risks hampering Myanmar’s ability to sustain the high rates of growth necessary for economic take-off.
 - Much of Myanmar receives abundant rainfall; however, water shortages can still be found throughout the Dry Zone area. Geographical disparities between urban and rural areas also exist. The result of geographic variation, degradation of important ecosystems and underinvestment in water related infrastructure (for household, private sector and agricultural usage) has meant that too many of our people remain without access to improved sanitation facilities.

- Access to energy cuts across all aspects of Myanmar's development. Access to electricity bears a direct linkage to greater individual opportunities at the household level, greater productivity and competitiveness of our private sector, and can facilitate the emergence of new and innovative SMEs. Myanmar's energy needs have increased significantly in recent years. Continued strong economic growth, rapidly increasing private sector energy consumption and an increasingly urbanized population all suggest that electricity demand is set to continue to increase for the foreseeable future.
- Rapid economic development and related policy shifts have had vast implications for sustainable land governance and resource use. Historical mismanagement and opacity have meant that our natural resources have too often been a cause of, rather than part of a cure for, Myanmar's underdevelopment. In addition, the rapid degradation of essential ecosystems stems partly from decades of mismanagement and overuse.
- An increasingly urbanized population, a rapidly expanding tourism sector, and a re-energized private sector all place particular pressures on existing urban infrastructure while creating opportunities for new services and urban development. Strategies and plans that address the social and economic impacts arising from greater urbanization will be critical to preventing imbalances from reaching destabilizing levels.

7. Opportunities/Potential

From the SWITCH-Asia Country Profile Myanmar:

- SWITCH-Asia can support the alignment efforts for urban development planning between local and national levels and build capacities, especially at city level.
- Scale-up efforts to reach out to local communities to improve capacity around sustainable consumption and production, e.g., community foresting and prioritize biodiversity assets for guiding interventions to protect these assets.
- Train media to report on SCP and to create awareness among the public.
- Expand cooperation with international organizations and institutions especially on combatting pollution, capacity building, and impact measurement.
- Exploration of innovative finance or the enabling of public private alliances on blended finance (e.g., government guarantees, private investment, suitable feed in tariffs), will help to create an enabling environment for green investment also in rural areas, and create new green jobs. Examples range from assistance with local solutions, e.g., options to finance off-grid renewable energy solutions for low-income customers, to advice on macro-level policies, e.g., fiscal policies for eco-tourism that link recreational use to conservation funding in protected areas.
- Assist with demonstration and testing of viable approaches, e.g., piloting an urban "green zone district" which demonstrates sustainable infrastructure and planning concepts as well as energy efficiency measures, and advocate for wider adoption of successful practices.
- Provide suitable international examples on energy efficiency standards and technologies, including lessons learned in other countries that are relevant to Myanmar's development context.

UNDP's Country Programme priorities for 2019

(Source: <https://www.mm.undp.org/content/myanmar/en/home/library/poverty/annual-report-2018.html>)

- Effective public institutions enabled to develop and implement evidence-based policies and systems that respond to the needs of the people
- Improved civil service policies and systems and enhanced strategic human resources management
- Enhanced accountability, integrity and oversight towards strengthening legitimacy of the State and promoting access to justice and human rights
- Strengthening environmental management and DRR as the basis for inclusive, resilient and sustainable development
- Promoting Economic Empowerment of Women and Youth in Myanmar

From the Sustainable Development Plan 2018-2030:

- Myanmar will mainstream the protection of our environmental and biodiversity dividend into all manner of planning and decision making. Whether on land, above ground or under water, a range of policy safeguards, legal protections and enforcement mechanisms will be deployed to ensure that unsuitable and destructive practices are phased out and replaced with more environmentally conscious approaches. Myanmar will also ensure that individuals and communities, including those most vulnerable, are included in decision-making processes at all levels.
- Strategic infrastructure planning that takes into consideration social, environmental and economic costs and benefits will be necessary to ensure that the country can reap the greatest possible benefit from infrastructure development. Doing so will avoid the negative impact of poorly planned infrastructure such as deforestation, pollution and other negative social impacts - degrading the essential benefits that the people of Myanmar derive from their natural environment. Myanmar will also integrate climate-sensitive approaches to existing laws and planning processes and will work with individuals and communities at all levels to improve natural resource management and mitigate, potentially even reverse, the impacts of climate change.
- Recognizing the important role that ecosystems play in providing clean water during the dry season and that degradation of these ecosystems ultimately affects water quality and quantity, Myanmar will enhance investments in conservation and in water-related infrastructure. The GoM will also promote township-level water use planning and encourage healthy water use practices, in order to ensure that the water supply, sanitation and hygiene needs of our schools, health facilities, urban, private sector, and rural communities are met.

- Myanmar will prioritize the long-term benefits gained by managing the safe and sustainable development of our energy sector, including ensuring careful consideration of available energy resources, together with analysis of consumption patterns and future projections. The country will also prioritize the creation of an investment friendly environment which encourages the use of innovative, sustainable and renewable energy generation technologies.
- Myanmar will prioritize policies focused on long-term sustainable land management, including protecting and sustainably managing our nation’s forests, rivers, mangroves, mountain areas, lakes and coastal areas, and developing the necessary institutions at all levels required to manage our natural resources in a sustainable manner. Quantifying the value of our natural resource wealth will be one important step towards a more effective and transparent management regime, which must include continued engagement with affected communities. Considering natural capital value, and its contribution to the economy and the lives of our people, in sectoral and economic planning, budgeting and policies will be essential to improving natural resource management.

8. Case studies:

SWITCH-Asia Project Case Study from Myanmar

(https://www.switch-asia.eu/site/assets/files/1199/final_switch-asia_briefing_no4.pdf)

- The EU-funded SWITCH-Asia “SMEs for environmental Accountability, Responsibility and Transparency” (SMART Myanmar) project began in early 2013. The project worked closely with the Myanmar Garment Manufacturer’s Association (MGMA) and dozens of its member factories and several other institutional partners, such as the national chamber of commerce (UMFCCI) and the Myanmar Bankers’ Association, to promote and educate manufacturers on sustainable consumption and production (SCP) best practice.
- The objective is to increase compliance with social and environmental guidelines and standards and ultimately the competitiveness of the sector beyond profits alone.
- The project initiated a robust training program, hiring and training a team of young local industrial engineers and pairing them with international textile and garment experts from Germany, China and India. This group engaged in factory interventions with 16 selected factories, advising on and assisting with improvements in factory productivity with a focus on resource efficiency, i.e., to reduce energy, water and fabric consumption, and social compliance emphasizing occupational health and safety, also with reference to the use of chemicals.

APPENDIX G: COUNTRY BRIEF ON SCP FOR THE PHILIPPINES

1. Key Data

1.1 Economics

From the ASEAN website:

The Philippines is a low middle-income country in Southeast Asia with a per-capita GDP (PPP) of USD8,360.23 (2017) and a growth rate of 6.7% (2017). It is an archipelagic nation consisting of over 7,000 islands, some 2,000 of which are inhabited. The country's fragmented geography contributes to high domestic transport costs.

A newly industrialized country, the Philippines' economy has been transitioning from being agriculturally focused to one focused more on services and manufacturing. The agricultural sector employs close to 32% of the country's 38.1 million strong labor force yet contributes to only 13.8% of the country's GDP. In comparison, the industrial sector employs 13.7% of the workforce and accounts for 30% of national GDP. On the other hand, the 46.5% of workers involved in the services sector are responsible for 56.2% of GDP. The economy is also heavily reliant on remittances, which has surpassed foreign direct investment as a source of foreign currency.

Filipino imports include electronic products, mineral fuels, machinery and transport equipment, iron and steel, textile fabrics, grains, chemicals, and plastic. Its exports include semiconductors and electronic products, transport equipment, garments, copper products, petroleum products, coconut oil and fruits. Major import partners of the Philippines include Japan (10.8%), United States (10.8%), China (10.1%), Singapore (8.1%), South Korea (7.3%), Thailand (5.8%), Saudi Arabia (5.4%), and Malaysia (4.4%). Major export partners include Japan (18.5%), US (14.8%), China (12.7%), Singapore (8.9%), Hong Kong (7.7%) and South Korea (4.6%). (Source: <https://www.aseanbriefing.com/regions/philippines>)

Table 1.1 GDP Growth Rate and Inflation, % per year

GDP growth				Inflation			
2018	2019	2020	2021	2018	2019	2020	2021
6.2	5.9	2.0	6.5	5.2	2.5	2.2	2.4

(Source: <https://www.adb.org/sites/default/files/publication/575626/ado2020.pdf>)

The Philippines's GNI per Capita data was reported at 10,030.000 Intl \$ in 2017. This records an increase from the previous number of 9,390.000 Intl \$ for 2016. The GNI per Capita data is updated yearly, averaging 4,560.000 Intl \$ from Dec 1990 to 2017, with 28 observations. The data reached an all-time high of 10,030.000 Intl \$ in 2017 and a record low of 2,550.000 Intl \$ in 1990.

(Source: <https://www.ceicdata.com/en/philippines/gross-domestic-product-purchasing-power-parity/ph-gnippp-gni-per-capita>)

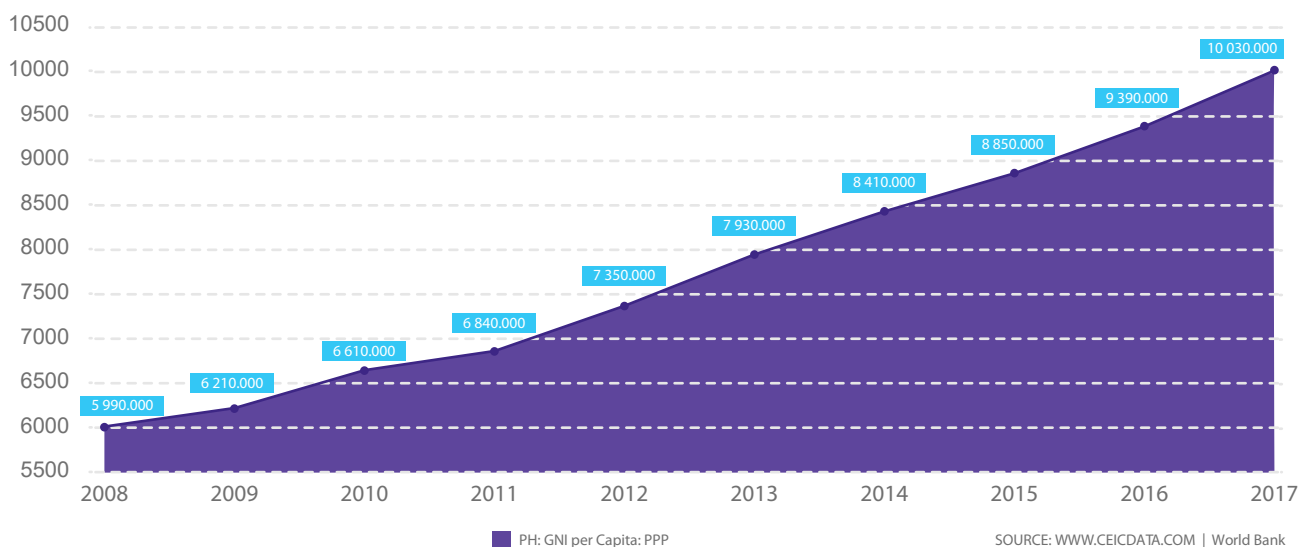


Figure 1.1. The Philippines GNI per Capita in USD (2008-2017)

The economy has been relatively resilient to global economic shocks due to less exposure to troubled international securities, lower dependence on exports, relatively resilient domestic consumption, large remittances from about 10 million overseas Filipino workers and migrants, and a rapidly expanding services industry. During 2017, the current account balance fell into the negative range, the first time since the 2008 global financial crisis, in part due to an ambitious new infrastructure spending program announced this year. However, international reserves remain at comfortable levels and the banking system is stable.

Efforts to improve tax administration and expenditures management have helped ease the Philippines' debt burden and tight fiscal situation. The Philippines received investment-grade credit ratings on its sovereign debt under the former AQUINO administration and has had little difficulty financing its budget deficits. However, weak absorptive capacity and implementation bottlenecks have prevented the government from maximizing its expenditure plans. Although it has improved, the low tax-to-GDP ratio remains a constraint to supporting increasingly higher spending levels and sustaining high and inclusive growth over the longer term.

Although the economy grew at a rapid pace under the AQUINO government, challenges to achieving more inclusive growth remain. Wealth is concentrated in the hands of the rich. The unemployment rate declined from 7.3% to 5.7% between 2010 and 2017; while there has been some improvement, underemployment remains high at around 17% to 18% of the employed population. At least 40% of the employed work in the informal sector. Poverty afflicts more than a fifth of the total population but is as high as 75% in some areas of the southern Philippines. More than 60% of the poor reside in rural areas, where the incidence of poverty (about 30%) is more severe - a challenge to raising rural farm and non-farm incomes.

(Source: <https://www.cia.gov/library/publications/the-world-factbook/geos/bx.html>)

1.2 Social

The country has a population of 105 million (2017), which is growing by 1.5% per year. Its population is majority rural and growing, with a fertility rate of 2.9 children and life expectancy at 68.4 years. Around 63% of the population is of legal working age (15–64 years). Around 47% of the population is classified as urban and approximately one eighth of the population resides in Metro Manila, the capital region. This is the population pyramid for the Philippines.

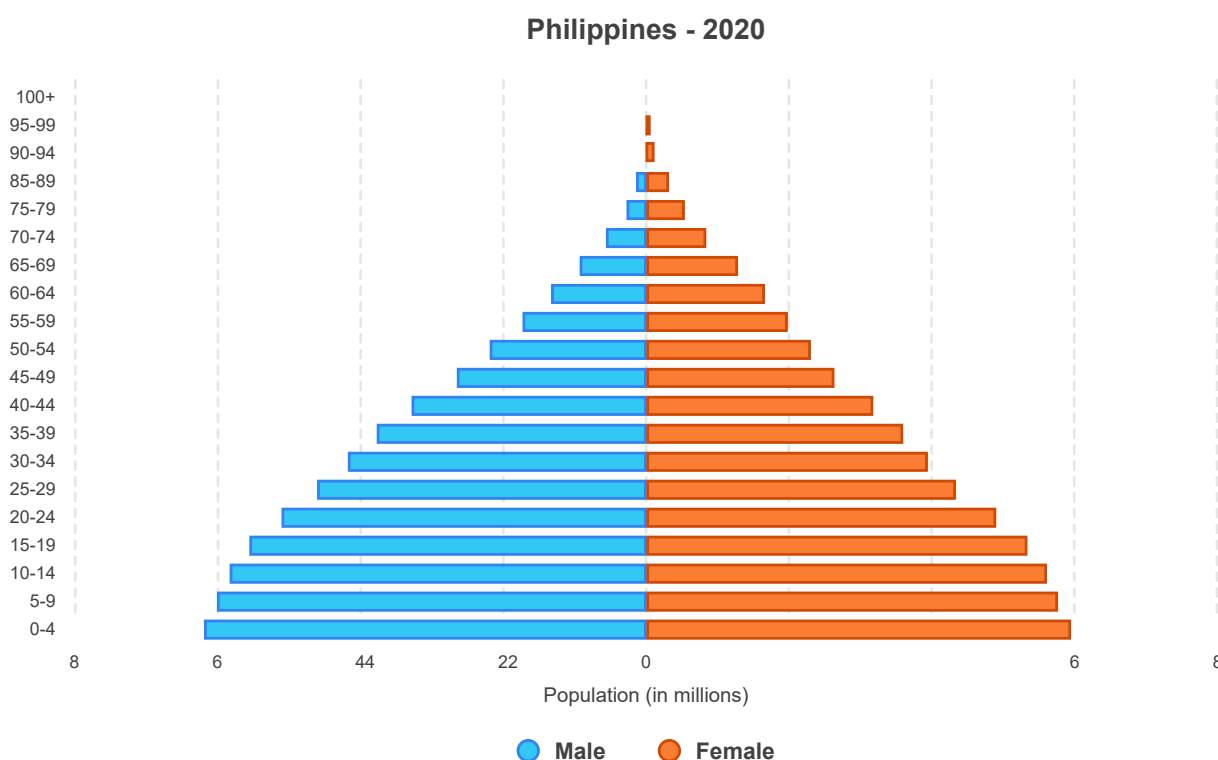


Figure 1.2. The Philippines' population pyramid for 2020

As of 2017, the labor force participation rate is 64.8% and the employment-to-population ratio is 61%. Both of those rates are more than 26 percentage points higher for men than for women. The total unemployment rate is 5.9 per cent, and the youth unemployment rate is 13.8 per cent, with the female youth unemployment rate 3.1 percentage points higher than the male rate. The youth (aged 15–24 years) not in employment, education or training rate was 22.1% in 2016. Formal employment is heavily reliant on services (56.1%) and moderately reliant on medium-skilled occupations (43.6%). Vulnerable employment in the Philippines as of 2017 accounts for 36.6% of the labor force, with the majority of those workers having own-account status.

Rural population growth was 1.8% in 2015. The share of agricultural land in total land area increased by 4.3 percentage points between 1991 and 2014, and agricultural employment also increased, from 9.6 million to 12.4 million people. The share of agricultural employment in total employment fell by approximately 12.5 percentage points due to faster job creation in other sectors. Based on a green jobs mapping study in 2014 but using 2006 figures, the organic agriculture industry employs between 14,160 and 118,000 people, assuming at least 50% of organic farmers satisfy the decent work criteria. (Source: https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/documents/publication/wcms_625966.pdf)

1.3 Environment

Since 1990, the percentage of the population with access to improved water supply has increased 7.9 percentage points, to 91.8% in 2015. There was a 16.8 percentage point increase in access to improved sanitation between 1990 and 2015, reaching 73.9%. Both rates, however, remain below the ideal threshold of 100%. According to the 2014 green jobs mapping study, in the Philippine coastal areas, raw sewage is often dumped, which contaminates water supplies.

The Philippines generates moderate amounts of solid waste - an estimated 40,087 tons/day, or around 0.4 kg/person, yet this amount is trending upwards. Of this figure there exist large geographical differences, with urban areas generating much greater waste volumes than smaller towns and rural areas. As in other middle-income countries with tropical climates, municipal waste has a high share of compostable/ biodegradable material – 52%. Recyclable materials (paper, glass, metals, textiles, leather and certain types of plastics – mainly bottles made of PET or HDPE) constitute around 27% of overall waste, with plastics making up 11%. Some 18% of the waste stream is “residual”, neither biodegradable nor easily recyclable, yet official statistics do not indicate how much of this is plastic. A small share of municipal waste stream – around 2% – is classified as hazardous or special waste.

Waste collection rate varies considerably among municipalities, from around 40% up to 85% in Metro Manila. Within cities, low-income neighborhoods are often under-served or lack waste collection services. The law encourages sorting of waste at source and local governments are required to provide segregated collection services. Despite this, source separation of waste is not widely practiced.

There is little information on air quality in the Philippines especially for areas outside of the mega cities, due to the lack of initiative and funding to regularly collect air quality data unless it is externally funded. The air quality situation in Metro Manila and the other major metropolitan areas in the Visayas and Mindanao have not improved despite this seasonal fluctuation over time, in view of the increasing number of gasoline-fueled cars and fossil-fueled buses which are still increasing in numbers, in absolute terms. The Philippines' annual PM2.5 concentrations are 80% higher than the WHO standards at 18.4 ug/m³, although this trend normally reflects the air quality condition in the mega-cities such as those in Metro Manila.

Due to increasing water demand, the stock of the country's groundwater resources has been declining relative to demand. In relative terms, the volume of groundwater resources decreased at an average annual rate of 1.4%, from 265.5 bcm in 1988 to 244.6 bcm in 1994. This was interpreted to be a trend towards groundwater stock depletion, spawning corollary problems like salt water intrusion in areas where over extraction was deemed to have occurred.

The quality of the country's coastal waters was documented in the 1980s to have rapidly deteriorated primarily from sewage, industrial effluents, mine tailings, oil from shipping operations, and agricultural run-off. Increasing population and intensifying economic activities were taking their toll on the Philippine coastal waters which also support activities with direct impacts on dependent population's health like fisheries, domestic water use and tourism. The impact of extractive industries like mining also took their toll on the other coastal water bodies. This problem continues to the present times, with no major investments in wastewater and sewage treatment and solid wastes continuing to be dumped in major water bodies, finding their way into the coastal waters.

Being an archipelagic country with an increasing population, land (and the services and other resources extracted from it) are increasingly becoming scarce and hence, more precious, for the Philippines. The Philippines' per capita usage of land can be gleaned from its population density (people per sq. km) which was reported by the World Bank to be 347 square kilometers (sq. km) in 2016, and the country's total land area estimated at 300,000 sq. km. The Philippines ranked no. 174th of 200 countries in terms of land per 1000 population in 2008. In terms of land per capita, the Philippines registered 3.92 sq. km in 2000 and 2.97 sq. km in 2015, an indication of a shrinking availability of a resource vis the country's increasing population.

