switchasia
REGIONAL POLICY ADVOCACY
Funded by the European Union

SCOPING STUDY ON SUSTAINABLE CONSUMPTION AND PRODUCTION IN CAMBODIA

A Step to the SCP ROADMAP for CAMBODIA

FINAL DRAFT

UN environment programme
50 1972-2022

Authors

Fiona Lord (Independent expert), Leang Sovichea (Independent national consultant) and Nop Sokhai (Ministry of Environment) under direct supervision from the Department of Green Economy, of the General Directorate of Policy and Strategy (Formerly known as General Secretariat for the National Council for Sustainable Development (GSSD)), Ministry of Environment.

Suggested citation

General Secretariat of the National Council for Sustainable Development, Ministry of Environment, Kingdom of Cambodia and SWITCH-Asia RPAC. (2021). *Scoping Study on Sustainable Consumption and Production in Cambodia.*

Contact Information

General Directorate of Policy and Strategy, Ministry of Environment: # Techo Building (Lot 503), Tonle Bassac, Chamkarmon, Phnom Penh, Cambodia. https://ncsd.moe.gov.kh

Dr. Mushtaq Ahmed Memon
Regional Coordinator for Resource Efficiency
United Nations Environment Programme, Regional Office for Asia and the Pacific
Project Manager, Regional Policy Advocacy Component
The EU SWITCH-Asia Programme
Email: memon@un.org

Disclaimer: This document is a Draft and is not to be considered as the final version.

Acknowledgement

The purpose of this scoping study is to support the design of Cambodia's Roadmap for SCP. The scoping study provides an overview of SCP definitions, outlines experience across Southeast Asia with SCP strategic planning, summarizes Cambodia's existing policy initiatives and programs supporting SCP, identifies opportunities and challenges with SCP implementation in Cambodia, and supports the multi-stakeholder consultation process in the design of Cambodia's Roadmap for SCP.

This scoping study was carried out and developed by the Department of Green Economy, of the General Secretariat for NCSD of the Royal Government of Cambodia, with financial support the European Union through the EU SWITCH-Asia programme and in collaboration with the United Nations Environment Programme through the Regional Policy Advocacy Component of the EU SWITCH-Asia programme.

The Scoping Study aims at providing an overview of existing initiatives to accelerate SCP practices in Cambodia. The team would like to express to the individual experts Fiona Lord and Leang Sovichea for their dedication and commitment to complete the Scoping Study. Sincere appreciations go to the experts for their technical and coordination supports including Nop Sokhai and Chan Soknaran (MoE). Special thanks are conveyed to partners and the European Union Delegation in Cambodia for their technical comments and inputs; Clemens BECKERS (EU), Moeko Saito-Jensen, PhD (UNDP), Tunnie Srisakulchairak (UNEP), Peter King (IGES), Dwayne Appleby (IGES), Chika Aoki (IGES), Rithy Uch (COMPED), Sam Phalla (COMPED) and Loraine Gatlabayan, EU SWITCH-Asia SCP Facility, Karolien Casaer (GGGI), and Mr. Ravi Jayaweera (B4P).

Finally, heartfelt thanks on endless support during the preparation process to the following, in particular:

H.E Tin Ponlok, 2nd Vice-Chair of NCSD and Secretary of State of Ministry of Environment.

General Directorate of the Policy and Strategy (GDPS), Ministry of Environment

- H.E. Vann Monyneath, General Director, GDPS, MoE
- H.E. Ngin Lina, Deputy General Director, GDPS, MoE
- Mr. Taing Mengeang, Director, Department of Green Economy
- Mr. Nop Sokhai, Deputy Director, Department of Green Economy
- Dr. Keo Vanthoeun, Deputy Director, Department of Green Economy
- Mr. Sok Chanarann, Officer, Department of Green Economy

Ministries and representatives of the SCP Technical Working Group under NCSD

- General Secretariat of the National Council for Sustainable Development
- Ministry of Interior
- Ministry of Industry, Science, Technology and Innovation
- Ministry of Environment
- Ministry of Agriculture, Forestry and Fisheries
- Ministry of Mines and Energy
- Ministry of Commerce
- Ministry of Education, Youth and Sports
- Ministry of Land Management, Urban Planning and Construction
- Ministry of Tourism
- Ministry of Economy and Finance
- Ministry of Planning
- Council for Development of Cambodia.