Between 1969 and 1988, the country's forests were depleted at a disturbing rate of 210,000 hectares per year. Philippine forests host among the most diverse life forms in the world, but ironically, among the most endangered as well. The country's forests continue to be depleted at an average rate of 2% per year (based on 1990s data). By 1994, of the approximately 27.5 million hectares of old growth forests in 1575, only 800,000 remained in 1994. With the significant diminution of the country's forests, revenues from the forestry sector also drastically dropped. For 2017, the Forest Management Bureau reported total log production at 733,474 cu.m (2,912 cubic meters or 0.39 % from naturally grown trees and 730,563 or 99.61% from planted ones). Forest charges declined significantly from 2010 (PhP153,664.18) to 2017 (PhP1,801,57) for round wood. This trend can also be seen in the share of the forestry sector in the country's GDP: 0.1 % in 1998 to 0.01% in 2017.

(Source: http://www.switch-asia.eu/site/assets/files/2457/scp_in_the_philippines.pdf)

2. Policies, strategies, plans, networks (government, civil society, private sector)

The country has employed a whole-of-government and whole-of-society approach to SDG implementation. National actions are grounded in laws to ensure robustness. Cross-sectoral coordination and orchestration of actions are done through existing institutional mechanisms. Stakeholders are informed and engaged in discussions. The recently launched SDG website provides a platform for broader engagement, including the youth and the Filipino diaspora.

Several policy issuances have been enacted that are geared toward mitigating greenhouse gas (GHG) emissions. The most recent is the Energy Efficiency and Conservation Act of 2019 (RA 11285), which intends to secure sufficiency and stability of the country's energy resources by promoting the development and utilization of efficient renewable energy technologies and systems. Other relevant policy issuances in the past three years include: Green Building Code of 2016 that promotes resource efficiency in buildings; Green Jobs Act of 2016 (RA 10711) that encourages the creation of green jobs, and provides incentives to business enterprises that use green technologies to produce environmental goods and render services; and Securities and Exchange Commission Memorandum Circular No.4. 2019 that provides the Sustainability Reporting guidelines to help publicly-listed firms manage non-financial performance along economic, environmental, and social aspects of their organization, including their contributions in attaining the SDGs.

The Single-Use Plastics Regulation and Management Act, aimed at phasing out single-use plastics, was proposed in the senate in 2018. The act gives mention to introducing strong economic incentives to encourage plastic reduction and stresses the importance of R&D on alternatives. The country's current National Development Plan targets a national waste diversion rate of 80% by 2022, a dramatic increase from the previous target of 50% in 2015. Experiences of cities that actively seek to reduce residual waste (including by providing segregated door to door collection, establishing proper materials recovery facilities, composting biodegradable waste, and maximizing recycling) suggest that waste diversion rates of 70-80% are achievable. The remaining 20-30% of waste that requires disposal consists mainly of inert materials and plastics. The share of sachets and other single use plastics also tends to be high.

The country has also established the GHG Inventory Management and Reporting System through EO 174. 2014 to enable the country to transition towards a climate-resilient pathway for sustainable development. Similarly, a National Integrated Climate Change Database and Information Exchange System was established to serve as the primary enabling platform of the government in consolidating and monitoring climate change-related data and information from public, private, and other stakeholders. This allows decision-makers to access, distribute, and exchange these data for policymaking, development planning, and investment decision-making. The government, through NEDA, is also developing a National Action Plan on Sustainable Consumption and Production, which was discussed in the previous section.

With specific regard to SDG 12, the Philippines has worked closely with the European Union's SWITCH-Asia Program, previously implementing nine projects between 2009 and 2018 through the Grants Program as well as receiving technical assistance via the National Policy Support Component (NPSC) from 2012 to 2017 and concentrated on three core areas: Clean Energy, Green Procurement and Eco-Labeling and Cross Cutting SCP matters with focus on Clean Air legislation. During its extension, technical assistance also covered environmental education and information.

3. Programs and projects (government, civil society, private sector)

The country has employed a whole-of-government and whole-of-society approach to SDG implementation. National actions are grounded in laws to ensure robustness. Cross-sectoral coordination and orchestration of actions are done through existing institutional mechanisms. Stakeholders are informed and engaged in discussions. The recently launched SDG website provides a platform for broader engagement, including the youth and the Filipino diaspora.

Already in 2001, the Philippines had enacted a comprehensive law on integrated solid waste management. This law, the Ecological Solid Waste Management Act (Republic Act 9003), has often been seen as a model piece of legislation by other countries. It is still the main legal basis for waste management, waste prevention, and recycling in the country. Some of its main features are:

- Responsibility for waste collection and treatment is delegated to the local level – local government units (LGUs) and neighborhoods/villages (barangays)
- Establishment of a National Solid Waste Management Commission (NSWMC) with broad membership to oversee implementation and to provide guidance as well as financial and technical support to the local level
- Universal waste collection services
- Source separation, with an initial target of 25% waste diversion
- Establishment of material recovery facilities (MRFs) in each barangay or cluster of barangays, for further sorting, resource recovery, and storage
- Regular classification of waste to be carried out for each LGU
- Local 10-year plans for collection and treatment, to be updated regularly and approved by the national regulating authority
- A time-set target to close all open dumpsites and to shift to controlled landfill disposal as the main treatment method for residual waste

The private sector is involved in a great number of initiatives to collect and recycle post-consumer plastics, often as partnerships with non-profit organizations. The following serve as instructive examples of these efforts. The Philippine Alliance for Recycling and Materials Sustainability (PARMS), a partnership of businesses and government agencies, runs a pilot project on collecting and recycling laminated plastics. Empty sachets are collected through elementary schools and recycled plastics are used for making construction materials, speed bumps, and similar items. The recycling facility is run in collaboration with a barangay in Metro Manila. As of 2017, representatives from major corporate groups including Coca-Cola, Pepsi, Nestle, Procter & Gamble, and Unilever among others joined PARMS and committed to invest PHP25 million (around USD 482,000) to upscale activities.

GreenAntz is a social enterprise that collects used sachets and mixes them with concrete to make construction bricks. It is a member of PARMS and collaborates with Nestle and the Philippine Plastic Industry Association (PPIA) and currently operates 7-8 facilities around the country. One reported advantage of this process is the ability to recover and use unclean sachets. However, marketing has turned out to be somewhat challenging as the construction industry is often unwilling to change suppliers and utilize untested materials.

A number of major shopping malls, including Ayala, Shoemart, and Robinson's promote reusable shopping bags and organize waste markets on a regular basis, where customers can bring recyclables and sell to traders. Some shops selling unpackaged food products reportedly exist in Metro Manila but these outlets mainly target a small segment of wealthy consumers. Similarly, an increasing number of shops offer products in traditional packaging, such as banana leaves.

Since 1997, the Polystyrene Packaging Council of the Philippines has collaborated with schools and shopping malls in Metro Manila to collect post-consumer expanded polystyrene. They also operate a facility where this waste is melted into lumps, which are exported to other Asian countries for recycling. The Philippine Plastics Industry Association (PPIA) has partnered with the Roman Catholic Church of Manila and developed a program where parishes accept plastics from households, offer small gifts in return and pass on collected materials to recyclers.

In addition, the country promotes Extended Stakeholders Responsibility (ESR) as reflected in the final draft National Plan of Action. This aptly applies in the Philippines' context of the manufacturing – retail value chain that ensures to integrate the informal and semi-formal waste sector (waste pickers, paleros, junkshops, dealers/haulers, waste consolidators, recyclers, etc.) as well as the local communities. The country also has several previous and ongoing projects relative to RA 6969 and obligations to the Basel, Rotterdam, and Stockholm Conventions.

4. SDG12 reporting/monitoring and evaluation

4.1 Plastic Waste Reduction

The Ecological Waste Management Act includes a provision for prohibiting “non-environmentally acceptable products”. It provides the National Solid Waste Management Commission a mandate to prohibit such products when there is a scientific basis for doing so and as long as the additional cost of alternatives do not exceed 10%. A Technical Working Committee (TWC) has been established to facilitate the phasing out of environmentally unacceptable products and packaging materials, with plastics included among the four product categories that will be subjected for evaluation. So far, no product has been listed but the TWC has commissioned a life-cycle assessment (LCA) of plastic carrier bags and alternatives; the study concluded that reusable bags of non-woven polypropylene have the least environmental impact. According to DENR, the TWC has been inactive for a while but has recently started operating again.

At the municipal and city levels, many governments have taken steps to reduce the use of single-use plastic items. To date, more than 300 local governments have issued such regulations, including some large cities like Quezon and Pasig. However, according to surveys conducted by NGOs, the status of implementation/enforcement varies widely.

The Philippines hosts a formal recycling industry for plastics, but the scale of operations remains difficult to assess. The National Solid Waste Management Commission lists 23 companies working to address plastics in its database of recycling enterprises, yet this is a far greater number than for other recyclable materials. At the same time, it is unclear whether all the plastics handled by these companies are recycled domestically, as a certain percentage may simply be sorted and shipped abroad for processing.

5. Key sectors or priorities

In addition to responding to the challenges, there are key sectors and activities that will promote overall effectiveness SCP efforts and the long-term success of the SDG implementation including:

- With the energy demand forecast to grow by 80% in the Philippines between 2017 and 2040, renewable energy and energy efficiency are critical for the country’s economic development.
- Sustainable tourism in the Philippines is becoming more important with the increased level of employment and income opportunities coming from the tourism industry while recognizing these activities depend on the sustainable use and management of natural resources.
- Waste management, and solid waste management is particular, is important in highly urbanized areas of the Philippines where an effective waste management system will determine the level of impacts on public health, environmental quality and the quality of life.
- Marine litter, especially from single-use plastics, is a national priority with the overwhelming amount of debris in the coastal waters of the Philippines.

- Other key sectors include climate change mitigation, efficient cities, sustainable industry and low carbon manufacturing strategies, sustainable lifestyles and education, and Green Public Procurement (GPP) and eco-labelling.

(Source: <http://www.switch-asia.eu/countries/southeast-asia/philippines>)

6. Challenges (readiness/mandate, financing, capacity, data etc. monitoring and evaluation, stakeholders)

Soon after the enactment of the comprehensive Ecological Solid Waste Management Act it became clear that many local governments faced difficulties with implementation of the new law. As of 2016, only 36% of local government units had complied with all aspects of the law, and the national government has even taken legal action against a number of local leaders for not complying. The National Ombudsman has thus far lodged complaints against 600 mayors, vice mayors and councilors, and is currently preparing charges against 100 additional local governments, including barangay officials. Some of the reasons why implementation has been slow include:

- Insufficient capacity of local authorities (technical knowledge, financial resources, managerial skills, staff)
- Difficulties in securing land to build material recovery facilities (MRFs) and sanitary landfills
- Coordination challenges for small local government units to make joint decisions and to share facilities
- Inadequate support from the national level to local levels. Some of the planned supporting institutions, such as the National Ecology Center, have not been fully operationalized
- Generally low awareness among citizens on the impacts of poor waste management
- Political challenges related to charging waste collection fees from residents and to penalizing offenses
- Fragmented geography and high transport costs

Enhancing resilience and adaptive capacities continues to be a challenging task for the country especially with the increasing intensity of hazards and uncertainties of climate change impacts. From 2016 to 2018, the number of persons directly affected by disasters declined but the number of casualties and missing persons remain relatively high.

Critical knowledge and data gaps persist. The government needs to be equipped with the right tools and approaches based on best-available science to effectively address the emerging challenges posed by climate change and prioritize adaptation investments and actions. Moreover, appropriate indicators to measure adaptive capacity and resilience are still lacking. More support is needed to generate accurate, timely, and local-specific climate risk information, and raise greater awareness and understanding on the use of such information especially by the LGUs and communities.

SDG 12 challenges from SWITCH-Asia Country Profile:

- While the country states its vision of a green economy in the Philippines Development Plan 2011 – 2016 and numerous related policies are in place, a coordinating framework is lacking without a single policy or plan specifically designed for SCP.
- Consumers lack awareness of options for sustainable consumption and an understanding of life cycle assessment, which needs to be simplified.
- SMEs, which make up a significant portion of businesses in the Philippines, do not have adequate access to technical and financial assistance to improve sustainable production practices.
- Informal settlements make many SCP issues more difficult to address, such as collection and disposal of waste material.
- Natural resource demands continue to increase while sustainable management faces additional threats from climate change impacts.

(Source: <http://www.switch-asia.eu/countries/southeast-asia/philippines/>)

SDG 12 challenges from Development Asia:

- Continued economic, population, and urban growth, resulting in increasing demand for and pressure on natural resources in terms of stocks and pollution.
- The exponential rise in waste generated by the country in the absence of effective solid and hazardous waste management systems, meaning the waste assimilation capacity of the environment has been pushed to the limit.
- Weak enforcement of environment-related laws and regulations, and policy gaps.
- Lack of data and an effective monitoring system to evaluate the impacts of policies and programs

7. Opportunities/Potential

SDG 12 opportunities from VNR:

- Technical advice to the drafting of a National Policy on Plastics and Marine Litter being developed in 2020 following the finalization of a National Plan of Action on Plastics and Marine Litter
- Capacity building on plastics issues, including climate impacts and chemical risks, for government officials from several related federal departments – including at least all the departments that are members of the National Solid Waste Management Commission
- Support to the piloting of EPR for one type of single-use plastics, reflecting past experiences of applying different EPR models (such as financial vs. physical responsibility, individual vs. joint responsibility) for various products and settings
- Training of government officials on how to effectively commission and interpret life-cycle assessments, especially for comparing waste treatment options, recycling scenarios and the evaluation of alternatives to single-use plastics
- Advise on circular economy options for small islands and communities in other remote locations where high transport costs result in shipping post-consumer plastic to recycling facilities prohibitively expensive

- Pilot study on biodegradable/compostable diapers and sanitary pads to explore consumer/public acceptance, suitable composting methods and potential needs to revise the existing guidelines on the use of compost in agriculture
- Evaluate experiences carrying out numerous existing local regulations of single-use plastics (bans and charges)
- Support updating existing procurement systems to enable more sustainable sourcing, focusing the minimization of plastics, including reducing the consumption of single-use and stimulating demand for products manufactured from recycled plastics

SDG 12 opportunities from SWITCH-Asia Country Profile:

- With the support of SWITCH-Asia, facilitate policy dialogues within and between stakeholders e.g. the National Ecolabelling Program of the Philippines (NELP), Socioeconomic Planning and Director General of the National Economic and Development Authority (NEDA) among other key entities.
- Connect related projects and needs to currently existing larger SCP initiatives e.g. “Sustainable Lifestyle and Education”, “Ecotourism”, “SCP Outreach” and “Sustainable Textile” Initiatives as well as to the UN 10YFP programs, to find synergy and multiply the impacts.
- Further build capacity of government, business, consumers, and civil society on SCP, including integration of SCP concepts into the education system and building awareness on eco-labelling among consumers.
- Provide adequate and needed assistance to SMEs to induce and enable eco-innovation towards resource efficiency and at the same time looking at the national development plan through the lenses of the SDGs in general, and SDG12 in particular.
- The Philippines has also drafted a National Action Plan (NAP) on SCP led by the National Economic Development Authority supported by the Asian Development Bank. Opportunities will be to support the government on the implementation of the NAP on SCP.

8. Case Studies

8.1 SWITCH-Asia project Green Philippines Islands of Sustainability (GPIoS)

The objective of the GPIoS project was to contribute to an overall improvement of the environmental situation of a strategic area of the country, namely, Metro Manila and its linked regions, the CALABARZON, Subic, and Clark areas (Labodova, 2014).

In order to attain the objective, it aimed to achieve the reduction in pollution level, as well as the reduction in: (1) wastewater, (2) hazardous waste, (3) raw and auxiliary materials, and (4) energy consumption for a significant number of SMEs and other specific companies in the targeted regions. The GPIoS project was the successor to a pilot project, the Green Philippines project, which ran from 2006–2009. While the pilot was focused in the Pampanga, Subic, and Clark regions, GPIoS extended its scope to Metro Manila and CALABARZON regions. The pilot project was limited to only 30 companies, several of which continued on to the GPIoS.

The GPIoS's main instrument for attaining its objectives involved workshops and individual consulting by experienced consultants. The project transferred know-how through training workshops and coaching, combined with a system of quality assurance and monitoring. At the core was a 12-month capacity-building program of workshops offered on a periodic basis to help interested companies clean up their production processes. In order to do this, it had the benefit of several European partner organizations, namely the Center for Appropriate Technology (GrAT) in Austria. GrAT provided the technical know-how with its expertise in environmental solutions as well as international experience. Locally, the Asia Society for Social Improvement and Sustainable Transformation (ASSIST) mobilized local stakeholders for the implementation of the project. The Philippine Chamber of Commerce and Industry (PCCI), the European Chamber of Commerce of the Philippines (ECCP), and the Philippine Business for Environment (PBE) were partner organizations who spread the word about the project among local firms and helped recruit the target number of SMEs.

As a result, over the course of 2009–2013, the project had involved around 400 SMEs within its geographical scope, thus raising environmental awareness among the participating SMEs. To create an enabling policy environment, the project worked in close collaboration with the DNER, which increased legal compliance of the participating SMEs. The project also established a relationship with two municipalities of Pasig City and Angeles City. At the end of the project, a training and consulting center was established as a joint activity of project partner ECCP and a local consultancy, which employs six consultants trained within the project. A detailed business plan has been created, which included a number of companies in need of a good financial base to become self-sustaining.

8.2 SWITCH-Asia project: Small and Medium Enterprises for environmental Accountability, Responsibility, and Transparency (SMART Cebu)

The objective of the SMART Cebu project was to increase the competitiveness of SMEs in the home and lifestyle industries through cleaner production processes of eco-friendly products, thereby contributing to the cleaner environment in the Cebu province (Ritter, 2014). Three industries of the home and lifestyle sector were engaged in the course of the project's life over three-and-a-half years (2009–2013), namely: (1) furniture and furnishings, (2) gifts, toys, and housewares, and (3) fashion accessories. These have been long-standing industries in Cebu, for which the province is renowned, and constitute an important element of the local economy.

To reach the SMEs, the business membership organizations (BMOs) of the three industries became the vehicle, namely: the Association of Cebu Gifts, Toys, and Hardware (Cebu GTH), the Cebu Furniture Industries Foundation (CFIF), and the Association of Cebu Fashion Accessories Manufacturers and Exporters (Cebu FAME). The project sought to instill a SMART Cebu mind-set (i.e., resource efficiency and cleaner production, or RECP).

The project's lead organization, SEQUA, a non-profit development organization from Germany, teamed up with experts from Energy Efficiency Agency (EFA) in North Rhine-Westphalia, Germany, to train and coach local experts and staff of the BMOs. They first trained six counsellors to provide advisory services to member companies of the BMOs. Then a pool of 30 clean production experts is trained to guide the SMEs on the technical aspects of how to make the manufacturing processes cleaner and more efficient. In total, the project conducted 150 walk-through eco-assessments and coached SMEs on the use of metrics in production operations and proper costing. RECP actions led to savings in energy and water, lower use of chemicals, less in-factory pollution, and improved operational efficiencies. Around 1,000 participants from close to 300 SMEs were involved in more than 30 training sessions on eco-design, SCP, RECP, as well as other SCP-related conferences.

For the first time, Cebu's home and lifestyle sector was able to participate in international trade fairs in Europe and Asia, presenting the sector as a global partner for sourcing and designing eco-friendly products. Marketing of these products was undertaken at these trade fairs and a new line of eco-friendly products was launched on the international market. About 12 fashion accessories companies, 12 GTH companies, and nine furniture companies promoted their newly developed eco-product lines at trade fairs in Paris, Cologne and Frankfurt. The participating companies can now claim that they are utilizing natural and renewable resources more efficiently in its production process, while reducing the carbon footprint of the products as they reach the world market.

Another key aspect of the SMART Cebu project was its pair of local partners, the European Chamber of Commerce in the Philippines (ECCP) and the Association in Development Financing Institutions in Asia and the Pacific (ADFIAP), a regional organization based in Manila. After the project was completed, its website became the responsibility of ECCP. The project also collaborated closely with the Department of Science and Technology; one result of this collaboration is the eventual accreditation of most of the local trainers coached by the project.

8.3 Promotion of Green Economic Development (ProGED)

The program finds its origins in the Philippine-German Cooperation Program Private Sector Promotion, a joint undertaking of the Department of Trade and Industry, the Regional Operations and Development Group and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) which concluded in December 2012 and assisted the Philippines in improving the conditions for private sector development. During the final phase, the program supported the Department of Trade and Industry in integrating the green economy concept into the Small and Medium Sized Enterprises Development Plan 2011 to 2016. (GIZ 2016b)

Against this background, the Promotion of Green Economic Development (ProGED) – Philippines was launched as a three-year project in 2013 targeting Small and Medium-sized Enterprises with emphasis on the tourism sector, with the aim of making businesses more environmentally and climate aware. Small and Medium-sized Enterprises were particularly targeted as they comprise 99.6% of registered businesses in the Philippines and 60% of the jobs. Due to their size such businesses are particularly vulnerable to price hikes or supply issues for electricity, fuel, water or other materials caused by natural disasters and extreme weather events. The programme aimed to assist Small and Medium-sized Enterprises in considering and working to offset such risks, with the co-benefits of lowering costs and environmental impact. (GIZ 2016a)

The project was implemented by GIZ in collaboration with the Department of Trade and Industry, Philippines and funded under the SWITCH-Asia project. It was developed using GIZ's management tool Capacity WORKS and jointly implemented. The Department of Trade and Industry established a Green Growth Core Group and has also supported the training of its regional offices to ensure continuity following the end of the project. To support Small and Medium-sized Enterprises in overcoming such issues the project worked within three areas – (i) information and awareness raising; (ii) business promotion and matchmaking; and (iii) development of a green policy framework for the Department of Trade and Industry. The project began with two pilot provinces, Cebu and Bohol, prior to expanding to 30 further provinces with the initial focus on tourism expanding to processed foods, coffee and cacao, organic fertilizers, and household goods. (GIZ 2016a)

Around 60 environmentally friendly projects were implemented by different enablers due to the Green Economic Development networks and 300 people from both the public and private sector underwent capacity building. Much of the reason for this success is the involvement of the Department of Trade and Industry which has demonstrated its commitment to green economic development through the establishment of an inter-departmental Green Growth Core Group and the integration of green measures into industry roadmaps (GIZ 2016e). Having been evaluated as very successful based on OECD DAC criteria by an assessment conducted by a third-party consultant, in-phasing events were held in provincial offices during the closing period of the project to further integration of green economic development into the work of the Department of Trade and Industry. A replication toolkit has been developed to further assist with the promotion of Green Economic Development beyond the end of the program (GIZ 2016d). Since the evaluation, the Green Economic Development training has commenced for regional staff of the Department of Trade and Industry (GIZ 2016f) and a memorandum of understanding has been signed between The Global Green Growth Institute and Department of Trade and Industry, with the aim of supporting the development of business cases, the mainstreaming green growth into planning processes and capacity building (GIZ 2016c).

APPENDIX H: COUNTRY BRIEF ON SCP FOR SINGAPORE

1. Key Data

- Summary Statistics (Source: <https://www.focus-economics.com/countries/singapore>)

Summary Statistics	
Region	South-Eastern Asia
Land area (sq km)	725.1
Population	5,700,000
Capital city	Singapore
Currency	Singapore Dollar (SGD)
GDP (2019)	371,000,000,000
GDP Growth Rate (2019)	0.7%
GDP per capita (2019)	\$65,390
Unemployment Rate (2019)	2.3%
Inflation Rate	0.6%

(Land Area Source: <https://www.singstat.gov.sg/publications/reference/singapore-in-figures/key-indicators>)

- The country provides one of the world's most business-friendly regulatory environment for local entrepreneurs and is ranked among the world's most competitive economies. (Source: <https://www.worldbank.org/en/country/singapore/overview#1>)
- GDP growth in the city-state has been amongst the world's highest, at an average of 7.7% since independence and topping 9.2% in the first 25 years. (Source: <https://www.worldbank.org/en/country/singapore/overview#1>)
- Value-added manufacturing, particularly in the electronics and precision engineering sectors, remain key drivers of growth, as are the services sector, particularly the information and communications industries, which grew 6.0% year-on-year, and the finance & insurance industries, which grew 5.9% year-on-year. (Source: <https://www.worldbank.org/en/country/singapore/overview#1>)
- Together with strong financial support from the government, the country continues to strengthen the nimbleness and flexibility of its workforce by providing continuing education such as the *Skillsfuture* initiative. Government spending on continuing education will nearly double, to more than S\$1 billion yearly. (Source: <https://www.worldbank.org/en/country/singapore/overview#1>)

- State of the Environment in Myanmar (Source: Towards A Sustainable and Resilient Singapore, 2018)
 - In 2017, Singapore generated about 7.7 million tons of waste.
 - Singapore generates approximately 60,000 tons of e-waste each year.
 - Currently, e-waste recycling is conducted through a public-private partnership that forms a network of collection centers across Singapore where consumers can voluntarily and conveniently deposit their e-waste for recycling. The collected e-waste is then channeled to licensed recyclers for treatment.
 - Packaging waste constitutes about one-third of Singapore’s domestic waste by weight.
 - By supporting on-site food waste treatment at commercial premises and hawker centers as well as piloting district-level food waste treatment, Singapore have increased the food waste recycling rate from 12% in 2012, to 16% in 2017.

2. Policies, strategies, plans, networks – government, civil society, private sector

- Singapore has in place an integrated waste management system. They have an efficient collection system to collect all municipal waste to prevent litter. They are then sent directly for incineration at waste-to-energy plants, which are equipped with air pollution control equipment to meet stringent emissions limits for pollutants such as Sulphur dioxide, dioxins and furans. This incineration process thus solves the issue of plastics needing long periods before breaking down. (Source: Towards A Sustainable and Resilient Singapore, 2018)
- Since 2014, all new public housing projects are fitted with a dual-chute system on every floor for the separate collection of recyclables and general waste. This is also mandatory for new private non-landed residential developments taller than four stories since April 2018, and private residential developments will be required to have a recycling bin for every block from 1 August 2018. (Source: Towards A Sustainable and Resilient Singapore, 2018)
- In 2014, Singapore mandated the reporting of waste data and waste reduction plans by large commercial premises. (Source: Towards A Sustainable and Resilient Singapore, 2018)
- Singapore has also launched the “Environmental Services Industry Transformation Map” to improve productivity, promote growth and create better jobs for the cleaning and waste management sectors in Singapore. (Source: Towards A Sustainable and Resilient Singapore, 2018)
- Singapore is a party to several multilateral environmental agreements (MEAs) that provide guidelines on regulatory and implementation guidance, including in areas with transboundary implications: (Source: Towards A Sustainable and Resilient Singapore, 2018)
 - The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal
 - Stockholm Convention on Persistent Organic Pollutants
 - Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade
 - The Vienna Convention for the Protection of the Ozone Layer and
 - The Montreal Protocol on Substances that Deplete the Ozone Layer
 - Minamata Convention on Mercury

- Singapore controls the import, export, transport, sale, storage and use of hazardous substances, under the “Environmental Protection and Management Act” (EPMA) and the “Environmental Protection and Management (Hazardous Substances) Regulations” (EPM (HS) Regulations). (Source: Towards A Sustainable and Resilient Singapore, 2018)
- They electronically process inward and outward declarations for the import and export of hazardous substances through the Whole-of-Government (WOG) TradeNet computerized network system. (Source: Towards A Sustainable and Resilient Singapore, 2018)
- The Singapore Packaging Agreement (SPA) was launched in 2007 as a joint initiative by the Government, industry and NGOs. SPA signatories are encouraged to redesign their products and processes to enjoy cost savings. This helps to reduce packaging waste from consumer products and in the supply chain. The SPA also offers a platform where companies share experiences, exchange practical ideas and collaborate on cost-effective solutions to reduce waste, including through a packaging benchmarking database. (Source: Towards A Sustainable and Resilient Singapore, 2018)
 - Over the past decade, SPA signatories have cumulatively reduced about 39,000 tons of packaging waste, and saved more than S\$93 million in material costs.
 - Under the SPA, an eco-label, the Logo for Products with Reduced Packaging (LPRP), has also been introduced to enable consumers to identify products with reduced packaging.
- They have also implemented the Restriction of Hazardous Substances (“SG-RoHS”) framework which came into effect on 1 June 2017. This initiative restricts the amount of hazardous substances such as lead, chromium and cadmium entering the environment from Electrical and Electronic Equipment (EEE). (Source: Towards A Sustainable and Resilient Singapore, 2018)
- NEA also implements the Hazardous Waste (Control of Export, Import and Transit) Act to ensure that Singapore meets its obligations as a Party to the Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal. This includes the implementation of the Prior-Informed Consent (PIC) procedure under the framework of the Convention. (Source: Towards A Sustainable and Resilient Singapore, 2018)
- In January 2008, Singapore introduced the Mandatory Energy Labelling Scheme (MELS) for household air-conditioners and refrigerators to help consumers compare their energy efficiency and make more informed purchasing decisions. (Source: Towards A Sustainable and Resilient Singapore, 2018)
- Minimum Energy Performance Standards (MEPS) were introduced in 2011 to raise the average energy efficiency of products in the market. Currently, only household refrigerators, air-conditioners, clothes dryers and lamps that meet the minimum energy efficiency standards can be sold in Singapore. MEPS will be extended to cover motors from October 2018. (Source: Towards A Sustainable and Resilient Singapore, 2018)
 - Since the introduction of MELS and MEPS, the average energy efficiency of air-conditioners and refrigerators have improved by about 23% and 39% respectively.

- In 2009, Singapore introduced the mandatory Water Efficiency Labelling Scheme (WELS), where suppliers were required to label the water efficiency of their water fittings and appliances. Currently, mandatory WELS covers taps and mixers, dual-flush low-capacity flushing cisterns, urinal flush valves and waterless urinals, and washing machines.
(Source: Towards A Sustainable and Resilient Singapore, 2018)
- The Water Efficiency Management Plan (WEMP) was introduced in 2010 as a voluntary initiative for commercial and industrial users to improve the efficiency of their water use. Since January 2015, all large water users who meet the water use threshold of 60,000 cubic meters must submit their WEMPs on an annual basis. These users are also required to install water meters to measure and monitor water consumption. The WEMP includes an analysis of current water usage and proposed water conservation measures.
(Source: Towards A Sustainable and Resilient Singapore, 2018)
- The Water Efficiency Fund was introduced in 2007 to co-fund the implementation of water efficiency projects. Projects include feasibility studies, water audits, recycling efforts, use of alternate sources of water and community wide water conservation programs.
(Source: Towards A Sustainable and Resilient Singapore, 2018)
- Introduced in 2006, the Public Sector Taking the Lead in Environmental Sustainability (PSTLES) initiative requires public agencies to implement measures for energy efficiency, water efficiency and recycling. In 2014, the PSTLES initiative was enhanced. This included requiring each Ministry to appoint a Sustainability Manager, set sustainability targets, and develop a resource management plan.
(Source: Towards A Sustainable and Resilient Singapore, 2018)
- In addition, public agencies retrofitting major energy consuming equipment are encouraged to adopt the Guaranteed Energy Savings Performance (GESp) contracting model. Under the model, an accredited energy services company conducts an energy audit of the facility, implements proposed energy efficiency improvement measures, and guarantees the system performance and annual energy savings of the retrofitted equipment. As of February 2018, 32 large building owners have called GESp contracts for building retrofit works. These building owners saved an average of 16% in electricity use, which is equivalent to annual savings of S\$11.3 million. (Source: Towards A Sustainable and Resilient Singapore, 2018)

3. Programs and projects - government, civil society, private sector

- For example, the National Environment Agency (NEA) collaborates with schools to set up recycling corners. A Preschool 3R Awareness Kit, consisting of a set of picture cards and a Teacher's Guide, assists kindergarten teachers in planning activities to interest preschoolers in practicing the 3Rs and educating them on what and how to recycle.
(Source: Towards A Sustainable and Resilient Singapore, 2018)
- The Community 3R Outreach Programme (CROP) seeks to raise awareness of the 3Rs through public outreach initiatives. Under CROP, all 3R community events and initiatives carry a common tagline: "Reduce, Reuse, Recycle. Care for Our Environment."
(Source: Towards A Sustainable and Resilient Singapore, 2018)

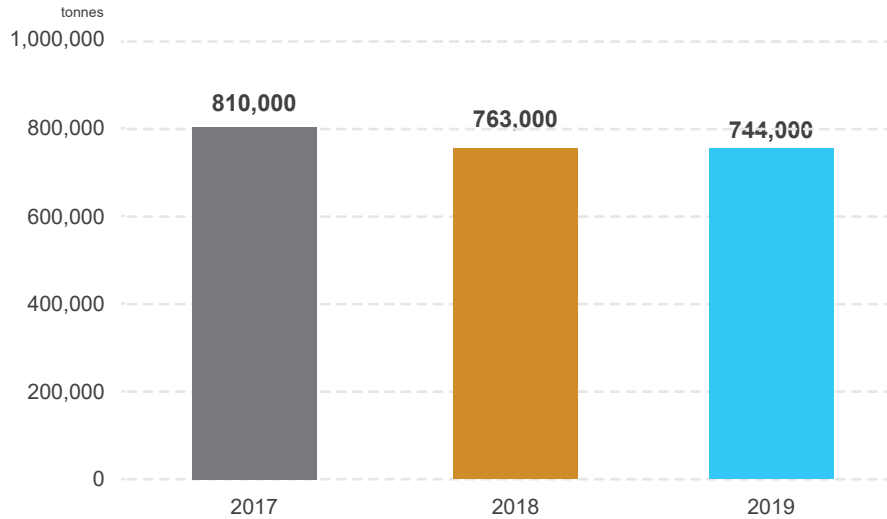
- The Water Efficient Buildings (Basic) certification program, first introduced in 2004, encourages building owners to implement water efficiency measures. The WEB (Basic) certification can be obtained by installing water-efficient fittings and adopting water efficient flow rates/flush volumes. Certified buildings can typically save 5% of their monthly water consumption. WEB (Basic) requirements are also recognized under the Green Mark Certification Scheme for buildings, which is an initiative to drive Singapore’s construction industry towards more environment-friendly buildings.
(Source: Towards A Sustainable and Resilient Singapore, 2018)
- They encourage food manufacturers, retail food establishments and supermarkets to re-price or re-distribute unsold or excess food to consumers or donate them to charities. Consumers are also encouraged to reduce food waste through publicity and outreach initiatives that encourage smart and prudent food purchases, preparation and storage habits.
(Source: Towards A Sustainable and Resilient Singapore, 2018)
- The “Love Your Food @ Schools” Project is a two-year project launched in April 2017 to encourage youth to cherish food and reduce food wastage. A closed-loop food waste management system was introduced in 10 participating schools to encourage students and staff to reduce generation of food waste, and to segregate and treat food waste using on-site food waste digesters to produce compost.
(Source: Towards A Sustainable and Resilient Singapore, 2018)

4. SDG12 reporting /monitoring and evaluation

- Singapore’s progress on SDG 12
 - Target 12.1 – Implement the 10-year Sustainable Consumption and Production Framework
 - In 2019, Singapore launched the Zero Waste Masterplan, which outlines our circular economy approach to encourage sustainable consumption and production. Singapore also introduced the Resource Sustainability Act that will put in place a systems-level approach that mandates key responsibilities to enable re-use and recycling nation-wide. Sustainable development has been the cornerstone of Singapore’s continued progress since our independence and will continue to be an ongoing journey. (Source: <https://www.singstat.gov.sg/find-data/sdg/goal-12>)

- Target 12.3 – Halve Global Per Capita Food Waste

Amount of Food Waste Generated



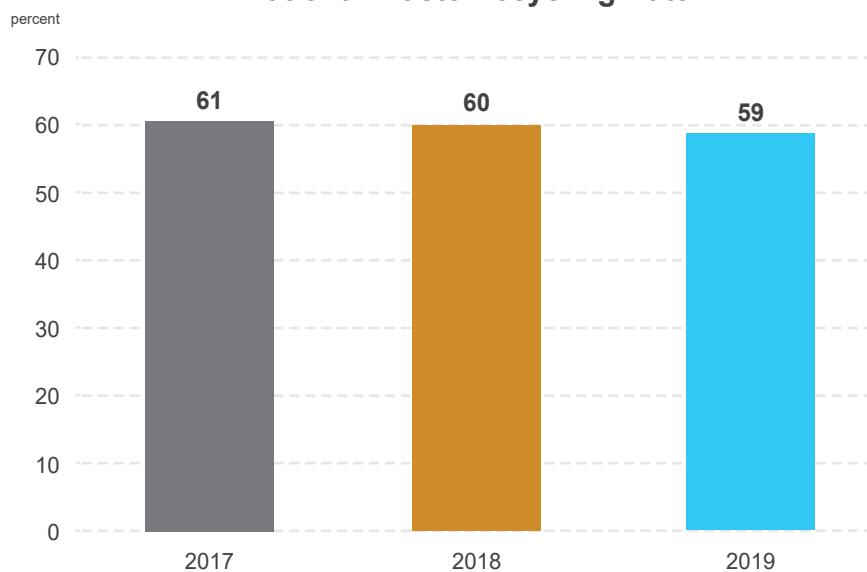
(Source: <https://www.singstat.gov.sg/find-data/sdg/goal-12>)

- Target 12.4 – Responsible Management of Chemicals and Waste
 - As a party to several Multilateral Environmental Agreements (MEAs) on hazardous chemicals and waste, Singapore has put in place measures to meet its obligations.

(Source: <https://www.singstat.gov.sg/find-data/sdg/goal-12>)

- Target 12.5 – Substantially Reduce Waste Generation

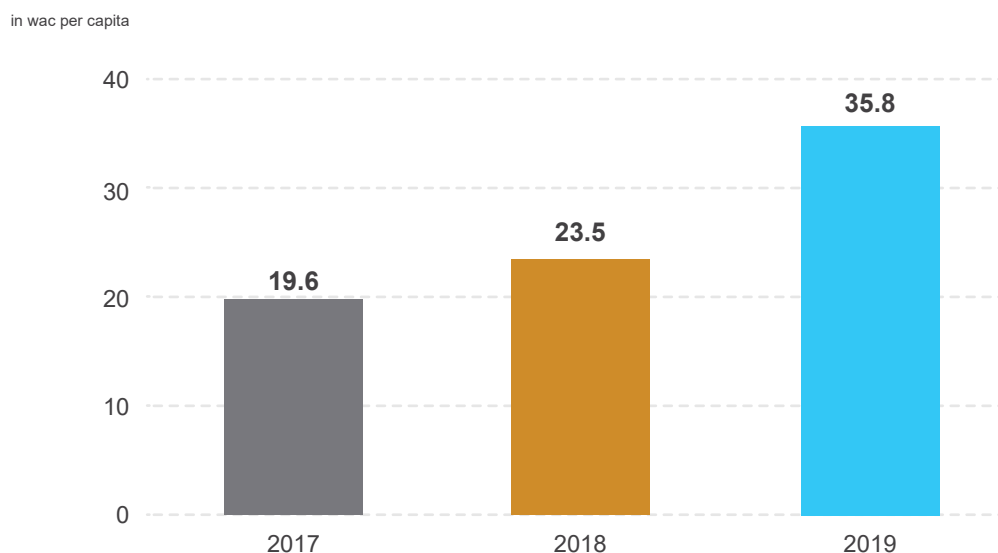
National Waste Recycling Rate



(Source: <https://www.singstat.gov.sg/find-data/sdg/goal-12>)

- Target 12.A – Support Developing Countries’ Scientific and Technological Capacity for Sustainable Consumption and Production

Installed Renewable Energy (Solar Photovoltaic) Generating Capacity in Singapore



(Source: <https://www.singstat.gov.sg/find-data/sdg/goal-12>)

5. Key sectors or priorities

- They are working to increase their national recycling rate from the current 61% to 70% by 2030. (Source: Towards A Sustainable and Resilient Singapore, 2018)
- Singapore’s Nationally Determined Contribution (NDC) is an economy-wide absolute GHG emissions limitation target and covers the following sectors: Energy, Industrial Processes and Product Use, Agriculture, Land Use, Land-Use Change and Forestry and Waste (Source: Accompanying Information on Singapore’s 1st NDC, 2018)
 - Greenhouse gases covered: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), Sulphur hexafluoride (SF₆) and nitrogen trifluoride (NF₃).
- Singapore is implementing concrete measures within the various sectors: (Source: Accompanying Information on Singapore’s 1st NDC, 2018)
 - For example, for the transport sector, Singapore is taking steps to make public and shared transport and active mobility the preferred mode of travel; phase out internal combustion engine vehicles and promote the adoption of cleaner and greener vehicles, such as electric vehicles; and enhance the environmental friendliness of its transport infrastructure.
 - For the buildings sector, Singapore has mandated minimum energy performance standards and developed the Super Low Energy Buildings Programme, which supports the research and adoption of cost-effective, energy-efficient and renewable energy solutions.

- For industry, Singapore has enhanced its grant schemes to help individual companies improve their energy efficiency, and have sought to bring companies within a sector together to achieve systems-level efficiency gains across the sector.