Table of Contents

Table of Contents

List of Figures

List of Tables

Preface

Understanding the association of economic development and environmental challenges around the globe, the Royal Government of Cambodia (RGC) strongly pledges to protect environment and natural resources in accelerating Cambodia's progress towards sustainable economic development and poverty reduction. This will be achieved through, for example, more sustainable use of natural resources, increased efficiencies in energy use, and valuation of ecosystem services. The RGC has been working hard to create an enabling policy environment and governance arrangements to support sustainable development initiatives through policies formulation and implementation.

Over the last 30 years, peace and political stability have led Cambodia to achieve many economic and social development goals. The country is now a lower middle-income country and is committed to reaching upper middle-income status by 2030 and a high-income country by 2050. Like the rest of the world, Cambodia is now facing unprecedented challenges posed by the COVID-19 pandemic. The COVID-19 outbreak caused a slowdown in economic activity across key sectors, such as tourism, manufacturing, and construction. Cambodia is aiming for a swift green and inclusive recovery from the pandemic, and expects our Gross Domestic Product (GDP) to grow by around 3.5 percent in 2021 and we hope to reach pre-Covid-19 economic growth rates again by 2024.

In this context, Cambodia maintains its commitment to sustainable consumption and production (SCP) in growing our economy, as set out in our *National Strategic Development Plan* (2019-2023) and in the Cambodian Sustainable Development Goals for 2030. The Ministry of Environment (MoE) and the National Council for Sustainable Development (NCSD) – an inter-ministerial body, established to develop and coordinate policy on sustainable development – play central leadership roles on the SCP agenda. MoE has focused on four-pillar reform which is a key milestone for the Ministry. This four-strategic pillar of MoE include: (1) Environmental Protection, (2) Biodiversity Conservation, (3) Promotion of Sustainable Lifestyles, and (4) Human Resource Development.

Under the leadership of NCSD and MoE, the RGC is committed to partnership with development partners, businesses and other stakeholders to ensure that domestic and international investment in Cambodia, as well as consumption and production patterns, contribute to Cambodia's overall socio-economic development and environmental sustainability. With this commitment, we still face challenges in achieving SCP, for example, in the design of green standards and certification systems, promotion of green technology investment, provision of financial support, and in human resources availability.

The Cambodian economy has undergone profound structural change over the recent decades. The services sector has been the largest contributor to economic growth since the late 1990s, surpassing traditional sectors such as agriculture, fisheries, and forestry. The industrial sector, with its growing contribution to GDP (from 17% in 1998 to 32% in 2018), has also played a key role in supporting economic growth, employment creation, and poverty reduction.

As indicated in Cambodia's Industrial Development Policy (2015-2025), Cambodia's industrial sector needs to access new and more premium markets through economic diversification, in order to maintain sector growth. Effective public policies and new investments in technologies and business opportunities are needed to improve both productivity and reduce social and environment impacts, ensuring that full and sustainable economic benefits can be realized. With this transformation of the industrial sector in Cambodia over the coming decades, we have the opportunity to fully integrate SCP into the sector.

Pollution is a significant inhibitor to economic growth for a multitude of reasons including the reduction of labour productivity due to negative health impacts and other societal costs. Through the implementation of environmentally sustainable practices in all stages of a product's life-cycle – from design, to production, to marketing and distribution, and consumption – we can significantly reduce our pollution levels, while improving our health and increasing productivity. We must implement sustainable business practices across all sectors of Cambodia's economy in our COVID-19 recovery, and this SCP Roadmap for Cambodia provides a clear set of steps on how to achieve this goal.

My sincere thanks to the Department of Green Economy (DGE), General Directorate of Policy and Strategy (GDPS), MoE, relevant ministries and stakeholders, and the NCSD's Technical Working Group on SCP, for initiating and participating in this study. I am pleased Cambodia is taking resource efficiency and environmental sustainability into account in developing the country's economy and in recovering from COVID-19. This scoping study will serve as a critical step for SCP roadmap development with multi-stakeholder consultations. I am optimistic our common work will contribute to the government's efforts in filling the needs of present and future generations.