6. Challenges – readiness/mandate, financing, capacity, data etc. monitoring and evaluation, stakeholders

- In 2017, Singapore generated about 7.7 million tons of waste. The amount of waste generated is expected to increase in tandem with population and economic growth. The household recycling rate was 21% in 2017. At the same time, their manpower constraints limit the resources available for their waste management industry. (Source: Towards A Sustainable and Resilient Singapore, 2018)
- Improper disposal of e-waste could lead to environmental pollution and be detrimental towards human health. It is also a waste of precious natural resources. (Source: Towards A Sustainable and Resilient Singapore, 2018)
- Singapore’s urban density and limited land area (725 km²), relatively flat land, low wind speeds and lack of geothermal resources present serious difficulties in pursuing alternative energy options. Its limited land resources also make it challenging to deploy solar power on a large scale. (Source: Accompanying Information on Singapore’s 1st NDC, 2018)
- Singapore’s location within Southeast Asia presents a challenge to local climate modelling work in projecting climate change effects, since there is a lack of observational climate data in the region. (Source: Accompanying Information on Singapore’s 1st NDC, 2018)
- Sea level rise presents an existential challenge to Singapore, posing threats to Singapore’s long-term future. Along with fellow members of the Alliance of Small Island States (AOSIS), Singapore, as a low-lying country, is particularly exposed to the adverse effects of rising sea levels. The dangers are compounded by the fact that Singapore is located in the tropics, since it is predicted that sea level rise in tropical areas could be up to 30% higher than the global average. The uncertainty of sea level rise projections presents significant planning challenges to protect Singapore. (Source: Accompanying Information on Singapore’s 1st NDC, 2018)
- Climate change also poses challenges to Singapore’s water supply, security and resilience. To ensure a sustainable and reliable water supply, Singapore has diversified its water supply sources and now has four sources to meet its national water needs, namely, water from local catchment, imported water, NEWater or recycled water, and desalinated water. Singapore has embarked on an integrated and effective way to meet its water needs with investments in research and technology to treat, recycle and supply water in the most cost-efficient way possible. (Source: Accompanying Information on Singapore’s 1st NDC, 2018)

- Singapore will experience more frequent and intense rainfall events with climate change, and will need to deal with the increasing frequency and intensity of floods. It has introduced a “Source-Pathway-Receptor” approach, which looks at catchment-wide solutions to achieve higher flood protection. The Singapore Government has spent almost S\$2 billion on drainage improvement works since 2011. An additional S\$190 million will be spent in 2020 to upgrade and maintain drains. Singapore will need to continually invest and manage its infrastructure to deal with the effects from climate change.
(Source: Accompanying Information on Singapore’s 1st NDC, 2018)
- As a small country without natural resources, Singapore has developed as an open economy that imports more than 90% of its food supply, making it sensitive to disruptions to global supply chains. Changing climate patterns pose risks to its food supply. To make food supply more resilient, Singapore is pursuing three strategies, namely: 1) Diversification of import sources; 2) Grow local; and 3) Grow overseas. (Source: Accompanying Information on Singapore’s 1st NDC, 2018)

7. Opportunities/Potential

- They are working to increase their national recycling rate from the current 61% to 70% by 2030. (Source: Towards A Sustainable and Resilient Singapore, 2018)
- To conserve the precious resources used to produce plastics and packaging, as well as divert these from their limited landfill space, it is imperative that Singapore takes steps to reduce plastics and packaging waste. To holistically tackle the issue upstream and at source, Singapore will mandate that businesses report on the type and amount of packaging they put on the market and their plans for reduction by 2021. (Source: Towards A Sustainable and Resilient Singapore, 2018)
- They are also investing in R&D to develop solutions to extract value and resources from key waste and residue waste streams. (Source: Towards A Sustainable and Resilient Singapore, 2018)
- They are studying the benefits of smart waste collection systems to optimize waste collection operations, manpower and resources. This includes leveraging technologies such as bin fill sensors, a smart card access system for waste disposal chutes, and the use of side-loader bins that require only one operator to carry out recyclables collection.
(Source: Towards A Sustainable and Resilient Singapore, 2018)
- They will be reaping synergies from the water-energy-waste nexus at our upcoming signature Integrated Waste Management Facility (IWMP), which will be integrated with the Tuas Water Reclamation Plant (TWRP). This will allow for synergies such as effluent water from wastewater treatment being used for cooling waste incineration equipment; while food waste can be co-digested with used water sludge to enhance biogas production to increase the overall plant thermal efficiency. Integrating the facilities will also reduce carbon emissions by more than 200,000 tons annually. (Source: Towards A Sustainable and Resilient Singapore, 2018)
- Going forward, a mandatory e-waste management system will be implemented in 2021 to ensure the proper recycling of e-waste, where safety and environmental standards are adhered to. (Source: Towards A Sustainable and Resilient Singapore, 2018)

- To develop the NDC, extensive technical studies were undertaken, including an assessment of Singapore's economy-wide energy efficiency potential. These take into account Singapore's national circumstances and challenges. Studies and technology roadmaps developed in collaboration with industry stakeholders, academic experts and technical consultants, served as additional inputs on the potential of future technologies for long-term mitigation in Singapore. Stakeholder consultations were also carried out to obtain feedback on possible measures to reduce carbon emissions. (Source: Accompanying Information on Singapore's 1st NDC, 2018)
- The updated NDC reflects the following enhancements: (Source: Accompanying Information on Singapore's 1st NDC, 2018)
 - An economy-wide absolute GHG emissions limitation target in place of the previous intensity target.
 - A clear peaking level (i.e., 65 MtCO_{2e}) around 2030.
 - Inclusion of NF₃.
 - Methodological updates to Singapore's NDC. These updates include, for example, the use of the 2006 IPCC Guidelines and the 100-year time-horizon GWP values from the IPCC Fifth Assessment Report. This demonstrates enhanced transparency in the reporting of Singapore's national inventory and climate actions.
 - Updated information on implementation efforts. These efforts include more ambitious solar energy goals and the introduction of an economy-wide carbon tax with no exemptions for covered facilities.
 - Application of ICTU guidance. This will facilitate greater clarity, transparency and understanding of Singapore's NDC and implementation efforts.
- Singapore will be naturalizing more waterways and waterbodies in its gardens and parks. Coastal and riverine parks will also incorporate designs such as floodplains to protect coastal and low-lying areas from sea level rise or flooding. Singapore is also conserving and restoring its mangrove forests. Mangroves help to dissipate waves and trap sediment, potentially serving as a flexible form of coastal defense while reducing erosion. (Source: Accompanying Information on Singapore's 1st NDC, 2018)

8. Case studies

8.1 Singapore Green Plan

- The 2005 review of the 1992 Green Plan found that targets on air and water quality, waste, recycling, and conservation had been met. The evidence suggests that the portfolio of policies and practices in place have made Singapore substantially greener than when it was first established. (Source: https://www.greengrowthknowledge.org/sites/default/files/downloads/best-practices/GGBP%20Case%20Study%20Series_Singapore_Sustainable%20City%20Singapore.pdf)

8.2 Land Transport Master Plan 2013

- Other major achievements have been the mass public transit system, which encourages commuters to take public transport instead of turning to private cars.
- This is reflected by a 63% public transport peak period mode share, which increased from 59% in 2008 to 63% in 2012. There is a target to increase this to 75% public transport mode share by 2030. This reduces congestion on roads, improves air quality, and maximizes land use by minimizing the need for roads.

(Source: https://www.greengrowthknowledge.org/sites/default/files/downloads/best-practices/GGBP%20Case%20Study%20Series_Singapore_Sustainable%20City%20Singapore.pdf)

8.3 Punggol Northshore

- The coastal town of Punggol in Singapore's north-east is a test-bed for smart urban planning and green technologies. Punggol Northshore, its latest district, is Singapore's first batch of "smart" public housing, kitted out with new technologies that enable residents to live with a lighter environmental footprint. Its development was guided by the Housing and Development Board's Sustainable Development Framework that sets out key desired sustainability outcomes.
- In the planning of Punggol Northshore district, Singapore's Housing and Development Board (HDB) analyzed wind flow, solar irradiance and shading to identify the best locations for solar panels and outdoor community amenities. It also modelled how water, waste, transport, energy and other systems interact to help planners and designers understand the trade-offs involved when integrating green features into the estate. In common areas, public lights and fans will be controlled by sensors, which will automatically adjust to optimize energy use while meeting residents' needs. In their homes, residents will be able to monitor and manage their home energy consumption in real time. They will have a pneumatic waste disposal system that will be cleaner, and will also track waste and recycling volumes and patterns, so that waste is collected only when needed.

(Source: <https://www.clc.gov.sg/docs/default-source/books/ssbcombined-cover-text.pdf>)

8.4 Jurong Lake District – Jurong Lake Gardens

- Jurong Lake Gardens mirrors Singapore's journey as a nation that balances development and conservation. The Gardens' habitats will be enhanced to demonstrate that urban landscapes can also support rich biodiversity, with a focus to create a high-quality, sustainable environment for Singaporeans from all walks of life to enjoy. Its development will be done sensitively with the intention to create spaces for families and the community to come together. At the same time, the development of Jurong Lake Gardens will also include the provision of infrastructure to create a seamless integration with the new Science Centre grounds and the lake. There will also be exciting horticultural concepts that feature the latest advances in science and technology, as well as science-based play equipment and amenities to facilitate discovery and learning.

(Source: <https://www.clc.gov.sg/docs/default-source/books/ssbcombined-cover-text.pdf>)

8.5 Car-Free Sunday SG

- In February 2016, URA piloted the first edition of Car-Free Sunday SG — a six-month pilot — in the area around the Civic District and the Central Business District. For the pilot, these city streets were closed to vehicular traffic on the last Sunday morning of every month. With the roads free of cars, walkers, joggers and cyclists were able to take to the streets, while adjacent open spaces hosted sports and fitness sessions, family-friendly activities and a breakfast picnic area. A myriad of activities transformed the area into a walkable, cyclist-friendly and activity-filled precinct. Through the pilot program, Singaporeans are able to enjoy the city in a new way, and to experience the benefits of a city with fewer cars.

(Source: <https://www.clc.gov.sg/docs/default-source/books/ssbcombined-cover-text.pdf>)

APPENDIX I: COUNTRY BRIEF ON SCP FOR THAILAND

1. Key Data

- Thailand covers an area of 513,120 square kilometres in the centre of the South-East Asian peninsula. It has 2,420 kilometres of coast line on the Gulf of Thailand and the Andaman sea. Thailand stretches 1,650 kilometres from north to south, and from east to west 780 kilometres at its widest point. (Source: https://www.boi.go.th/index.php?page=social_and_culture) Thailand consists of 77 provinces and 5 regions (North, North-East, East, Central and South) separated by geography and climate. (Source: <http://www.t-globe.com/provinces>)
- In 2019 GDP of Thailand was 4,334,846 million Baht, 65,128 Baht per capita per year. The most GDP was from service sector, industrial sector and agricultural sector. (Source: <http://statbbi.nso.go.th/staticreport/page/sector/th/10.aspx>)
- Population in 2019 was 66,558,935 persons. (Source: <http://statbbi.nso.go.th/staticreport/page/sector/th/10.aspx>)
- Over the last four decades, Thailand has made remarkable progress in social and economic development, moving from a low-income to an upper-income country in less than a generation. (Source: <https://www.worldbank.org/en/country/thailand/overview>)
- The structure of population is presented as **Figure 1.1**

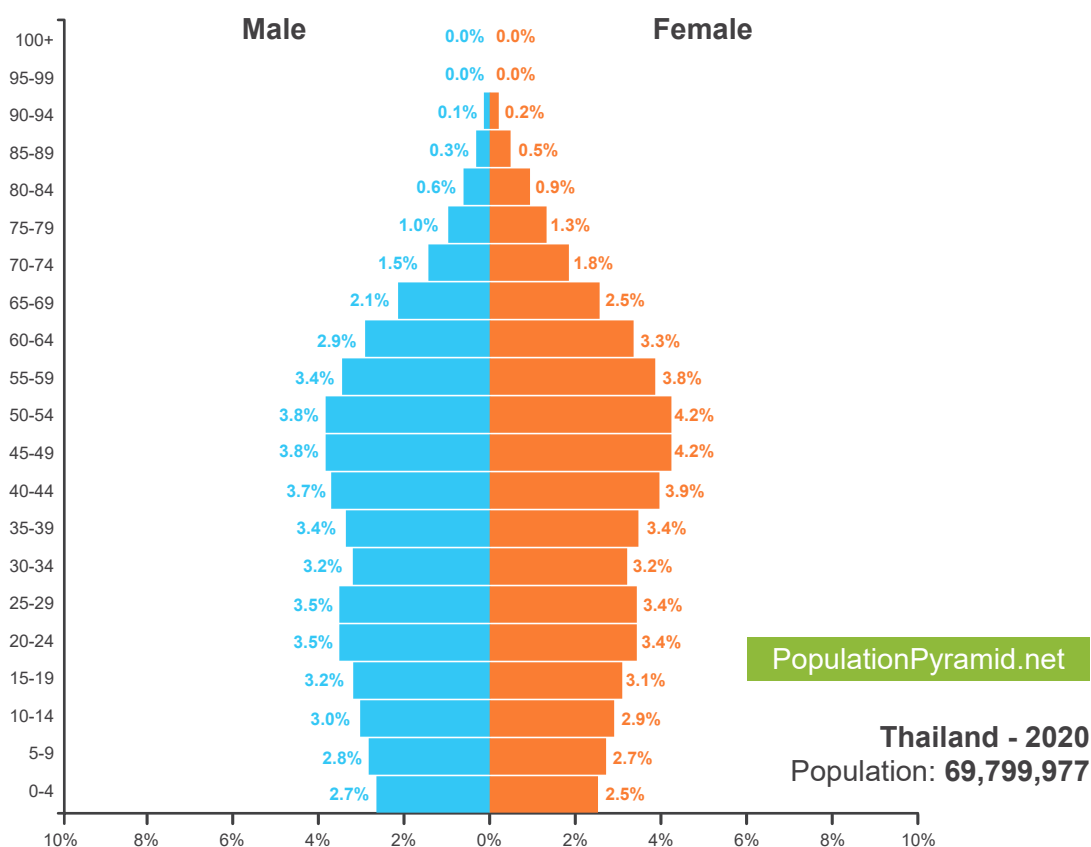


Figure 1.1 The Thailand's population pyramid for 2020
(Source: <https://www.populationpyramid.net/thailand/2020/>)

- In recent years, economic growth slowed from 4.2% in 2018 to 2.4% in 2019. The key drivers of slowing growth were weaker demand for exports reflecting the impact of US-China trade tensions, slowing public investments, and a drought, impacting agricultural production. Key development challenges also pose a risk to Thailand's future growth if it wants to attain high-income status by 2037. These include weakness in education outcomes and skills matching, which risk future productivity and chances of the younger generation, and increasing spatial inequality, with remote areas falling behind in economic and welfare indicators.
(Source: <https://www.worldbank.org/en/country/thailand/overview>)
- Poverty declined substantially over the last 30 years from 65.2% in 1988 to 9.85% in 2018 (based on official national estimates). However, the growth of household incomes and consumption growth both have stalled nationwide in recent years. This resulted in a reversal in the progress of poverty reduction in Thailand with the number of people living in poverty rising. Between 2015 and 2018, the poverty rate in Thailand increased from 7.2% to 9.8%, and the absolute number of people living in poverty rose from 4.85 million to more than 6.7 million. The increase in poverty in 2018 was widespread - occurring in all regions and in 61 out of 77 provinces. In the Central and Northeast, the number of the poor increased by over half a million in each region during the same period. The conflict-affected South became the region with the highest poverty rate for the first time in 2017.
(Source: <https://www.worldbank.org/en/country/thailand/overview>)
- State of the Environment in Thailand 2019
(Source: <http://www.onep.go.th/ebook/soe/soesummary2019.pdf>):
 - In 2018, the organic farming area increase from 2017 supported by the government.
 - Value of production, consumption and export of ore decreased from 2017. Green Mining Project has been implemented to develop and raise the standard of manufacturing.
 - Energy production in Thailand decreased from 2017, mostly from natural gas production. Meanwhile, the importation of energy was increase to response the increasing demand. In 2018, GHG emission increased from 2017 about 0.80% from energy consumption. Alternative energy increased about 8.47 in 2018 compared to 2017.
 - Forest area increased about 0.33 million rai in 2018 (compared to 2017).
 - Water resource is consumed by agricultural sector mostly, following by biodiversity conservation, consumption by community, and industrial sector, respectively. Master plan for Water Resource Management 20-year (2017-2037) to integrate the water resource in Thailand effectively.
 - In 2018, the abundance of ocean and coastal resources increased from 2017 about 17.89%.
 - Air pollution problem is PM2.5 especially from transportation and cumulative heat point. The government raised PM2.5 as national agenda and established Master Plan of Air Quality Management 20-year (2018 – 2037).
 - Surface water quality was fair to good level, better from 2017. Water Quality Plan (2018 – 2037) has been implemented to control discharge quality form point sources from community, industry, and agriculture.

- In 2018, solid waste generated about 27.93 million ton overall the country or 1.15 kilogram/person/day (1.13 kilogram/person/day in 2017). The amount of plastic waste in community was about 2.0 million ton which could be collected to recycle system about 0.5 million ton. The amount of hazardous waste in community was about 638,000 ton (618,700 ton in 2017) which 65% were electronic waste. Imported hazardous substances using in agricultural sector reduced from 2017. Otherwise, imported hazardous substances using in industrial sector increased from 2017. The relevant policy to manage waste consists of Mater Plan of Protection and Solving of Waste and Hazardous Waste 20-year (2018 – 2037), Master Plan of Municipal Waste Management in Thailand (2016 – 2021), draft Plastic Waste Management Roadmap (2018 – 2030), Electrical and Electronic Equipment Waste Management Act (B.C.....), Draft Ministerial Regulations on Hygiene Management of Toxic or Hazardous Solid Waste from the Community (B.C.....), and Action Plan on Infectious Waste Management (2019 – 2020).

2. Policies, strategies, plans, networks (government, civil society, private sector)

- Sustainable Consumption and Production Roadmap 2017-2037: SCP in six sectors including industry, agriculture and food, service sector including tourism, cities and local government, sustainable procurement, and awareness raising and education.
- Thailand's VNR 2017, Thailand's VNR 2018, Thailand's VNR 2019
- Bio-Circular-Green Economy (BCG) in Action
(Source: http://stiic.sti.or.th/wp-content/uploads/2018/10/BCG_Final1.pdf)
- Networks:
 - Thailand Business Council for Sustainable Development (TBCSD): The TBCSD continues on the path of environmental improvement in partnership with business by promoting the concept of “Sustainable Development”. It’s focus remains the conservation of natural resources and the environment, for future generations, as evidenced in the TBCSD Honorary Chairman’s message. The focuses on three main programs consisting of (1) Policy Development in Thailand; (2) Capacity Building with regard to Business Competitiveness and Good Practices; and (3) Raising Public Awareness of Cultural and Environmental Issues.
(Source: http://www.tei.or.th/tbcسد/about_tbcسد/index.html)
 - Global Compact Network Thailand (GCNT): GCNT is one of Local Network of private organizations of UN Global Compact (no. 70). The Network drives and supports SDG in society broadly focusing on collaboration and innovation development.
(Source: <https://globalcompact-th.com/about/index/2>)
 - Thai SCP Network: Aim to support and drive Thai SCP Roadmap and collect the activities about SCP in Thailand. And provides the platform for the networks to share experience and make the collaboration for SCP implementation.
(Source: <https://www.thaiscp.net/aboutus/description>)

- SDG Moves: DG Research and Support Programme (SDG Move) is under Policy Research Centre on Green Economy (PRO-Green), Faculty of Economics, Thammasat University. The objectives of SDG Moves are (1) Producing Policy Research on SDGs, especially on Means of Implementations (such as monitoring system, SDG governance, Volunteerism for SDGs, as well as Goal specific issues), (2) Promoting Science-Policy-Society Interface, translating knowledge from academia to policy makers and society, and (3) Creating SDG knowledge hub for Thai society and communicating knowledge to society. (Source: <https://www.sdgmove.com/en/background/>)
- Sustainable Development Solutions Network (SDSN) Thailand: The objectives of SDSN Thailand are (1) Shaping Multi-Stakeholder Dialogue, (2) Nurture thematic networks, (3) Advise decision-makers, and (4) Strengthening Sustainability Research and Education. (Presentation of meeting for SDSN Thailand Development, Thammasat University, 2019)
- ASEAN Centre for Sustainable Development Studies and Dialogue (ACSDSD): ACSDSD will play a catalytic role in promoting sustainable development cooperation in the region and enhancing the complementarities between the ASEAN Community Vision 2025 and the UN 2030 Agenda for Sustainable Development, also known as the “Complementarities Initiative”. ACSDSD serves as a regional platform to encourage research and studies as well as capacity building of government and non-governmental organisations in ASEAN, and promote dialogue and cooperation on sustainable development within ASEAN and external partners. (Source: <https://www.cm.mahidol.ac.th/acsdspd/index.php/about-us>)

3. Programs and projects (government, civil society, private sector)

- Project with EU SWITCH-Asia:
 - Green Integration Policy to support Green Products & Services “Mainstream Green Integration of Thailand: Transformation from Policy to Implementation”; The objectives of project are (1) to enhance the procurement of the environmentally friendly products and services in Thailand, (2) to study all types of environmentally friendly products and services and cluster them for management more efficiently, (3) to conduct the environmentally friendly products and services policy and the action plans, (4) to provide knowledge and information for raising awareness on the environmentally friendly products and services, and (5) to share experiences on the environmentally friendly products and services through good practices and lesson learned among ASEAN Member States and other leading SCP countries.
 - “Zero Carbon Resorts 2.0” contributed to the sustainable development of the tourism sector and its value chain in the Philippines and in Thailand, with a focus on reduction of resource consumption and CO2 emissions. (Source: www.switch-asia.eu)

- Transferable skills and scalable experiences from Thailand’s application of the Sufficiency Economy Philosophy (SEP) in pursuit of Sustainable Development Goals (SDGs). (Source: <https://sep4sdgs.mfa.go.th/en/page/70260-sep-approach-towards-sdgs?menu=5d6bd9a415e39c1868002d61>). This information source presents and shares the information and examples of practices on SDG. For SCP (SDG12) it presents the activities of Foundation for Consumers, Green Industry, Green Label: Thailand, Green Leaf Foundation, Plan Toys (environmental friendly toys), Jim Thompson, Khiri Travel, Sustina (organic product), and Change Fusion (building impact innovations to rebalance economy, society and nature).
- Public Private Partnership for Sustainable Plastic and Waste Management (PPP Plastic) (Source: https://www.thaiplastics.org/service_page.php?id=832&Hits=14): “Reduce Thailand Plastic Marine Debris 50% by 2027”. Thailand PPP Plastic’s Strategy: “Reduce landfilled plastic waste and leakage to ocean by engaging all stakeholders to embrace and implement Circular Economy which starts from people behavior change through education, improve waste segregation and management system, and provide value added channel for all plastic waste to be reused or recycled efficiently.” On 7 Aug 2018, the PPP Plastic led by the Federation of Thai Industry and TBCSD (Thailand Business Council for Sustainable Development) was formally appointed to be the 3rd Working Group of Plastic Waste Management Sub-Committee by the Deputy Permanent Secretary of the Ministry of National Resources and Environmental.
- Energy Efficiency Program: Energy efficiency labelling by the Electricity Generating Authority of Thailand was introduced in 1994 for refrigerators and has expanded since then to include 24 more electrical products. As of 2015, 272 million energy-efficient products have been labelled. The project named Label No.5, seeks to continuously improve the testing and requirements of Label No. 5 electrical appliances to reach global standards. The objective of the program is to inform consumers that No. 5 labelled appliances are highly energy-efficient and thus reduce their electricity bills. This will also enhance competition among manufacturers to further improve the energy efficiency of their products. There are tax incentives and subsidies for energy-efficient products (25% tax credit from the purchase of mostly label No. 5 products). The old Label No.5 uses a rating scale of one to five, the new label uses a rating scale of four levels: No.5, No.5 ★, No.5 ★★ and No.5 ★★★★★(Figure 1.2). It also emphasizes on the electricity bill more.