Say Samal
Chair of the National Council for Sustainable Development
and Minister of Environment
Kingdom of Cambodia

Acronyms and Abbreviations

ABC	Association of Banks of Cambodia
ADB	Asian Development Bank
AFD	French Development Agency
ASEAN	Association of Southeast Asian Nations
BEC	Building Energy Code
C-SDG	Cambodian Sustainable Development Goals
CAMEEL	Cambodia Energy & Environmental Leadership
CamGAP	Cambodian Good Agricultural Practices
CBT	Community Based Tourism
CBET	Community Based Eco-Tourism
CCCA	Cambodia Climate Change Alliance
COMPED	Cambodian Education and Waste Management Organization
COVID-19	Coronavirus disease
CSA	Climate-smart agriculture
CSARO	Community Sanitation and Recycling Organization
CTCN	Climate Technology Centre & Network
DEE	Department of Environmental Education
DEWATS	Decentralised Wastewater Treatment System
DGE	Department of Green Economy
EAC	Electricity Authority of Cambodia
EESDP	Energy Efficiency Sector Development Program
EIA	Environmental Impact Assessment
ELC	Economic Land Concessions
ESCO	Energy Service Company
EU	European Union
FA	Cambodia's Forestry Administration
FAO	UN Food and Agricultural Organisation
FASMEC	Federation of Association for SMEs of Cambodia
FDI	Foreign Direct Investment
FFI	Flora and Fauna International
FLEGT	Forest Law Enforcement, Governance and Trade
GEF	Global Environment Facility
GERES	Group for the Environment, Renewable Energy and Solidarity
GHG	Greenhouse gas
GGGI	Global Green Growth Institute
GIZ	Gesellschaft für Internationale Zusammenarbeit
GMAC	Garment Manufacturing Association of Cambodia
GMO	Genetically Modified Organism
GPP	Green Public Procurement
GDP	Gross Domestic Product

GDPS	General Directorate of Policy and Strategy
GSSD	General Secretariat for Sustainable Development
GWh	Gigawatt hours
IDP	Industrial Development Policy
IFC	International Finance Corporation
IGES	Institute for Global Environmental Strategies
ISC	Institute of Standards of Cambodia
ISO	International Standards Organisation
IT	Information technology
JICA	Japanese International Cooperation Agency
KOICA	Korean International Cooperation Agency
KICT	Korean Institute of Civil Engineering and Building Technology
LMO	Living Modified Organism
MAFF	Ministry of Agriculture, Forestry and Fisheries
MoE	Ministry of Environment
MoH	Ministry of Health
MoEYS	Ministry of Education, Youth and Sport
MEF	Ministry of Economy and Finance
MISTI	Ministry of Industry, Science, Technology and Innovation
MME	Ministry of Mines and Energy
MLMUPC	Ministry of Land Management, Urban Planning and Construction
MPWT	Ministry of Public Works and Transport
MEPS	Minimum Energy Performance Standards
MFI	Micro-Finance Institute
MKCF	Mekong-RoK Cooperation Fund
MRV	Measurement, Reporting and Verification
MSME	Micro, Small and Medium Enterprises
NBP	National Biodigester Programme
NCSD	National Council for Sustainable Development
NDC	Nationally Determined Contribution
NEEP	National Energy Efficiency Policy
NGO	Non-Government Organisation
NSDP	National Strategic Development Plan
NTFP	Non-Timber Forest Products
PEFC	Programme for Endorsement of Forest Certification
POP	Persistent Organic Pollutants
PPCR	Pilot Program on Climate Resilience
PV	Photovoltaic
RAC	Rattan Association of Cambodia
REDD	Reducing Emissions from Deforestation and forest Degradation

RDF	Refused Derived Fuel
REF	Rural Electrification Fund
RGC	Royal Government of Cambodia
RISE	Regulatory Indicators for Sustainable Energy
SCFC	Cambodia's SME Co-financing Scheme
SCP	Sustainable Consumption and Production
SDGs	Sustainable Development Goals
SEA	Strategic Environmental Assessment
SEZ	Special Economic Zones
SME	Small to Medium Enterprise
SNV	SNV Netherlands Development Organisation
S&L	Standards and Labelling
SUP	Single-use plastic
TEI	Thailand Environment Institute
TOU	Time of use
TWG	Technical Working Group
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNIDO	United Nations Industrial Development Programme
USAID	United States Agency for International Development
WCS	Wildlife Conservation Society
WFTO	World Fair Trade Organization
WWF	World Wildlife Fund

Executive Summary

Sustainable Consumption and Production (SCP) is a holistic approach to minimising negative environmental impacts from consumption and production systems, while promoting quality of life for all.[1] SCP involves de-coupling economic growth from environmental degradation by reducing the material and energy intensity of current economic activities, and reducing emissions and waste from extraction, production, consumption and disposal. SCP requires changes to the entire SCP system – from investment, to product design, distribution, marketing and consumption – as well as the engagement with the values underpinning consumption behaviour and social practices.