Figure 1.2: Thailand energy efficiency no.5 label (1: Energy efficiency level, the highest efficiency is 3 stars, 2: Indicates the type of product that has been certified, 3: Electricity bill per year to compare and estimate electricity usage, 4: Performance value for comparison with other products of similar size, 5: Product information, including brand, name, model, size, to be able to check the preliminary, 6: website of the Electricity Saving Label Project No. 5) (Source: Sustainable Consumption and Production Baseline Research for ASEAN, 2019)

- Recycling Program (Sustainable Consumption and Production Baseline Research for ASEAN, 2019):
 - The central ministries related to waste management and recycling in Thailand are the Ministry of Natural Resources and Environment (MONRE) - Pollution Control Department (PCD), Ministry of Interior – Local Authority (Municipal Solid Waste), Ministry of Industry - Industry (Industrial waste) and Ministry of Energy - Department of Alternative Energy Development and Efficiency (waste to energy). MONRE is responsible for coming up with overall policies, action plans, guidelines and information systems. The Ministry of Interior oversees municipal solid waste, while the Ministry of Industry oversees industrial waste. These ministries are part of the policy network for waste management in Thailand and can have a significant influence on other stakeholders in the network. This policy network sets the laws, policies and plans that encourage stakeholders such as plastic producers, waste generators, waste collectors and waste recyclers, to control the environmental issues that stem from each stakeholder. This is to achieve the goal of better waste management and recycling in Thailand.

- The PCD has come up with the National 3R strategy to recycle 60% of plastic waste by the end of 2021. The ministry has also come up with the National Master Plan for Waste Management (2016–2021) and Plastic debris management plan (2017–2021). These three plans and strategies aim to promote reuse and recycle of waste through introducing environmental labels, capacity building on 3Rs and waste management through public involvement and cooperation between private and public sectors and increase efficiency of waste separation, collection, recovery and utilisation systems.
- In 2013, plastic recycling rate was estimated to be 9.6% out of total plastic production. In 2014, approximately 13.86% of total MSW was utilised for recycling. In 2015, about 20% of total MSW, 30.1% of non-hazardous Industrial waste and 12.7% of hazardous industrial waste were recovered or recycled. Solid waste remains a major environmental issue in Thailand as waste production from domestic and industrial sectors has rapidly increased, and effective waste management methodologies are not applied adequately. Land, air and visual pollution occur as effective treatment and disposal facilities and transport are lacking, leading to low collection coverage, illegal waste dumping and open burning.
- Currently, the local administration organisation under the Ministry of Interior oversees municipal waste management and they provide waste collection services and disposal. The recycling industry in Thailand has both formal and informal actors. The former consists of waste generators such as households, the commercial sector and institutes who collect and sell their recyclable plastic waste to waste shops or waste recyclers. The informal sector collects the remaining plastic waste through picking and scavenging bins, transfer stations and landfills to sell to waste shops. Manual segregation at sources and dumpsites leads to inefficient segregation and recycling of waste. The PCD reported in 2016 that most waste, especially plastic, does not have high recyclability as 80% of plastic waste such as plastic bags and packaging are contaminated. The costs of eliminating, collecting and cleaning these types of waste are quite expensive. Current network analysis reveals that in the policy network, the local government, waste collectors, waste recyclers and waste shops play essential roles in plastic waste management in Thailand. Waste generators, research institutes/universities, and plastic producers have minor effects on plastic waste reduction/recycling.
- There are five key barriers to plastic waste recycling and management that hold the same for MSW:
 - Consumption patterns involving the high use of plastic in food containers that causes contamination
 - Lack of awareness and education for waste segregation at source and proper recycling practices
 - No requirement for plastic producers to provide a plastic resin identification code (SPI Codes) on plastic bottles/containers to allow for the efficient recycling of plastic waste
 - Limited financial incentives to recycle
 - Lack of efficient waste-collection management due to inadequate knowledge and expertise of local government staff and lack of support from the financial sector

4. SDG12 reporting/monitoring and evaluation

- Thailand's VNR 2017, Thailand's VNR 2018, Thailand's VNR 2019 : In the past, 639 companies have declared their sustainability, or 98 per cent of the total registered companies, while another 14 per cent of companies have reported on their sustainability based on the Global Reporting Initiative (GRI). In 2019, Thailand is working to establish a reporting mechanism on the country's sustainable consumption and production 2018 - 2020, while also studying food loss management for sustainable consumption 2019. (Source: https://sep4sdgs.mfa.go.th/static/pdf-flipbook-master/index.html?file=https://image.mfa.go.th/mfa/0/wmuEa8nR2N/VNRs/VNR2019_ENG_v_4.pdf)
- Thailand SCP Monitoring System by the Office of Natural Resources and Environmental Policy and Planning (ONEP) through the website: http://sdg12.onep.go.th/?page_id=14
 - SDG Indicator 12.2.1:

Table 1.1 Material footprint, material footprint per capita and material footprint per GDP

Year	MF (ton)	MF/Capita (ton/person)	MF/GDP (ton/\$)
2010	581,090,986.52	8.75	0.00257

- SDG Indicator 12.2.1:

Table 1.2 Domestic material consumption, domestic material consumption per capita and domestic material consumption per GDP

Year	DE (ton)	Import (ton)	Export (ton)	DMC (ton)	DMC/Capita (ton/person)	DMC/GDP (ton/GDP)
2015	575,604,581.85	149,974,039.67	178,451,618.01	547,127,003.51	8.12	0.0021

- SDG Indicator 12.6.1:

Table 1.3 Number of companies publishing sustainability reports

Year	Industry Group								
	Agro & Food Industry	Consumer Products	Financials	Industrials	Property & Construction	Resources	Services	Technology	Total
2017	10	4	7	13	14	18	13	8	87

Remark: The results are from the study of the Development of Monitoring and Evaluation System to Promote Sustainable Consumption and Production in Thailand.

- Thailand intends to reduce its greenhouse gas emissions by 20 percent from the projected business-as-usual (BAU) level by 2030. The level of contribution could increase up to 25 percent, subject to adequate and enhanced access to technology development and transfer, financial resources and capacity building support through a balanced and ambitious global agree (Intended Nationally Determined Contribution and Relevant Information, Submission by Thailand, 2015).

5. Key sectors or priorities

- Emphasizing production process development, Green Industry certification and integrated solid waste management in the industrial sector.
- Sustainable tourism remains central to Thailand's SCP-related goals as the industry remains important for the country's economic health.
- Promotion of Green Public Procurement and eco-labelling.
- Education and awareness raising remain important for all SCP-related activities.
(Source: Country Profile Thailand, SWITCH-Asia SCP Facility)

6. Challenges (readiness/mandate, financing, capacity, data etc. monitoring and evaluation, stakeholders)

- Most efficiency programmes do not yet show desired results in terms of decoupling growth from total resource depletion.
- Adoption of sustainable lifestyles is not yet wide-spread, particularly among the growing middle-income bracket of Thailand where consumption rates are growing quickly.
- Reducing impacts from the transport and aviation sector, especially as Thailand is a hub for travel across Southeast Asia.
- Water productivity is low, which is of particular concern in relation to the agricultural and food processing sectors.
- There are limited sustainability and low-carbon policies and initiatives aimed at the automotive industry.
- SMEs continue to lack sufficient access to financial institutions while they also lack awareness on the benefits of investments that promote sustainability.
- Majority of farmers are still using traditional production methods, which have negative environmental impacts. Clean agricultural technology is not affordable.
(Source: Country Profile Thailand, SWITCH-Asia SCP Facility)

7. Opportunities/Potential

SDG 12 opportunities from VNR 2019:

- The implementation of the Plan for the Promotion of Environmentally-friendly Procurement 2017–2021, which aims for the participation of 3,775 agencies (380 governmental agencies, 2,519 local administrative organizations and 876 private companies) by 2021
- The 5-year Industrial Waste Disposal Plan 2015 – 2021
- The Know-How and Innovative Agricultural Product Promotion Project, which aims to expand markets for agricultural products and build on agricultural research work
- The comprehensive development of organic agriculture and sustainable agriculture, while working to adjust chemical usage patterns of farmers and improve processing of agricultural products and green packaging
- Encouraging registered companies to disclose sustainability information through their sustainability and annual reports.

SDG 12 opportunities from SWITCH-Asia Country Profile:

- SWITCH-Asia can support integration of key national authorities such as national government agencies, research institutions and civil society organisations to further identify priorities as well as promote dialogue on policies.
- Scale-up efforts on integration of SCP-content into the public education system via the Government's 20-year National Education Plan to promote early adoption of sustainable lifestyles and behaviours.
- Expand the use of media to promote SCP awareness among the public.
- Leverage its position as a regional travel hub push for region-wide lower carbon and eco-friendly travel opportunities in collaboration with tour operators, the transport industry (particularly flight carriers) and tourism destinations.
- Expand cooperation with international organisations and institutions that would support and provide recommendations on implementing measures, good practices, creating statistical data and monitoring and evaluation on material footprints and domestic material consumptions in the future.
- Further exploration of innovative finance will help SMEs as well as those involved in the agricultural sector access clean technology.

8. Case Studies

8.1 Thai SCP Network

Thai SCP Network has developed a driving plan to push forward SCP of Thailand by leveraging the collaboration with relevant parties to support and strengthen implementation of SCP that leads to the achievement of Thai government on sustainable consumption and production. The key performance of the Thai SCP Network in 2020 consists of 1) Gathering information of SCP experts and organizations; 2) Activities in driving sustainable agriculture; and 3) Implementation status on SCP of Thailand.

- The information of SCP experts is classified in 11 sectors including Industry, Agriculture, Tourism and services, Capital markets, Education and research, Science, Technology and innovation, Civil society and private institutions, Policy and planning, Awareness and lifestyles, Sustainable procurement, and other related topics (e.g. GHG). Currently, there are 64 SCP experts in total.
- Thai SCP Network cooperates with the GAP Net in the promotion and supports the agriculture sector on Good Agricultural Practices (GAP). The results of this activities are (1) Compiling to create a database on various standards and pool of experts to be able to provide technical advice to farmers, (2) Development of curriculum and training courses on the principles of GAP for farmers, (3) Compiling and develop a database on technologies/tools for supporting production, residual chemical examination, traceability, and (4) Preparation of questionnaire to collect technology/tools needs and coordination with manufacturers/technology providers to access technology/tool and reduce costs.
- Collecting the implemented activities on SCP in Thailand which show that the key policy to drive SCP is the Circular Economy, which has been well accepted and participated by all sectors. Driving SCP is gaining attention from the private sector and civil society, and increasingly play a more significant role in implementation. The focus has been moving towards a change in consumption patterns.

8.2 PPP Plastic

- Waste Management System: Plastic Circular Economy Model for City;
 - Area: Bangkok, Klong Toey District, 1st Phase Plan: 18 months (2017-2019)
 - Activities:
 - PPP Plastic and Bangkok Metropolitan had signed an MOU with 7 office and residential buildings to implement the 1st phase project.
 - Set up a steering team with Bangkok Metropolitan Administration's environment team successfully.
 - Conducting 'Plastic Sustainability and Waste Management training and workshop for residents and the general public'.
 - Building a platform for program volunteers to share their database of waste collection and segregation.

- Waste Management System: Plastic Circular Economy Model for Community and Province;
 - Area: Rayong Province with 18 Municipalities and Rayong Provincial Administration Organization (PAO), 48 local communities, 5-Year plan (MOU in 2018)
 - Activities:
 - Conducted waste segregation workshop “community circular economy model” with municipalities and 48 local communities on 18th Dec, 2018
 - Set up bi-monthly meeting with 18 Municipalities and Rayong PPP team
 - Follow up and tracking the progress
 - Promote waste segregation at source
 - Knowledge/barriers sharing
 - Build Role Model (best practice)
 - Extend to local schools, local department store and tourism organization

8.3 Mainstream Green Integration of Thailand: Transformation from Policy to Implementation (2020-2021)

This project support by the SWITCH-Asia SCP Facility. The objectives of project are (1) to enhance the procurement of the environmentally friendly products and services in Thailand, (2) to study all types of environmentally friendly products and services and cluster them for management more efficiently, (3) to conduct the environmentally friendly products and services policy and the action plans, (4) to provide knowledge and information for raising awareness on the environmentally friendly products and services, and (5) to share experiences on the environmentally friendly products and services through good practices and lesson learned among ASEAN Member States and other leading SCP countries. The expectation results are (1) The draft procurement of the environmentally friendly products and services policy and its action plan which contributes to promote the green procurement policy to achieve SDG12.7.1 and other relevant SDG targets, (2) Governmental organisations, private organizations and people have more knowledge and awareness to support the environmentally friendly products and services, (3) Initiated instrument, mechanisms and institutes to support the procurement of the environmentally friendly products and services are put in place in society, and (4) Strengthen the SCP networks in Thailand and in ASEAN Member States on the environmentally friendly products and services. The activities consist of

- Phase 1: Develop the first Draft of the Green Integration Policy and the National Green Directory and action plan
 - Review green products and services policies and cluster the environmentally friendly products and services
 - Conduct stakeholder meeting to improve the criteria for the new environmentally friendly products and services clustered
 - Derive recommendations on Green/Sustainable Public Procurement (G/SPP) criteria in terms of clustering the environmentally friendly products and services into various groups to address more efficiently in No.3
 - Formulate the first draft of the Green Integration Policy and the National Green Directory
 - Conduct stakeholder meeting to engage stakeholders and get feedback on the 1st draft Green Integration Policy and the National Green Directory

- Propose to approve the 1st draft Green Integration Policy and the National Green Directory to the MONRE Committee on SDGs
- Phase 2: Implementation
 - Conduct demonstration projects and activities through pilot projects in selected areas and to conduct an information campaign platform to stakeholders on clustered environmentally friendly products and services as well as capacity building activities on G/SPP
 - Preparation for draft Green Integration Policy and the National Green Directory and information campaign and capacity building with stakeholders
 - Publish reports and materials and conduct meetings for the approval of the 2nd draft Green Integration Policy and the National Green Directory

8.4 Establish Low Carbon Consumption and Production in Thailand: WWF-SCP (2016-2018) (https://www.wwf.or.th/what_we_do/_scp_tip_/)

This Project supported by German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety: BMUB. It is a part of International Climate Initiative (IKI) project implemented by German Government in three countries including Thailand, Indonesia and Philippines. The objectives of this project are (1) encourage and integrate SCP to government and private policy to solve the problem of degradation of ecosystem and green house gases emission in agricultural and forest sectors, (2) promote education, learning, pilot project and lesson learn to develop the solution model of loss of upstream forest, the quality of life, and develop the sustainable food supply chain, and (3) organize the campaign to raise awareness of consumers for SCP and consume green products and services.

APPENDIX J: COUNTRY BRIEF ON SCP FOR VIET NAM

1. Key Data

1.1 Economics

The Socialist Republic of Vietnam is located along the east side of the Indochina Peninsula, and has a long coastline facing the South China Sea. The population amounts to 93.7 million (2017) with an urbanization ratio of 36% (2018). Vietnam is a one-party socialist republic, which over the last three decades has launched extensive free-market economic reforms. The country has industrialized rapidly with electronics and textiles as major export goods and experienced one of the highest economic growth rates in the world; the current GDP per capita (PPP) stands at US\$ 7,435.329. Administratively, Vietnam is divided into 58 provinces and 5 municipalities (major cities), at equal level, and the country also has two lower tiers of governance.

The country has been transitioning since 1986 from the rigidities of a centrally planned, highly agrarian economy to a more industrial and market-based economy, and it has raised incomes substantially. Vietnam exceeded its 2017 GDP growth target of 6.7% with growth of 6.8%, primarily due to unexpected increases in domestic demand, and strong manufacturing exports. It has a young population, stable political system, commitment to sustainable growth, relatively low inflation, stable currency, strong FDI inflows, and strong manufacturing sector. In addition, the country is committed to continuing its global economic integration. However, the government remains cautious about the risk of external shocks despite the recent speed-up in economic growth.

(Source: <https://www.cia.gov/library/publications/the-world-factbook/geos/bx.html>)

Table 1. GDP Growth Rate and Inflation, % per year

GDP growth				Inflation			
2018	2019	2020	2021	2018	2019	2020	2021
7.1	7.0	4.8	6.8	3.5	2.8	3.3	3.5

(Source: <https://www.adb.org/sites/default/files/publication/575626/ado2020.pdf>)

1.2 Social

Its population is mostly rural and growing, with a fertility rate of 2 children and life expectancy of 76.5 years. Around 70% of the population is of legal working age (15–64 years). This is the population pyramid for Vietnam.

Vietnam - 2020

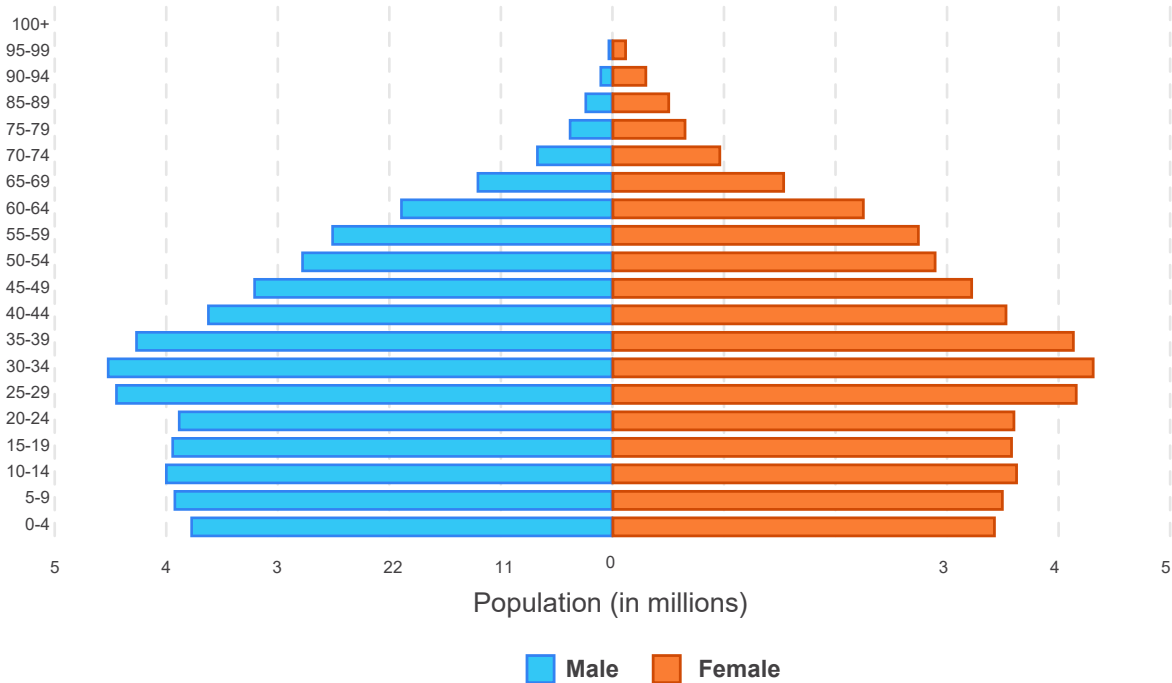


Figure 1.2. Vietnam’s population pyramid for 2020

In 2018, the labor force participation rate was 78.2% and the employment-to-population ratio was 76.5%. Both these rates are more than 9 to 10 percentage points higher for men than for women. The total unemployment rate was 2.1%, and the youth unemployment rate was 7.3%, with near gender parity in both rates. The proportion of youths aged 15-24 years not in education, employment or training was 0.6% in 2016. Employment is heavily reliant on agriculture and services, and on low-to medium-skilled occupations.

Vulnerable employment in Viet Nam as of 2018 accounted for 55.8% of the labor force, with the majority of those workers having own-account status. Own-account and contributing family workers are more likely to experience low job and income security than employees and employers, as well as lower coverage by social protection systems and employment regulation.

Rural population growth was 0.04% in 2017. The share of agricultural land in total land area increased by 9.5 percentage points between 2000 and 2015, while agricultural employment decreased from 26.9 million to 24.2 million people. The share of agricultural employment within total employment fell by approximately 21.3 percentage points due to much faster job creation in other sectors. (Source: https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/documents/publication/wcms_627572.pdf)

1.3 Environment

Viet Nam ranks at number 132 of 180 countries in the Environmental Performance Index (EPI), with a score of 46.96 (with 0 being furthest from the high-performance benchmark target of 100). Viet Nam outperforms the average score for Asia and the Pacific in some of the EPI categories, including water and sanitation, heavy metals, agriculture, and biodiversity and habitat.

Forest area increased between 1990 and 2015, to approximately 18.9% of total land area. From 2000 to 2016, the share of terrestrial protected area increased slightly, reaching 7.6% of total land area, while the proportion of marine protected area remained steady.

Since 2000, there has been a gradual increase in access to basic drinking water, to an average of 91% in 2015, and access to basic sanitation, to an average of 78% in 2015. Both are still below the ideal threshold of 100%. Only 0.3% of the labor force was employed in water supply, sewerage, waste management and remediation activities in 2017.

The carbon dioxide (CO₂) emission levels for Viet Nam have increased gradually, by an average of 8.9% from 1990 to 2014. The increase was due to two major sources: use of coal and gas for power generation; and oil for transportation. The level of emissions is significantly lower than the Asia-Pacific average and slightly higher than the ASEAN average since 2005. The PM_{2.5} emission levels for Viet Nam were steady except for a slight increase in 2005. Overall PM_{2.5} emission levels exceeded the WHO Air Quality Guideline threshold level, thus indicating high emissions. Viet Nam also shows higher levels of emissions than the ASEAN and Asia-Pacific averages. Motor vehicles are the major source of PM_{2.5} emissions in Viet Nam, followed by industrial coal and oil combustion, particularly from the brick industry that is known to burn biomass such as rice husks. Domestic emissions come from using coal for cooking and some heating.

According to the World Risk Report, Viet Nam has a very high World Risk Index score. It ranks number 18 of 171 countries because of its high exposure to natural hazards and limited institutional capacity to cope and adapt. Part of the country's vulnerability relates to the 37% of the total population who, in 2010, lived in the 15.4% of the total land area below 5 meters above sea level. According to the Emergency Events Database, there was a substantial increase in natural disasters and associated damage costs between the 1980s and the 2010s. The natural disasters in that time were mostly tropical cyclones, storms, floods, landslides, and droughts. Damage costs have increased significantly since the 1980s.

In 2014, 50.9% of the population relied primarily on clean fuel and technology, in the sense that these do not create pollution within the home. The share of renewable energy in total energy consumption has not kept pace with overall consumption. In 2000, it was 59% but fell below 35% in 2010 and, after some fluctuation, reached 35% in 2015. However, renewable energy electricity generation increased over the last 16 years, with hydropower being the main renewable energy source in 2016.

In 2017, almost 48,000 people were employed in the renewable energy sector, with 93% employed in hydropower. The country's employment rate in electricity, gas, steam, and air conditioning was only 0.3% in 2017. With the push for increasing reliance on renewable energy, there is the potential for decent job opportunities in the future. (Source: https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/documents/publication/wcms_627572.pdf)

Although Viet Nam is reported to be one of Asia's top five polluters of ocean plastic waste. According to international organizations, the country does not collect official statistics of plastic waste. There is only estimated data about the proportion of plastic waste contained in urban solid waste taken to the landfills; the proportion is about 8-16%. The amount of domestic solid waste generated in the period of 2007-2017 shows an increasing trend. MSW per capita is also increasing and now accounts for about 1.2 kg/person/day. In terms of waste composition, organic waste accounts for around 60-70% and plastics are around 10-15% in major cities across Viet Nam. Thus, plastics are a relatively small portion, in terms of weight, of existing waste flow. However, the Ministry of Natural Resources and Environment (MONRE) has estimated the number of plastic bags used in the country total over 30 billion bags per year. Only a small proportion, or roughly 17% of the bags are regularly reused, with rest disposed after single-use. Numbers from the Association of Plastic illustrate the scale of the problem. In 1990, Vietnamese citizens on average consumed 3.8 kg of plastic per year. 25 years later, the figure has reached 41kg. In addition, plastic scrap import has increased rapidly in recent years (18,548 tons in 2016; 90,839 in 2017 and 175,000 in 2018).

In Viet Nam, plastics, particularly PET bottles, along with other recyclables from households are collected by or sold to junkshops. Plastics are thereafter reported to be sent to small-scale recycling facilities located near Ho Chi Minh or Hanoi. These small-scale recycling facilities are often operated in so-called craft villages near agricultural areas located in close proximity to Hanoi and Ho Chi Minh City. Because recycling is undertaken by farmers for supplemental income it tends to be seasonal recycling activities during off-seasons for agriculture. However, according to interviews by IGES with junkshop owners in Da Nang in May 2019, plastics other than PET, especially plastic bags, are no longer targeted for collection and sale due to their low quality and relatively inexpensive price. In other words, waste picking of relatively high-value recyclable plastics is prominent in the recycling market of Viet Nam, due to lack of formal recycling routes. (Akenji, et al., 2019)

A look into Vietnam's statistics reveals a very sharp increase in the country's domestic material consumption over the last two decades. By 2010, Vietnam was consuming about 15 times more material compared to 1990 levels. This overexploitation of resources and unsustainable use will not only make future development uncertain but is likely to also have a detrimental effect on a wide range of areas throughout the lifecycle of those resources. The existing unsustainable trend of resource use has caused negative effects on water and on terrestrial ecosystems. It has also weakened the resilience of nature to climate change and constrained the provision of sufficient resources to meet the targets to end hunger and malnutrition, access to sanitation and hygiene and other basic services, as well as the sustainability of industrialization. Making resource use more sustainable is another major priority area for Vietnam.

Existing trends for food production, measured by the indicator of fertilizer use by nutrient, indicate an unsustainable pathway for agriculture production. Unsustainable agricultural practices have caused negative impacts on water, terrestrial, land, and mountain ecosystems. This has caused damage to nature and affected its resilience to climate change, coupled with the degradation in forests, loss of biodiversity, and unsustainable resource use. In addition, unsustainable agriculture impacts negatively on achieving other social and economic SDG targets, including ending hunger, and malnutrition, access to sanitation and hygiene, economic growth, and employment. Transforming towards sustainable agriculture production is an urgent task for achieving SCP in Vietnam.

2. Policies, strategies, plans, networks (government, civil society, private sector)

Viet Nam has nationalized the global 2030 Agenda in the SDG NAP, with 17 SDGs and 115 specific targets that fit national conditions and development priorities. In fact, such sustainable development perspectives are well integrated into the SEDS 2011-2020 and SEDP 2016-2020. Many SDGs also being integrated into the national development policy system, including laws, socio-economic development strategies and plans as well as action plans of ministries, agencies, and provinces. SDGs will be integrated in the future SEDS 2021-2030 and SEDP 2021-2025 as well as in Viet Nam's next medium-term investment and annual SEDPs.

Vietnam has also consistently implemented policies connected to SDG 12, including the National Strategy for Sustainable Development in 2011- 2020, National Strategy on Green Growth in 2012-2020 and Vision to 2050, and Strategy on Cleaner Industrial Production until 2020. These policies were in line with the previous Law on Economical and Efficient Use of Energy. Vietnam's National Action Plan (NAP) on Sustainable Production and Consumption until 2020 and Vision to 2030 is the most comprehensive and direct document which explicitly mentions SDG 12 and is intended to guide the country's path towards sustainable consumption and production until 2030.

During the sustainable development process, Viet Nam actively conducted communication activities to raise awareness of stakeholders (ministries, sectors, agencies, local/international/social organizations, and the business community) to enhance the sustainable development implementation capacity of stakeholders (especially ministries, agencies, and provinces). However, people's awareness of the SDGs remains modest, especially at grassroots level within local communities and amongst young people who are the future of Viet Nam and will play key roles in achieving the SDGs by 2030. Therefore, it is of great importance to raise SDG awareness amongst stakeholders, especially local communities, and young people. Viet Nam has taken significant steps to help young people realize their role in realizing the SDGs, with local and international NGOs supporting SDGs at local and community levels. The mass media is also an essential channel to disseminate legislation and policies on sustainable development to raise public consciousness. In recent years, journal, radio, and television media have been contributed to communication, awareness raising of sustainable development for all.

The National Council on Sustainable Development was established in 2005 and is responsible for providing the GOVN and Prime Minister with advice on implementing SDGs in Viet Nam. The Ministry of Planning and Investment (MPI) is the lead agency to implement the 2030 Agenda and NAP. The Planning-Finance Departments of other ministries and related agencies and provincial Departments of Planning and Investment (DPI) are focal agencies to implement the 2030 Agenda. Some ministries, related agencies and provinces have also established steering committees, sustainable development offices or/and supporting units on sustainable development. The National Assembly, Viet Nam Fatherland Front and social organizations will play an important role in monitoring implementation during the SDG implementation process. The inter-sectoral working group on SDGs in Viet Nam has also been formulated to strengthen coordination between ministries, related agencies and organizations in implementing the NAP. In addition, the VBCSD, led by the Viet Nam Chamber of Commerce and Industry (VCCI), plays an important role in involving the business community in SDG implementation.

The UN SDG Technical Working Group was formed to cooperate with the GOVN in implementing the 2030 Agenda. In addition, the network of local and international NGOs, socio-political and socio-professional organizations as well as, and Association of Persons with Disabilities have conducted activities to implement SDGs and made direct contributions to the VNR. SWITCH-Asia has also already implemented eight previous projects supporting Vietnam's sustainable consumption and production efforts between 2009 and 2017 while three projects are currently running, focusing on empowering SMEs involved in improving the sustainability of the shrimp value chain, manufacturers of natural products committed to sustainable business practices and increasing sustainable freight transportation and logistics, respectively.

To enhance coordination and cooperation among stakeholders in SDG implementation, numerous forums and dialogues are organized annually, notably the National Conference on Sustainable Development, Business Forum on Sustainable Development and Viet Nam Development Partnership Forum (VDPF).

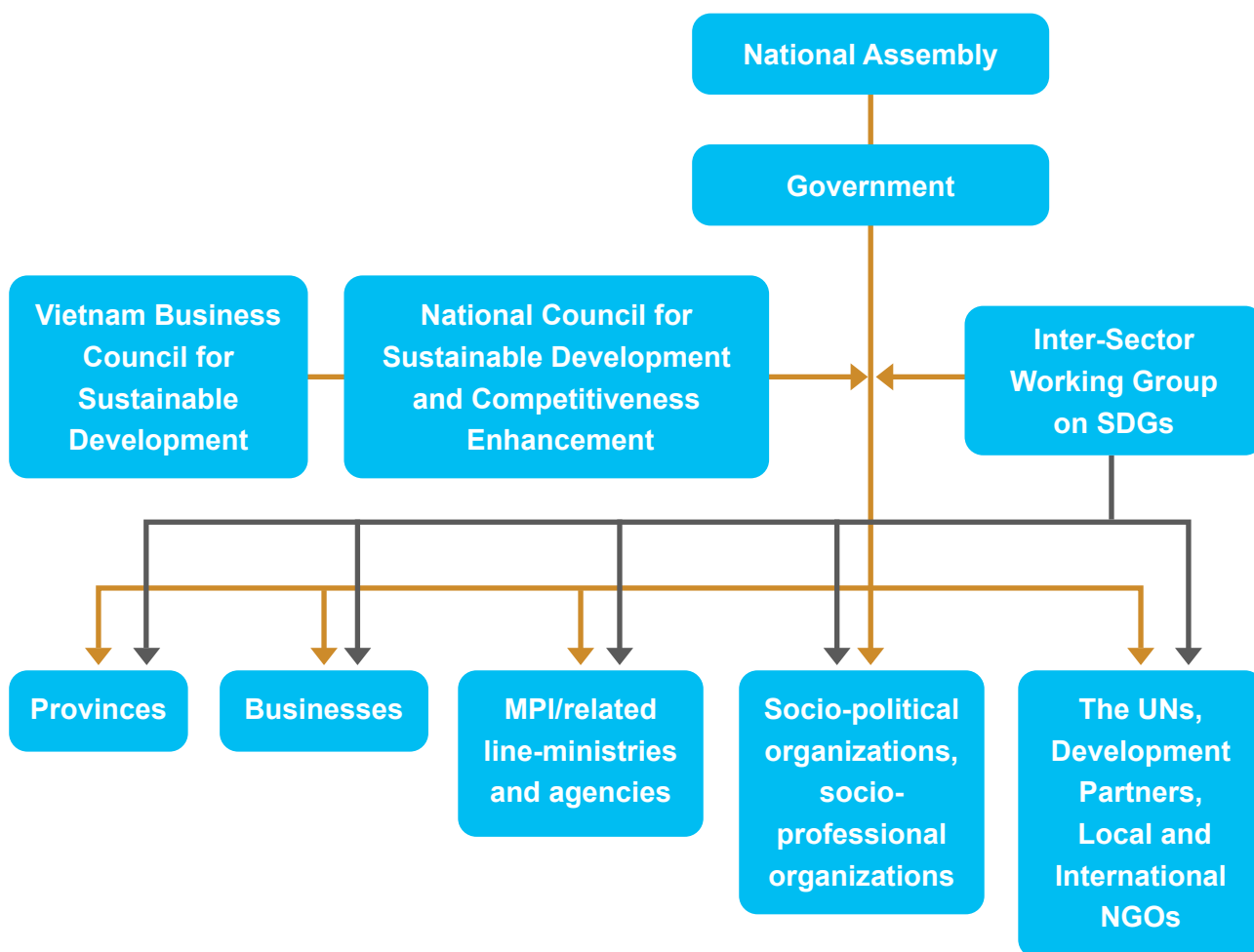


Figure 2.1. Institutional Arrangement for SDG Implementation in Vietnam

3. Programs and projects (government, civil society, private sector)

Viet Nam has issued numerous policies related to SDG 12, especially the National Strategy for Sustainable Development in 2011-2020, National Strategy on Green Growth in 2022-2020 and Vision to 2050, and Strategy on Cleaner Industrial Production until 2020. The foundation for these policies was the issuance of the Law on Economical and Efficient Use of Energy. Particularly, the GOVN issued the NAP on Sustainable Production and Consumption until 2020 and Vision to 2030. This is the most comprehensive and direct document which explicitly mentions SDG 12 and is oriented towards sustainable production and consumption for Viet Nam until 2030.

The Law on Economical and Efficient Use of Energy, National Strategy for Sustainable Development (2011-2020), National Strategy on Green Growth (2022-2020) and Vision to 2050 and Strategy on Cleaner Industrial Production until 2020 are key policies related to SDG 12. The latter strategy has been implemented nationwide, attracting the participation of more than 9,000 enterprises in mining, steel manufacturing, food and beverage, chemicals, construction, and other processing industries. Viet Nam has started to use “green” and energy saving labels for electric and electronic products and is applying sustainable public procurement practices in accordance with relevant green economy standards. The Viet Nam Sustainability Index (VNSI) was introduced by Ho Chi Minh City Stock Exchange in July 2017 to evaluate the sustainability performance of 20 companies listed on the stock market. Some companies (big or multi-national ones) have implemented sustainability practices and integrated sustainability information in periodic reports. Some enterprises (most of which are big or multi-national enterprises) have apply sustainable practices and integrate sustainable information into their periodical report. To orient consumption towards sustainability, Viet Nam has applied economic tools such as natural resource taxes on mineral mining and water resources, an environmental protection tax and environmental protection fees on wastewater. However, sustainable consumption has been paid little attention. Sustainable consumption activities have been limited, with mainly awareness raising activities, which remain fragmented with small-scale impacts. (Source: Vietnam’s Voluntary National Review on the Implementation of the Sustainable Development Goals, 2018)

SWITCH-Asia Programme in Viet Nam is part of the EU’s cooperation program on sustainable development in the region, including Viet Nam. The program focuses on promoting the transformation towards sustainable production and consumption. It aims to promote participating countries to shift to sustainable production and consumption models through projects in sectors, such as forest development, corporate social responsibility (CSR), energy efficiency, sustainable aquaculture, capacity building and awareness raising for sustainable production and consumption. In Viet Nam, the program has supported seven projects:

- a. CSR Viet Nam: Helps Vietnamese SMEs adapt and adopt CSR for improved linkages with global supply chains in sustainable production. This project is conducted by UNIDO in Ha Noi, Da Nang and Ho Chi Minh City. It has made a contribution to raising SMEs’ awareness of CSR with its improved multi-dimensions; re-designed the procedure and criteria to select the national CSR prize in 2012, with inclusion of ISO 26000 aspects.
- b. SUPA: Establish a sustainable Pangasius supply chain in Viet Nam. The project is implemented by Viet Nam Cleaner Production Centre (VNCPC). It aims that at least 70% of the targeted middle to large pangasius producing and processing SMEs and 30% of the feed producers in the project will apply cleaner production and use energy efficiently. At least 50% of targeted processing SMEs will provide sustainable products with ASC standard to EU and other markets.

- c. MEET-BIS Viet Nam: Mainstream energy efficiency through Vietnamese business innovation support. It is implemented in Ha Noi and Ho Chi Minh City. The project aims to promote sustainable production of urban-based SMEs by supporting development of sustainable markets for affordable water and energy efficiency technologies. The project works with private sector suppliers to develop commercially attractive business innovation packages targeting SMEs.
- d. GetGreen Viet Nam: Sustainable living and working in Viet Nam, implemented by Delft University of Technology in Ha Noi, Da Nang, Ho Chi Minh City and Can Tho. The projects aims at actions to create consumption behavior change toward towards sustainability. Such actions have great impacts on the environment through the small behaviors of the participants. It also helps improve capacity of consumer protection organizations and the GOVN in persuading and supporting consumers to have more environment-friendly consumption behaviors.
- e. SPIN-VCL: Sustainable product innovation (SPI) in Viet Nam, Cambodia, and Laos. This project is implemented by Delft University of Technology in Viet Nam, Cambodia, and Laos. The project helps improve the innovative power of industry to improve environmental and societal quality of products made in the three countries. This is expressed through sustainable production projects here. The project contributes to a decrease in environmental impacts and improve social sustainability aspects connected to products over the whole lifecycle.
- f. Responsible and sustainable trade: Sustainable and responsible trade promoted to wood-processing SMEs through forest and trade networks in China, India and Viet Nam. The project is implemented by WWF and aims to build capacity of wood processing SMEs for sustainable forest exploitation and wood production. About 600 SMEs of the three project countries apply sustainable production techniques and are certified sustainable forest products to national and international markets.
- g. Sustainable rattan: Establish a sustainable production system for rattan products in Cambodia, Laos and Viet Nam. This project is implemented by WWF in the Mekong subregion. It aims that at least 50% of rattan processing enterprises will be sustainable by 2015, making a contribution to environmental improvements, strengthened competitiveness and poverty alleviation.