This **Scoping Study for Cambodia's Roadmap for SCP** discusses a range of existing and new initiatives that can accelerate SCP implementation in Cambodia. Cambodia's *National Strategic Development Plan* (2019-2023) commits Cambodia to "promoting resource efficiency and sustainability by implementing the principle of SCP."[2] This scoping study explores opportunities for SCP in Cambodia's economy and society, particularly through partnerships with the public and private sectors. The scoping study recommends SCP actions that are aligned to Cambodia's *Circular Economy Strategy and Action Plan (2021),* its *National Strategic Plan on Green Growth* (2013-2030) and supports implementation of Cambodia's Sustainable Development Goals (C-SDGs), and its Nationally Determined Contribution (NDC). The scoping study has been developed under the direction of the General Secretariat for the National Council for Sustainable Development (NCSD), in consultation with the NCSD's Technical Working Group (TWG) on SCP.

The approaches recommended for SCP in Cambodia in this paper are **consistent with the SCP initiatives across Southeast Asia**. *Thailand's SCP Roadmap* (2017-2036), for example, focuses on SCP at three levels – national, local and household levels – across a range of sectors, whereas, *Vietnam's National Action Plan on SCP* (2021-2030), provides measurable targets for provinces and cities to track progress on SCP implementation between 2021 and 2025, and 2030. Cambodia's Roadmap for SCP will build on the lessons learned and knowledge exchanged on SCP across the Asia region, and globally, including through the European Union funded SWITCH-Asia Programme.

The scoping study identifies that the **industrial sector** in Cambodia provides a significant potential for SCP action, through increasing energy efficiency, renewable energy, water use efficiency and pollution control in factories. New guidelines, networks and training for industrial enterprises on SCP are needed, as well as voluntary standards for industry on resource efficiency. The design of new environmental quality and effluent standards for factories is also required, alongside more consistent monitoring and enforcement of these standards. Technology upgrading in factories should also be supported through programs for environmental technology and access to finance.

[1] United Nations Environment Programme (UNEP). 2011. Paving the way for Sustainable Consumption and Production: the Marrakech Process Progress Report.
[2] Royal Government of Cambodia (RGC), National Strategic Development Plan (NSDP), 2019-2023, Action 4.190, page 219.

In the **building construction and real estate sector**, the scoping study identified opportunities to promote green and sustainable building design, including energy efficiency and water use efficiency in buildings for SCP implementation. Green building guidelines for retrofitting and construction of buildings are currently being developed for Cambodia by NCSD and will be piloted. To further promote SCP in the construction and real estate sector, the SCP Roadmap should outline the required institutional arrangements for a Green Building Council or Institute, and the steps for integration of the green building guidelines into Cambodia's construction codes and promotion of the guidelines.

In the **tourism and the services sector**, SCP can be achieved through promotion of responsible and sustainable tourism opportunities, which protect Cambodia's natural resources while supporting community economic development. In particular, the SCP Roadmap should promote eco-tourism and the strengthening of capacity, planning and regulations for community-based eco-tourism.

The use of **green and sustainable public procurement** methods can be supported by the SCP Roadmap, which would outline the steps for how government sectors and agencies could be promoting sustainable products and services through their procurement practices. Sustainable public procurement involves the establishment of minimum environmental criteria and performance requirements for the procurement of products and services. Cambodia's ministries and institutions can play a leading role in SCP through use of green and sustainable public procurement methods.

The need for an **eco-labelling program** for consumer products, including tourism and services, in Cambodia should also be incorporated into the SCP Roadmap. A voluntary eco-labelling scheme that will enable importers, retailers and consumers to review the sustainability of products, such as appliances, could be established. National standards and guidelines for eco-labelling are needed, alongside institutional arrangements for the certification of standards, and awareness raising to promote the eco-labelling programs amongst consumers and Cambodia's trading partners.

Solid waste reduction and management plays a central role in SCP in Cambodia, with opportunities for product development, recycling, compositing and waste minimisation. The SCP Roadmap can promote alternatives to single-use plastics, Extended Producer Responsibility schemes, plastic production standards, and improvements to waste segregation and recycling. Furthermore, the Roadmap should promote improvement in organic waste management, support waste-to-energy for residual waste treatment and improvements in landfill disposal and operations.