4. SDG12 reporting/monitoring and evaluation

4.1 Cleaner Production and Energy Efficiency

The Strategy on Cleaner Industrial Production has been widely implemented in all 63 provinces/cities, with participation of more than 9,000 enterprises in the mining, steel manufacturing, food and beverage, chemical, construction, and other processing industries. Numerous sustainable industrial production models and sustainable product designs have been developed. However, they have been applied on a small scale, mostly due to development partners' support. During 2011-2015, Viet Nam saved 5.6% in energy, equivalent to nearly 11.3 million tons of oil equivalent (TOE). Particularly, the energy intensity of energy-intensive industries has declined: 8.1% in steel, 6.3% in cement and 7.3% in textile industries. (VNR)

Vietnam's strategy on cleaner industrial production to 2020 has an overall objective as follows: cleaner production must be observed in all industrial production establishments to better the use of natural resources, materials and fuels; minimize emission and curb pollution; and protect and improve the quality of environment, human health and secure sustainable development.

The Cleaner Production Strategy has achieved the goals set for period of 2010-2015, especially the targets on the percentage of Department of Industry and Trade with qualified staff to implement cleaner production guidelines for industrial enterprises (73%) and the percentage of enterprises becoming aware of cleaner production (55%). The achieved rates are higher than the target for these issues. However, the percentage of medium and large companies which have a department in charge of cleaner production is not available.

Program objectives set out for achievement by 2025 are (i) achieving energy savings of 5-7% of the total national energy consumption from 2019 to 2025; (ii) reducing power loss to below 6.5%; (iii) reducing the average energy consumption for industries/sub-sectors compared to 2015-2018, specifically: (a) for steel industry: from 3.00 to 10.00% depending on type of product and production technology; (b) for chemical industry: at least 7.00%; (c) for plastic manufacturing: from 18.00 to 22.46%; (d) for cement industry: at least 7.50%; (e) for textile industry: at least 5.00%; (f) for the liquor, beer and beverage industry: from 3.00 to 6.88% depending on the type of product and production scale; (g) for paper industry: from 8.00 to 15.80% depending on the type of product and production scale; and (iv) 70% of industrial parks and 50% of industrial clusters will be provided with access to, and economically and efficiently use, energy.

One of the program's main tasks is to build a Vietnamese energy data center, as well as databases and information technology applications on energy and energy efficiency. Another major task of the program is to strengthen capabilities in the economical and efficient use of energy, through training and building capacity for officials and focal agencies on economical and efficient use of energy in organizing the management and implementation of the State's regulations on economical and efficient use of energy. Furthermore, the program will implement other major tasks, including inspecting, supervising, urging and guiding the implementation and evaluation of the implementation results of legal regulations on economical and effective use of energy; boosting communication to raise public awareness about economical and efficient use of energy; and strengthening international cooperation in the field of using energy economically and effectively.

(Source: http://www.switch-asia.eu/site/assets/files/2689/vietnam_assessment_on_scp_2016-2020_26_oct_2020.pdf)

4.2 Plastics and Related Priority Issues (from CE & Plastics)

Since key cities in Viet Nam are experiencing rapid urbanization and have increasingly developed as tourist destinations, public concerns over plastics are more visible than what are shown by statistics. For example, Da Nang, a well-known beach resort and the rapidly developing third largest city in Viet Nam, is increasingly experiencing plastic pollution in the beach especially after storms or high tides. Many residents organize beach clean-up campaigns during early mornings in the weekends.

After China's ban on plastic scrap and waste imports, a substantial amount of plastic waste import shifted to Viet Nam. For example, Viet Nam imported almost 75,000 tons of scrap plastic from the U.S. in 2018, making it the sixth-largest importer of U.S. plastic throughout the year. On May 21, 2018, Saigon Newport Corporation, the largest port management company in Viet Nam, notified their partner shipping companies of the temporary suspension of the acceptance of plastic scrap for the period of June 25 to October 15, 2018. Due to the sudden increase in the volume of accepted plastic scrap, the port soon reached over capacity. The Office of the Government issued Dispatch 2227/VP-CP-KTTH, dated 21 March 2019, which states that "plastic scraps are only imported as raw materials to produce intermediary products by the end of December 31, 2024" and the government will work through the backlog of scrap plastic containers that remain stuck at the country's ports. Furthermore, the government instructed MONRE to issue environmental safety certificates to eligible containers with a view to encourage importers to use them in the manufacture of products.

On a positive note, Viet Nam has taken efforts to manage imported plastic scrap and monitor plastic production and consumption. The Viet Nam Administration of Seas and Islands emphasized its first priority was to review legal documents on risks posed by plastic waste as part of its efforts to revise the country's legal framework concerning ocean plastic waste in line with its larger ocean-based economic growth strategy. Viet Nam is working to make changes, starting with changing public behavior. In addition, MONRE's Viet Nam Environmental Administration aims to reduce 65% of non-biodegradable plastic bags used at supermarkets and shopping malls by 2020 compared to 2010. By 2026, Viet Nam seeks to fully phase out non-biodegradable plastic bags.

4.3 Sustainable Transportation

To implement the green growth strategy, the transport sector has developed an Action Plan to respond to climate change and green growth for the period 2016-2020 to proactively develop transport in a synchronized and sustainable and environment-friendly manner, thus reducing GHG emissions.

One of the important goals is “promoting the use of renewable energy, clean energy and means, equipment and technologies with high energy efficiency in transportation; By 2020, 5-20% of buses and taxis will use compressed natural gas (CNG), liquefied petroleum gas (LPG) and solar energy; Improve and expand the application of emission standards to motor vehicles. Building management capacity, inventorying greenhouse gas emissions from transportation activities”.

The Action Plan outlines six tasks and solutions: (i) developing the transport infrastructure system in the direction of improving climate resilience and reducing environmental pollution; (ii) managing transportation activities towards low emissions, economical and efficient use of energy; (iii) promoting the application of environment-friendly technologies, encourage the use of renewable and clean energy sources in transport; (iv) implementing synchronous solutions to control emissions of motorized vehicles; (v) propagating, raising awareness for organizations and individuals about climate change, and green growth in transportation; and (vi) strengthening international cooperation and diversifying resources to implement activities on climate change responses and green growth in transport.

Many transport enterprises and local authorities have implemented economic, technical and management measures such as rationalizing the management and administration of production activities, shortening distance and transport time, making the most of the capacity and properly using the functions of transport machinery and equipment, ensuring proper maintenance, and using energy-efficient devices, etc. Effort is underway to reduce fuel consumption in all transportation sectors including road, air, sea, and rail. Most transportation sectors have implemented solutions to reduce fuel consumption such as (i) piloting the development of clean energy in transportation such as biofuels (E5 gasoline, bio-diesel B5) for vehicles and since January 2018, E5 gasoline has been put into common use throughout the country; (ii) using the system of solar signal lights with 5,165 units put into use on inland waterways (accounting for 76% of the total number of signaling lights), replacing the old electric lights; and (iii) completing “a handbook on implementation of energy saving measures in transport operation and manufacturing railway industry”. Airlines have conducted research and deployment applications solutions (to shorten domestic and international flight routes, optimize flight speed, implement solutions for flight management, and manage emissions etc.). The fleet of cargo planes is also constantly being renovated to exploit more efficient use of fuel.

(Source: http://www.switch-asia.eu/site/assets/files/2689/vietnam_assessment_on_scp_2016-2020_26_oct_2020.pdf)

4.4 Sustainable Use of Primary Resources

So far, 29 provinces have applied the system of rice intensification to 395,000 ha, to create high yields and reduce GHG emissions due to enhanced technology to reduce input costs. Technologies in aquaculture and fisheries processing have been improved, while sustainable models of shrimp-rice production as well as intensive, semi-intensive, extensive, ecological, VietGAP white leg, Biofloc and alternate Giant tiger prawn shrimp farming have been rolled out. Meanwhile seaweed and shrimp farming with bioproducts and no chemicals as well as anti-biotics, ecological fish farming have been implemented in a range of provinces and standardized by competent authorities. (VNR)

4.5 Green Labelling

Viet Nam has used green labels, initiated by the Ministry of Natural Resources and Environment (MONRE) in 2009, to encourage effective production and consumption of natural resources and energy. So far, MONRE has formulated and issued criteria to grant green labeling for nine product groups, such as packaging for washing powder, printing ink, batteries, electric lamps, office equipment and construction materials. However, only four groups have been granted with green label and all relied on support from internationally supported projects. In addition, energy saving labeling for electric and electronic products has been institutionalized into compulsory requirements for producers as per the Prime Minister's Decision in 2011. In 2017, "the list of devices and equipment subject to energy labeling and application of the minimum energy efficiency, and the road map for implementation" was broadened to cover four other product groups in need of energy labels (home appliances, office and trade equipment, industrial equipment and means of transport). Viet Nam has also implemented compulsory energy labeling for cars with seven seats or less since 1 January 2015, for cars with seven-nine seats since 1 January 2018 and issued a compulsory roadmap for energy labelling for motorbikes from 1 January 2020.

This labeling is an effective tool to provide consumers with information to realize green and sustainable products and gradually change their consumption patterns towards more sustainability. However, sustainable consumption has not been paid proper attention by enterprises, people and even government ministries/agencies, while activities related to sustainable consumption remain modest and have had minimal impacts.

4.6 Green Procurement

Viet Nam is applying sustainable public procurement practices. Green public procurement has just been applied to energy saving products and is regulated in the Prime Minister's Decision in 2011. With this regulation, agencies that tap into the State budget must buy electric and electronic products with energy-saving labels. However, this decision affects consumption patterns of agencies towards sustainability, while procurement budgets make up a small proportion of total spending. No compulsory regulations have been defined for State budget-dependent agencies to apply green public procurement and no standards nor regulations on green public investment and spending have been set up. (VNR)

4.7 Awareness-raising and Community Involvement

Communication to raise public awareness of sustainable production and consumption has been widely implemented through the mass media, which in turn has enhanced awareness of sustainable development for enterprises and consumers. According to the Sustainable Development Report in 2017 by Nielsen, a global marketing research corporation, Vietnamese consumers are the most oriented towards sustainable society and development in South East Asia. This platform should be further developed with attention paid to high-tech agriculture and support of women to master high-tech agriculture models.

Many localities have carried out communication campaigns aimed at raising community awareness on the harmful effects of non-biodegradable plastic bags. Several localities have also issued documents to enhance the local management and use of plastic bags, which are difficult to decompose, such as Ho Chi Minh City, Hai Phong, Bac Giang, Bac Ninh, Thanh Hoa, Thai Nguyen, Soc Trang etc.

Ho Chi Minh City has established regulations focused on the sorting of domestic solid waste at source in order to promote recycling waste, including plastic waste. According to this regulation, waste collectors are allowed to refuse collecting waste from households and other generators when wastes are unsorted and are in contravention of regulations. Households that do not sort waste at source, violating regulations on environmental protection will be fined VND15-20 million. In addition, Ho Chi Minh City also provides financial support for environmentally friendly plastic bag production through the Ho Chi Minh City Environmental Protection Fund.

An Giang carries out the collection of non-biodegradable plastic bags through a plastic bag exchange program for other products or biodegradable plastic bags. Binh Duong piloted waste sorting at source, collecting plastic bags for recycling into plastic granules, and converting into waste oil (600 tons of bags/month) at Binh Duong Water Environment Joint Stock Company. Lam Dong province has invested in sorting and recycling plastic and plastic bags into oils with a volume of 700-1000 tons/year at two solid waste treatment plants (Da Lat and Bao Loc). Quang Nam province has successfully implemented the program “Say no to nylon bags” in Cu Lao Cham Biosphere Reserve, Tan Hiep commune, Hoi An city. Items used to replace nylon bags include ecological bags, plastic baskets, cloth bags, molds, and leaves, among others. The program began in 2009, and after five years it had achieved notable results, achieving a reduction in use of about 85%-90%. The local island environment has also benefitted from these efforts, contributing to the effective promotion of tourism activities. Based on the success of the program, on November 12, 2010, Tan Hiep was awarded the Certificate of Merit for Environmental Care by the Minister of Natural Resources and Environment.

4.8 Corporate involvement

The business community plays a key role in implementing SDG 12, especially sustainable production, and consumption. In recent years, some initiatives and activities have been launched by the business community. Especially, some companies have applied sustainable practices and integrated such practices into their regular reporting. Sustainable enterprise models have been honored at annual sustainable enterprise development forums, where such companies share their experiences. In order to enhance sustainable development in the business community, the Corporate Sustainability Index (CSI) was formulated by VCCI as a basis to evaluate and select sustainable enterprises in Viet Nam. The VNSI was introduced by the Ho Chi Minh City Stock Exchange in July 2017 to evaluate the sustainability performance of 20 companies listed on the stock market. These companies have target programs for sustainable development and report regularly on their social as well as environmental solutions. However, most enterprises in Viet Nam are not fully aware of the benefits from such sustainability reports and just a limited percentage of enterprises prepare such report.

5. Key sectors or priorities

In addition to responding to the challenges, there are key sectors and activities that will promote overall effectiveness SCP efforts and the long-term success of the SDG implementation including:

- Projects and programs mentioned in the NAP on Sustainable Production and Consumption until 2020 and Vision to 2030 can be expanded and scaled-up.
- Resources should be further mobilized from international sources, the Government budget and the private sector to enhance capacity building in science and technology on sustainable consumption and production models.
- Distribution systems should be greened, and a national supply chain should be developed.
- Other key sectors include GPP/eco-labelling, environmental tax reform, sustainable SMEs (textiles sector), sustainable waste (plastic), mainstreaming SCP and localizing the NAP.
(Source: <http://www.switch-asia.eu/countries/southeast-asia/vietnam/>)

Based on an assessment using a holistic systems approach to SCP, the following 9 prioritized actions (later sub-divided into 15 specific areas for the approved NAP on SCP) were identified for implementation over the decade 2021-2030:

- Sustainable resource management: consider waste as resources. In addition, a comprehensive approach to resource management based on a life cycle assessment (LCA) approach is essential.
- Cleaner production & resource efficiency: introduce LCA approach in the Cleaner Production (CP) Program. Also provide more hands-on training for officials of the Department of Industry and Trade (DoIT), especially staff designated to act as focal points of CP in their locality, as well as facilitating these officials to gain more experience in CP guidance. For enterprises, targeting of small and medium enterprises (SMEs) is especially important.

- Design for sustainability: consider innovative approaches such as nature-based solutions and bioregional planning to be part of green production and extended to other sectors such as the fashion industry, especially for waste reuse and recycling.
- Green public procurement: revise the existing Law on Environmental Protection 2014 and Article 47 of Decree 19/2015/ND-CP to introduce green public procurement (GPP). Supplement selection criteria of projects in the Public Investment Law, requiring investment projects to have a plan to purchase goods with energy labelling and eco-labelling and/or products that could be procured under GPP guidelines.
- Sustainable transportation: shift towards low carbon transportation and encourage cooperation among distributors of products and services to enhance efficiency. Also, the quality of public transport, especially in big cities, needs to improve to increase public transportation use.
- Eco-labelling and certification: promote eco-labelling certification for the service sector and enact a legal framework to promote GPP to incentivize business to produce green products.
- Sustainable marketing: include green marketing as part of greening the supply chain and sustainable lifestyles efforts towards SCP. Green marketing could also promote eco-tourism into cultural and heritage tourism sights.
- Sustainable lifestyles: increase consumers' knowledge on sustainable consumption through facilitating behavior change, product lifetime extension, production sustainability information and social impact communication.
- Waste management: strengthen policies to promote 3Rs, and create economic values in recycling industry, promote extended producer responsibility (EPR) program, management and control of marine waste and update CP guideline for specific industry sectors.

(Source: www.switch-asia.eu/site/assets/files/2689/vietnam_assessment_on_scp_2016-2020_26_oct_2020.pdf)

6. Challenges (readiness/mandate, financing, capacity, data etc. monitoring and evaluation, stakeholders)

SDG 12 challenges from VNR:

- Viet Nam is one of the world's most affected countries by climate change and sudden natural disasters which will affect the SDG implementation process in the country.
- As a result of intensive and extensive integration, fluctuations in the global economy will have knock on consequences for Viet Nam. Viet Nam is also facing challenges from environment, society, and other non-traditional threats.
- Financial demands to implement the SDGs will remain challenging as the national budget is limited, and ODA is contracting due to Viet Nam's status as a lower middle-income country.
- The inter-sectoral nature of the SDGs will present coordination challenges in terms of policies, ministries, and agencies.
- As many SDG indicators do not have metadata, for Viet Nam to monitor and evaluate implementation of 17 SDGs it will need new types of collection, complicated calculation methods, and data from nonconventional sources.

SDG 12 challenges from SWITCH-Asia Country Profile:

- Partnerships between the government, research and development institutions and the private sector are inadequate to encourage new SCP designs and technology.
- While sustainable development is a more well-known concept and Vietnam has a higher capacity than many other countries in the region, awareness and understanding of sustainable consumption and production among consumers, the private sector (especially SMEs) and policymakers is low.
- Compulsory regulations have not been defined for government budget-dependent agencies to apply green public procurement (GPP) while standards and regulations on green public investment and spending have not been set up.
- Although the government has applied some economic tools such as taxes to discourage unsustainable behavior, numerous goods and products that may result in environmental pollution are not subject to these taxes while tax rates remain too low to discourage sustainable exploitation of natural resources.

(Source: <http://www.switch-asia.eu/countries/southeast-asia/vietnam/>)

7. Opportunities/Potential

SDG 12 opportunities from VNR:

- Improve society's awareness of and mobilize all stakeholders' participation in sustainable development efforts
- Involve the whole political system, ministries, agencies, provinces, business community, mass organizations, communities, and development partners in implementing SDGs, and enhance institutional set-up and policy frameworks for sustainable development
- Promote coordination among stakeholders, especially governmental agencies, enterprises, sociopolitical and socio-professional organizations, and international community to implement the SDGs
- Formulate and issue a system of statistical indicators on sustainable development, enhance information and data collection for monitoring and evaluating SDG achievements of Viet Nam
- Mainstream SDGs into development policies and strategies, and integrate SDGs into the formulation of annual and five-year SEDPs, strategies, policies and development projections of ministries, sectors, provinces, and agencies
- Enhance the mobilization of domestic and foreign financial resources, especially from private sector, to implement SDGs
- Strengthen international cooperation to promote technical and financial support and knowledge transfers for SDG implementation

SDG 12 opportunities from SWITCH-Asia Country Profile:

- Increase SCP technical expertise to assist in SCP implementation and to demonstrate the benefits of SCP for businesses and specifically for SMEs.
- Development of guidelines for consumers to help them in their buying decisions as well as guidelines covering investments by the private sector and government.
- Continuing capacity building with organizations with relevant expertise to prepare Government officials and business leaders to understand the necessary actions.
- Enhancing regulations and enforcement on implementing energy audits, recycling construction materials, and promoting new technologies for processing waste.
(Source: <http://www.switch-asia.eu/countries/southeast-asia/vietnam/>)
- The need to develop and improve baseline data collection to support policy targets. The target indicators in the old version of the National Action Plan on Sustainable Consumption and Production up to 2020, with a vision to 2030 are overly ambitious with little consideration of the baseline data.
- Awareness raising and capacity building programs on SCP should be extended to provincial level officials and enterprise managers. Additionally, financial support from the Government to invest in joint R&D programs involving provincial governments and enterprises is important to facilitate eco-innovation.
- In greening the distribution system, good practice should be extended beyond the agriculture sector to other industrial sectors and involve key actors, such as wholesalers and retailers. Farmers should be given more incentives to apply for the certifications issued by the Government, through awareness raising of consumers to recognize the value of the logos on the certified products.
- There should be more studies on the export market potential of green products from Vietnam. For enterprises, there should be guidelines and platforms to share the technical standards and requirements from importing markets, especially for green products.
- On sustainable consumption and lifestyles, green public procurement should be incorporated into existing legal documents guiding public procurement. Awareness raising programs are important for consumers to recognize the availability of green products and services.
- For waste management, a market-based mechanism, such as waste collection fees from enterprises, and households, needs to be developed. There is need to develop a market for secondary material use by enterprises to increase the value of recycled and reused products.
(Source: www.switch-asia.eu/site/assets/files/2689/vietnam_assessment_on_scp_2016-2020_26_oct_2020.pdf)

APPENDIX K. Summary of policies on SCP and related themes in ASEAN

Country	Dedicated SCP Policy	Part of a broader national strategy	Other sustainability themes	Sectoral policies (Energy, waste, climate, eco-labelling, GPP, green building)*
Brunei Darussalam		<ul style="list-style-type: none"> - National Development Plan 2018-2023 		<ul style="list-style-type: none"> - Prevention of Pollution of the Sea Order 2005 - Hazardous Waste (Control of Export, Import and Transit) Order (2013) - First NDC (31/12/2020)
Cambodia		<ul style="list-style-type: none"> - Rectangular Strategy Phase IV (RS-IV) 2018 - National Strategic Development Plan (NSDP) 2019-2023 	<ul style="list-style-type: none"> - Cambodia National Policy on Green Growth 2013-2030 	<ul style="list-style-type: none"> - Cambodia's National Environment Strategy and Action Plan 2016–2023 - Energy Sector Development Plan 2005-2024 - Sub-Decree on Management of Plastic Bags (2017) - Sub-Decree No. 113 on Urban Garbage and Solid Waste Management (2015) - Climate Change Strategic Plan 2014-2023 - NDC (updated 31/12/2020) - National Policy, Strategy and Action Plan on Energy Efficiency in Cambodia 2013
Indonesia	<ul style="list-style-type: none"> - National 10 Year Framework Programmes on Sustainable Consumption and Production (2013-2023) 	<ul style="list-style-type: none"> - Long-Term National Development Planning of 2005-2025 (Law No. 17/2007) - Road Map of SDGs Indonesia 2020-2030 - Mid-Term Development Plans (2020-2024) 		<ul style="list-style-type: none"> - National Energy Policy 2014 - National Action Plan on Marine Debris (2017-2025) - Solid Waste Management National Policy and Strategy (2017-2025) - The Presidential Regulation No. 97/2017 - Minister for Marine Affairs and Fisheries Decree No.18 Year 2014 - Strategic Plan of the Ministry of Agriculture 2015–2019