The sustainability of **agriculture, fisheries, forestry and protected areas** in Cambodia are central to the economy and Cambodian livelihoods. Building on existing initiatives, the SCP Roadmap should identify how the food and forestry production systems can be more sustainable in production processes, including through managing chemicals, reducing deforestation and managing soils better, sustainable forest management and forest certification, and sustainable fisheries management.

The **transport and logistics sectors** are becoming increasingly important for SCP implementation, as Cambodia becomes increasingly urbanised, and trade networked. The SCP Roadmap should identify measures to promote the use of low-emission vehicles and use of biofuels, increase the use of public transit systems (buses, railways), and encourage cycling and pedestrian friendly cities.

The **sustainability of water consumption and use** in Cambodia can be promoted through the SCP Roadmap. Sustainability can be enhanced through the introduction of wastewater tariffs, restoration of green infrastructure, increased use of decentralised wastewater treatment infrastructure, improved drainage systems, improved household sanitation systems and school-based sanitation.

Sustainability in both **energy production and consumption practices** is foundational to SCP implementation in other sectors in Cambodia, including in industry, buildings, and agriculture. The SCP Roadmap should identify steps to promote sustainable energy sources and energy efficiency, including through labelling systems for products, energy efficiency audits and awareness raising.

The practice of **sustainable mining** should also be considered in the SCP Roadmap, including extraction of mineral resources, such as laterite, limestone, sand, gravel, gold and gemstones. The SCP Roadmap should support public-private partnerships that enable responsible mining practices, including jobs and education opportunities for local communities, including Indigenous peoples

New **sustainable and innovative financing models and practices** are needed to support the implementation of the SCP Roadmap. The banking and finance sector can incentivise more sustainable businesses and investments in through their lending practices, while donors and multilateral development banks also play a role in reducing the risk of sustainable investments.

As **sustainability education and awareness raising** will drive behaviour change and consumption practices, the SCP Roadmap should encourage the expansion of the eco-schools' program and promotion of sustainability leadership in businesses and workplaces through certification, awards and recognition. It should also support an increase in public awareness campaigns on sustainable lifestyles and strengthening of vocational training opportunities in sustainability businesses.

1. Introduction

The Royal Government of Cambodia (RGC) has identified the need to develop a national roadmap to support sustainable consumption and production (SCP) in Cambodia through its National Council for Sustainable Development (NCSD). Cambodia's economy is highly dependent on the environment and natural resources, particularly its agriculture and tourism sectors. The RGC therefore has a strong interest in maintaining the quality of Cambodia's environment and natural resources through sustainability measures that minimise waste and pollution and protect its natural assets. Like other countries, Cambodia also recognises that resource-intensive consumption patterns and production systems are leading to multiple global environmental crises, such as climate change. The RGC therefore recognises the need minimise the negative environmental impacts from consumption and production systems its growing economic sectors, such as construction and manufacturing.

The RGC has already committed to a *National Policy and Strategic Plan for Green Growth* (2013-2030), which seeks to integrate green growth practices and policies, including SCP, into its economic and social development agenda. Furthermore, Cambodia's commitment to the Cambodian Sustainable Development Goals (SDGs) and to the Paris Agreement on Climate Change, support and align to the need for strengthening SCP practices in Cambodia. In particular, Cambodia has committed to the twelfth SDG of 'Responsible Production and Consumption'.

Cambodia has a unique opportunity to redirect industrial development and consumption patterns towards sustainability, enhancing economic productivity, poverty reduction and environmental sustainability. In recent decades, Cambodia has made strong progress with economic growth and inclusive development. Cambodia's strong economic growth, averaging at 7.7% from 1995 to 2017 made it the sixth fastest growing economy in the world. Cambodia's poverty rates have dropped from 52% in 2004 to 12.9% in 2018, and Cambodia attained lower-middle income status in 2015. Cambodia has a vision to graduate to upper-middle-income status by 2030. While the COVID-19 pandemic has disrupted economic activity in Cambodia, particularly in distributing exports, there is an opportunity for sustainable business development to support an economic recovery.

The purpose of Cambodia's national SCP Roadmap will be to take stock of existing policies and actions that support SCP, identify potential implementation challenges with existing SCP commitments, prioritise future SCP actions and SCP mainstreaming opportunities, clarify responsibilities for SCP priority actions and identify budgets needed and resourcing opportunities for their implementation. The SCP Roadmap will align to the NCSD's *Strategic Framework 2018-2023* and include targets towards achieving this Strategic Framework.

The SCP Roadmap will aim to mainstream sustainability into each of Cambodia's economic sectors. Of particular relevance is the industrial sector, which is supported by Cambodia's *Industrial Development Policy* (IDP) (2015-2025).

The IDP aims to transform and modernize Cambodia's industrial structure from labour-intensive to skills-driven and contribute to sustainable economic growth through increased economic diversification, competitiveness and productivity. Aligned with the IDP, the GDP share of the industrial sector increased from 27.7% in 2015 to 32.8% in 2018, employing 23.9% of the labour force (RGC, 2019a). International trading has increased significantly, with volumes of freights going through the two major ports in Cambodia increasing by 30% between 2015 and 2018 (RGC, 2019a). The construction sector, tourism, agriculture and forestry also provide important opportunities for mainstreaming of SCP. In recent years there has been rising levels of resources consumption (energy, water, waste), particularly with a growing middle-class population in Cambodia. For example, there has been a surge in consumption and disposal of single-use plastics. This scoping study will review the existing trends, challenges and opportunities in each of these sectors for SCP.

The purpose of this scoping study is to support the design of the SCP Roadmap. It provides an overview of SCP definitions and relevant experience in Southeast Asia with SCP planning, and a summary of existing laws, policies and programs in Cambodia supporting SCP. This paper will help to identify knowledge gaps and support the multi-stakeholder consultation process in the design of a SCP Roadmap, including the development of clear actions, goals, and targets. Given the sustainability of consumption and production patterns in Cambodia is mainly a private sector-led activity, the private sector will play an important role in the design and implementation of Cambodia's Roadmap for SCP.

2. Definition of Sustainable Consumption and Production

Our current patterns of consumption and production are not sustainable around the world. Our 'take-make-dispose' practices are adding enormous pressures on the environment, natural resources, biodiversity and leading to increased levels of pollution and greenhouse gas (GHG) emissions. SCP introduces new systems and practices for both the public and private sectors to alter these unsustainable practices. SCP promotes the use of sustainable materials and renewable energy as production inputs, and energy and production efficiency in the generation of products and services. For sustainable consumption, SCP promotes the minimisation of single-use items such as single-use plastics, and reuse and repair of products to sustain the lifecycle of products.

"Sustainable Consumption and Production (SCP) is a holistic approach to minimising the negative environmental impacts from consumption and production systems while promoting quality of life for all", according to the United Nations Environment Programme (UNEP, 2011).

The principles of SCP, according to SWITCH-Asia SCP Policy Support guidance (2012) are:

1. Improving the quality of life without increasing environmental degradation and without compromising the resource needs of future generations
2. Decoupling economic growth from environmental degradation by:
   a. Reducing material/energy intensity of current economic activities and reducing emissions and waste from extraction, production, consumption and disposal
   b. Promoting a shift of consumption patterns toward groups of goods and services with lower energy and material intensity without compromising quality of life
3. Applying lifecycle thinking which considers the impacts from all lifecycle stages of the production and consumption process
4. Guarding against the rebound effect, whereby efficiency gains are cancelled out by resulting increases in consumption.

The following sections further outline the SCP system, decoupling economic growth, lifecycle thinking, the rebound effect, and provides examples of SCP interventions.

2.1. What is the SCP system?

The SCP system consists of several components, ranging from the 'extraction of raw materials' to 'design and production', and to 'product distribution' (including packaging, transport, wholesale and retail, trade, consumption and disposal/recycling), according to the conceptual framework of Barber (2014) **(Figure 1)**. Additionally, the SCP system also includes the role of 'investment decisions' and 'values/ needs' underpinning consumer decisions and identifies the flows of waste, emissions, and other impacts resulting from the practices and processes at each phase. The reform of the SCP system requires the communication between key actors including product producers, consumers, retailers, investors, regulators, by raising awareness, and understanding the social and environmental impacts of the unsustainable consumption and practices and policy.