Country	Dedicated SCP Policy	Part of a broader national strategy	Other sustainability themes	Sectoral policies (Energy, waste, climate, eco-labelling, GPP, green building)*
Lao PDR		<ul style="list-style-type: none"> - National Strategic Plan 2017-2021 	<ul style="list-style-type: none"> - National Green Growth Strategy 2019 	<ul style="list-style-type: none"> - Agricultural Development Strategy 2011-2020 - Renewable Energy Development Strategy Policy 2016 - Renewable Energy Development Strategy 2011-2025 - Policy on Sustainable Hydropower 2015 - National Energy Efficiency Policy 2016 - Environmental Protection Law (revised 2012) - National Strategy on Climate Change 2010 - First NDC (07/09/2016) - National Pollution Control Strategy and Action Plan (2018-2025) - Lao Industrial Development Strategy (2016-2030) - Natural Resources and Environment Strategy (2016-2025)
Malaysia	<ul style="list-style-type: none"> - National SCP Blueprint 2016-2030 	<ul style="list-style-type: none"> - Eleventh Malaysia Plan 2016-2020 (11MP) - 2030 Agenda for Sustainable Development (the 2030 Agenda) 	<ul style="list-style-type: none"> - Green Technology Master Plan (2017-2030) 	<ul style="list-style-type: none"> - National Land Public Transport Master Plan (NLPTMP) 2012 - National RE Policy and Action Plan (2011) - National Energy Efficiency Action Plan (2014) - Government Green Procurement 2014 - Malaysia's Solid Waste Management and Public Cleansing Act (Act 672) 2007 - First NDC (16/11/2016) - National Agrofood Policy 2011-2020 - National Policy for Biological Diversity 2016-2025 - National Forestry Policy 1978 (Amendment 1992) - The National Ecotourism Plan 2016-2025 - Roadmap Towards Zero Single-Use Plastics 2018-2030

Country	Dedicated SCP Policy	Part of a broader national strategy	Other sustainability themes	Sectoral policies (Energy, waste, climate, eco-labelling, GPP, green building)*
Myanmar		<ul style="list-style-type: none"> - Myanmar Sustainable Development Plan 2018-2030 - National Comprehensive Development Plan (2011-2030) 	<ul style="list-style-type: none"> - Green Economy Strategic Framework 2017 (in development stage) 	<ul style="list-style-type: none"> - National Environmental Policy, Framework and Master Plan (2030) (in development stage) - National Transport Master Plan 2014 - Comprehensive Plan for Dry Zone Greening (2001-2031) - National Electrification Master Plan 2016-2030 - National Energy Efficiency and Conservation Policy, Strategy, and Roadmap 2016 - National Renewable Energy Policy and Planning 2014 (draft) - National Waste Management Strategy and Master Plan 2018-2030 (in development stage) - National Climate Change Strategy 2018-2030 - NDC (updated 19/09/2017) - 30-Year National Forestry Master Plan (2001-2030) - National Urban Policy 2014 (draft) - Comprehensive Village Development Plan 2016-2021 (draft)
The Philippines	<ul style="list-style-type: none"> - Philippine Action Plan for Sustainable Consumption and Production 2019 (formulation phase) - Philippine SCP Policy Framework (draft) 	<ul style="list-style-type: none"> - Philippine Development Plan (2017-2022) 	<ul style="list-style-type: none"> - Green Jobs Act of 2016 (RA 10711) 	<ul style="list-style-type: none"> - Ecological Waste Management Act 2001 - Toxic Substances and Hazardous and Nuclear Waste Control Act (Republic Act 6969) - National Plan of Action on Marine Litter (final draft) - National Climate Change Action Plan (2011 – 2028) - NDC, initial communication (2015) - Energy Efficiency and Conservation Act of 2019 (RA 11285) - Energy Efficiency Roadmap for the Philippines 2017-2020

Country	Dedicated SCP Policy	Part of a broader national strategy	Other sustainability themes	Sectoral policies (Energy, waste, climate, eco-labelling, GPP, green building)*
				<ul style="list-style-type: none"> - Single-Use Plastics Regulation and Management Act (proposed in 2018) - Green Building Code of 2016 - National Ecolabelling Green Choice Philippines 2008 - Green Public Procurement Policy 2013 – 2016 - Renewable Energy Act of 2008 - Biofuel Acts of 2006 (RA9367)
Singapore		<ul style="list-style-type: none"> - A Lively and Livable Singapore: Strategies for Sustainable Growth 2008 	<ul style="list-style-type: none"> - Resource Sustainability Act 2019 - Singapore Sustainable Blueprint (2009) - Singapore Green Plan 2021 - GreenGov.SG 2021 	<ul style="list-style-type: none"> - Environmental Services Industry Transformation Map 2017 - Mandatory Energy Labelling Scheme 2008 (MELS) - Energy Conservation Act 2013 - Environmental Protection and Management Act 1999 - Hazardous Waste (Control of Export, Import and Transit) Act 1997 - Singapore Packaging Agreement 2007 - Prevention of Pollution of the Sea Act 1990 - Climate Action Plan 2015 - NDC (updated 31/03/2020) - Water Efficiency Management Plan 2015 (WEMP) - Water Efficiency Labelling Scheme 2009 (WELS) - Singapore Food Security Roadmap 2012 - Minimum Energy Performance Standards - Zero Waste Masterplan 2019 - Carbon Pricing Act 2019

Country	Dedicated SCP Policy	Part of a broader national strategy	Other sustainability themes	Sectoral policies (Energy, waste, climate, eco-labelling, GPP, green building)*
Thailand	<ul style="list-style-type: none"> - Sustainable Consumption and Production Roadmap 2017-2037 - Thailand SCP Networks 	<ul style="list-style-type: none"> - National Strategy 2018 - 2037 	<ul style="list-style-type: none"> - Bio-Circular Green Economy Action Plan 2021-2026 	<ul style="list-style-type: none"> - National Energy Policy 2008 - Thailand Integrated Energy Blueprint 2014 - Power Development Plan 2010-2030 - Alternative Energy Development Plan 2012-2021 - Roadmap on Waste and Hazardous Waste Management 2014 - National Solid Waste Management Master Plan (2016-2021) - National Roadmap for Development of Bioplastic Industry 2013-2018 - Plastic Debris Management Plan 2017-2021 - 20-Year Energy Efficiency Development Plan (2011-2030) - Action Plan “Thailand Zero Waste” (2016 – 2017) - NDC (updated 26/10/2020) - Enhancement and Conservation of National Environmental Quality Act B.E. 2535 AD 1992 - Green Building Code 2009 - Green Procurement Plan 2017-2022 - Thai Green Label
Vietnam	<ul style="list-style-type: none"> - Vietnam’s National Action Plan (NAP) on Sustainable Production and Consumption until 2020 and Vision to 2030 	<ul style="list-style-type: none"> - National Strategy for Sustainable Development in 2011- 2020 	<ul style="list-style-type: none"> - National Strategy on Green Growth in 2012-2020 and Vision to 2050 - Strategy on Cleaner Industrial Production until 2020 	<ul style="list-style-type: none"> - NDC (updated 11/09/2020) - Law on Environmental Protection Tax in 2010 - Law on Environmental Protection 2014 - National Target Program for Energy Efficiency and Conservation (2015)

*This list of sectoral policies are not in any way comprehensive per country, but serves to illustrate the variety and commonality of policies enacted in the region.

APPENDIX L. Summary of recent programs and projects on SCP and related themes in ASEAN

Country	Energy	Waste	Climate Change	Other programs/projects
Brunei Darussalam		<p>Government:</p> <ul style="list-style-type: none"> - No Plastic Bag Weekend - No Plastic Bag Everyday - Plastic Bottle Free Initiative - Reduce the Use of Styrofoam Initiative - Green Brunei (NGO) <p>La Vida (non-profit organization):</p> <ul style="list-style-type: none"> - La Vida Thrift Shop <p>BruWILD (NGO):</p> <ul style="list-style-type: none"> - Saving Our Ocean <p>*All from VNR</p>	<p>Regional ASEAN:</p> <ul style="list-style-type: none"> - ASEAN Climate Finance Strategy Project (with Philippines) - Heart of Borneo (HoB) Initiative with Indonesia and Malaysia (for sustainable management of forests and other sustainable land uses) - Bilateral power interconnection project with Malaysia (for RE and energy security) <p>*All from VNR</p>	<p>Government:</p> <ul style="list-style-type: none"> - Brunei Good Agricultural Practice - Good Animal Husbandry Practices - Good Aquaculture Practices - Control and Prevention of Overfishing - Brunei Selection Felling System - Brunei Environment Youth Envoys (Brunei EYEs) <p>BruWILD (NGO):</p> <ul style="list-style-type: none"> - Eco-Pahlawan Program - Report & Rescue Project <p>*All from VNR</p>
Cambodia	<p>SWITCH-Asia:</p> <ul style="list-style-type: none"> - Mainstreaming Energy Efficiency through Business Innovation Support (MEET-BIS Cambodia) 		<p>SWITCH-Asia:</p> <ul style="list-style-type: none"> - Waste-to-Energy in the Rice Milling Sector 	<p>GIZ:</p> <ul style="list-style-type: none"> - Proliferation of Sustainable Consumption and Production (SCP) in Asia <p>SWITCH-Asia:</p> <ul style="list-style-type: none"> - Sustainable product innovation (SPIN) in Viet Nam, Cambodia, and Laos
Indonesia	<p>Indonesia Government:</p> <ul style="list-style-type: none"> - EnMS and system optimization in energy-wasteful industries (e.g. pulp & paper, steel, textile, food, cement) <p>*All from VNR</p>	<p>Government (local):</p> <ul style="list-style-type: none"> - Municipal bans on plastic bags - Waste Bank <p>*from EU-ASEAN CE & Plastics Gap-Analysis</p> <p>NGO:</p> <ul style="list-style-type: none"> - Garbage Bank <p>*from Scoping Paper on GE and SC</p>	<p>Government:</p> <ul style="list-style-type: none"> - Reforestation and utilization of new and renewable energy in airport environments - Solar cell technology construction on shipping navigation aid instrument <p>CARE and CIS Timo (NGOs):</p> <ul style="list-style-type: none"> - Integrated Risk Reduction Villages 	<p>Government:</p> <ul style="list-style-type: none"> - Proper program (company performance rating for environmental management) <p>*from VNR</p> <p>WWF-Indonesia:</p> <ul style="list-style-type: none"> - Beli Yang Baik campaign and IKI SCP Project - Local for Local campaign - Live Greener (with Burgeens)

Country	Energy	Waste	Climate Change	Other programs/projects
			<p>EcoShape (NGO):</p> <ul style="list-style-type: none"> - Building with Nature Indonesia <p>*from VNR</p> <p>Regional ASEAN:</p> <ul style="list-style-type: none"> - Heart of Borneo (HoB) Initiative (with Brunei and Malaysia) 	
Lao PDR			<p>Government:</p> <ul style="list-style-type: none"> - Rural Electrification Program - Expansion of Large-scale Hydro-electricity Use <p>*from INDC, 2015</p> <p>SWITCH-Asia:</p> <ul style="list-style-type: none"> - ASEAN Energy Manager Accreditation Scheme (AEMAS) - Improved Cook Stoves (ICS) Program - Promotion and deployment of energy efficient air conditioners in ASEAN 	<p>Government:</p> <ul style="list-style-type: none"> - Energy Efficiency Program (ecolabelling) <p>*from SCP Baseline Research for ASEAN, 2019</p> <p>SWITCH-Asia:</p> <ul style="list-style-type: none"> - Eat Greener - Sustainable Product Innovation in Vietnam, Cambodia, and Laos (SPIN-VCL) - Sustainable Rattan Industries
Malaysia	<p>Government:</p> <ul style="list-style-type: none"> - MyCarbon system (to disclose carbon emissions of large enterprises) <p>*from VNR and SCP Blueprint</p>	<p>Government:</p> <ul style="list-style-type: none"> - No Plastic Bag Day Campaign <p>*from EU-ASEAN CE & Plastics Gap-Analysis</p>	<p>Government:</p> <ul style="list-style-type: none"> - Mangrove Planting Program - Central Forest Spine in Central Peninsular Malaysia <p>*from VNR</p> <p>Regional ASEAN:</p> <ul style="list-style-type: none"> - Heart of Borneo (HoB) Initiative (with Indonesia and Brunei) - Bilateral power interconnection project (with Brunei) 	<p>Government:</p> <ul style="list-style-type: none"> - Malaysian Good Agricultural Practices (MyGAP) program - Malaysia Organic (myOrganic) - Malaysia Sustainable Palm Oil (MSPO) - Economic Transformation Program (ecotourism) <p>*from VNR and SCP Blueprint</p> <p>SWITCH-Asia:</p> <ul style="list-style-type: none"> - Clean Batik Initiative - Environmental Declaration Scheme for Construction and Building Materials

Country	Energy	Waste	Climate Change	Other programs/projects
Myanmar	<p>Government:</p> <ul style="list-style-type: none"> - Improvement of Industrial Energy Efficiency (with UNIDO) <p>*from INDC, 2015</p> <p>SWITCH-Asia:</p> <ul style="list-style-type: none"> - SMART Myanmar I (catalyzing energy management in food and beverage industries) - ASEAN Energy Management Scheme 		<p>United Nations:</p> <ul style="list-style-type: none"> - UN-REDD Program (UN collaborative initiative on Reducing Emissions from Deforestation and forest Degradation in developing countries) <p>European Union:</p> <ul style="list-style-type: none"> - Forest Law Enforcement Governance Trade (FLEGT) program <p>SWITCH-Asia:</p> <ul style="list-style-type: none"> - SCALE (upscaling improved cook stove dissemination) 	<p>SWITCH-Asia:</p> <ul style="list-style-type: none"> - Tha Bar Wa (environmental declaration scheme for construction and building materials) - SMART Myanmar I (catalyzing sustainable water management in food and beverage industries) - SMART Myanmar II (SMEs for environmental accountability, responsibility, and transparency) - WWF's Green Economy Programme in Myanmar 2018-2021
The Philippines	<p>SWITCH-Asia:</p> <ul style="list-style-type: none"> - Green Philippines Islands of Sustainability (GPIoS) 	<p>SWITCH-Asia:</p> <ul style="list-style-type: none"> - Green Philippines Islands of Sustainability (GPIoS) 	<p>Government:</p> <ul style="list-style-type: none"> - National Integrated Climate Change Database and Information Exchange System <p>*from VNR</p> <p>Regional ASEAN:</p> <ul style="list-style-type: none"> - ASEAN Climate Finance Strategy Project (with Brunei) 	<p>Government:</p> <ul style="list-style-type: none"> - Various projects related to RA 6969 and obligations to the Basel, Rotterdam, and Stockholm Conventions <p>SWITCH-Asia:</p> <ul style="list-style-type: none"> - Small and Medium Enterprises for environmental Accountability, Responsibility, and Transparency (SMART Cebu) <p>GIZ:</p> <ul style="list-style-type: none"> - Promotion of Green Economic Development (ProGED) (also funded by SWITCH-Asia)
Singapore	<p>Government:</p> <ul style="list-style-type: none"> - Super Low Energy Buildings Program <p>*from NDC, 2018</p>	<p>Government*:</p> <ul style="list-style-type: none"> - Public Sector Taking the Lead in Environmental Sustainability (PSTLES) initiative - Recycling corners in schools - Community 3R Outreach Program (CROP) 	<p>Government:</p> <ul style="list-style-type: none"> - Jurong Lake Gardens (biodiversity conservation) - Car-Free Sunday SG <p>*from Sustainable Singapore Blueprint</p> <ul style="list-style-type: none"> - Super Low Energy Buildings Program <p>*from NDC, 2018</p>	<p>Government*:</p> <ul style="list-style-type: none"> - Mandatory Energy Labelling Scheme (MELS) - Water Efficiency Labelling Scheme (WELS) - Public Sector Taking the Lead in Environmental Sustainability (PSTLES) initiative - Water Efficient Buildings (Basic) certification program <p>*All from VNR, 2018</p>

Country	Energy	Waste	Climate Change	Other programs/projects
		<ul style="list-style-type: none"> - “Love Your Food @ Schools” Project (for food waste) <p>*All from VNR, 2018</p> <ul style="list-style-type: none"> - Say YES to Waste Less 2020 		<ul style="list-style-type: none"> - Singapore Green Labelling Scheme (SGLS) 1999 (enhanced 2017)
Thailand	Government: <ul style="list-style-type: none"> - Energy Efficiency Program (energy efficiency labelling) 	Government: <ul style="list-style-type: none"> - Reduce Thailand Plastic Marine Debris by 50% by 2027 (public-private partnership for sustainable plastic and waste management) - Recycling Program 	SWITCH-Asia: <ul style="list-style-type: none"> - “Zero Carbon Resorts 2.0” (with Switch Asia for sustainable development of tourism sector) WWF: <ul style="list-style-type: none"> - Establish Low Carbon Consumption and Production in Thailand: WWF-SCP 	SWITCH-Asia: <ul style="list-style-type: none"> - Mainstream Green Integration of Thailand: Transformation from Policy to Implementation (to support green products and services) Government: <ul style="list-style-type: none"> - Energy Efficiency Program (energy efficiency labelling) - Thai SCP Network
Vietnam	SWITCH-Asia: <ul style="list-style-type: none"> - Sustainable Pangasius (SUPA) (for cleaner production and EE) - MEET-BIS Viet Nam (EE through business innovation support) - Cleaner Production Strategy (for EE) 	Government (local): <ul style="list-style-type: none"> - Plastic Bag Exchange Program <p>*from from EU-ASEAN CE & Plastics Gap-Analysis</p>		Government: <ul style="list-style-type: none"> - Viet Nam Sustainability Index (VNSI) (evaluates sustainability performance of companies) <p>*from VNR</p> SWITCH-Asia: <ul style="list-style-type: none"> - CSR Viet Nam (sustainable production linked with global supply chains) - GetGreen Viet Nam (to create consumption behavior change) - Sustainable product innovation (SPIN) in Viet Nam, Cambodia, and Laos WWF: <ul style="list-style-type: none"> - Sustainable Rattan

Appendix M. Reported SDGs in Voluntary National Reviews lack information on SDG12

Country	Latest Available Version	Reported SDGs
Brunei Darussalam	2020	1-17
Cambodia	2019	4, 8, 10, 13, 16, 17
Indonesia	2019	4, 8, 10, 13, 15, 17
Laos	2018	1-17, 18 (local SDG)
Malaysia	2017	1, 2, 3, 5, 9, 14, 15, 17
Myanmar	-	-
Philippines	2019	4, 8, 10, 13, 16, 17
Singapore	2018	1-17
Thailand	2017	1-17
Vietnam	2018	1-17

Appendix N. Common Themes in SCP Implementation in AMS

Themes and Sectors	Brunei	Cambodia	Indonesia	Lao PDR	Malaysia	Myanmar	Philippines	Singapore	Thailand	Vietnam
SCP Policy Needs and Implementation		✓	✓		✓	✓			✓	✓
Human Resource	✓	✓	✓					✓	✓	
Waste Management and Recycling		✓	✓	✓	✓		✓	✓	✓	✓
Food waste and Food Losses			✓	✓	✓	✓	✓	✓	✓	✓
Energy Supply and Efficiency	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Consumption of Natural Resources	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Biodiversity and Wildlife		✓			✓		✓		✓	
Sustainable Land-use and Development	✓	✓	✓	✓		✓	✓	✓	✓	✓
Sustainable Building			✓		✓			✓	✓	
Sustainable Infrastructures	✓	✓		✓	✓	✓	✓		✓	
Sustainable Transportation			✓	✓	✓			✓	✓	✓
Climate Change & Resiliency		✓	✓	✓	✓	✓	✓	✓	✓	✓
Green Economy		✓	✓			✓		✓	✓	✓
Sustainable Industry and SME			✓	✓	✓	✓	✓	✓	✓	✓
Sustainable Tourism		✓	✓	✓	✓	✓	✓	✓	✓	✓
Sustainable Public Procurement and Ecolabelling			✓				✓	✓	✓	✓
Corporate Sustainability Reporting							✓	✓	✓	
Sustainable Lifestyles and Education	✓	✓	✓		✓		✓	✓	✓	✓



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