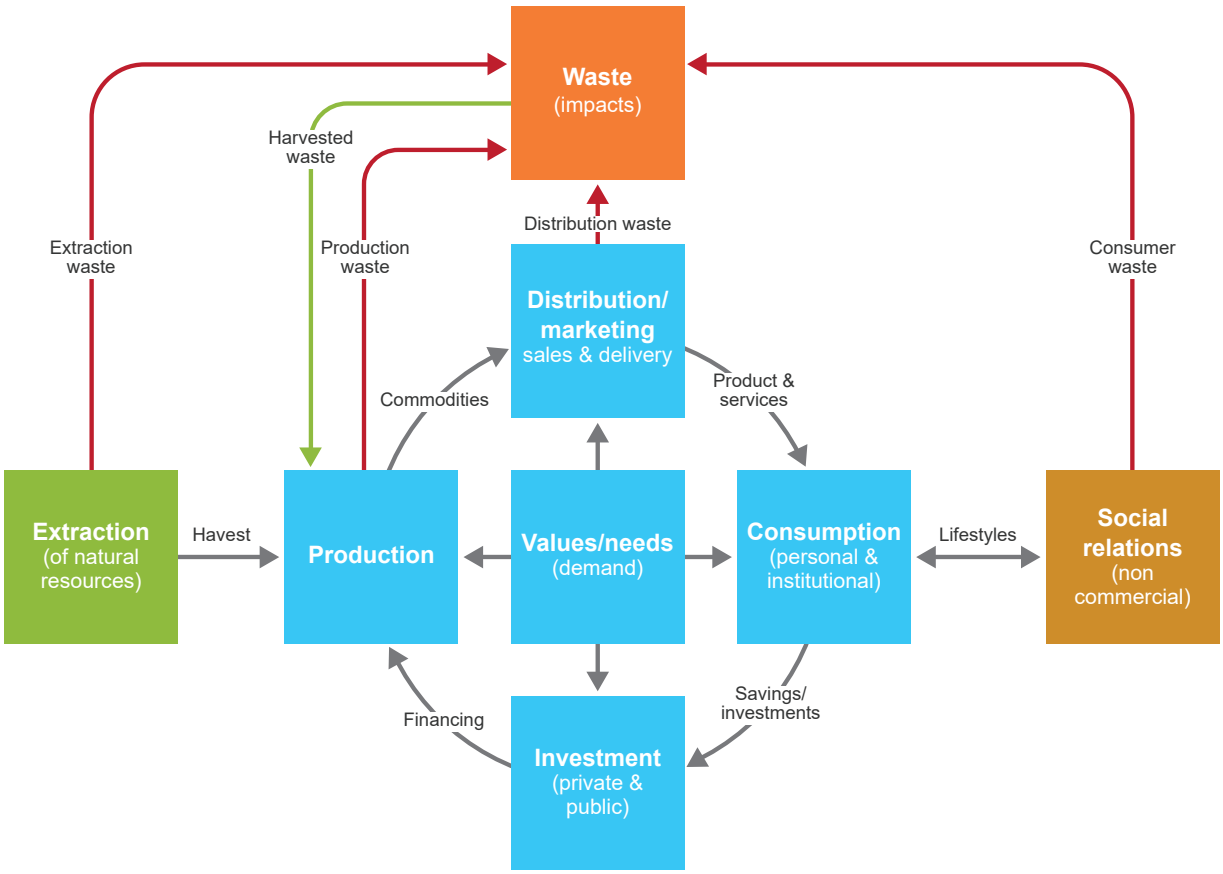


Figure 1. Consumption and Production System
Source: Barber (2014)

2.2. What is decoupling?

Economic growth currently gives rise to negative environmental externalities, such as through resource extraction, and pollution of the air, water and soil, as well as through increased volumes of waste. Decoupling of economic growth from environmental degradation is needed to sustain our quality of life and the quality of the natural environment. *"It is only through decoupling that continuing economic growth in the context of finite material, energy and ecosystem resources can be sustained,"* according to Etkins & Lemaire (2012, page 11) **(Figure 2)**.

To enable decoupling, there needs to be major changes in public policies, corporate activity, consumption behavior or a significant technological shift (UNEP, 2011). Developing countries have the opportunity to "leapfrog" resource intensive Western lifestyles and innovate with infrastructure to avoid technological lock-in (Schroeder & Anantharaman, 2017). According to UNEP (2011), to achieve decoupling of economic growth from natural resources degradation, there are three types of innovations required to achieve a major shift from business-as-usual practices:

1. Technological innovations
2. Institutional innovations (e.g. incentive policies, rents)
3. Relational innovations (e.g. changes to co-operation, social learning, social cohesion).

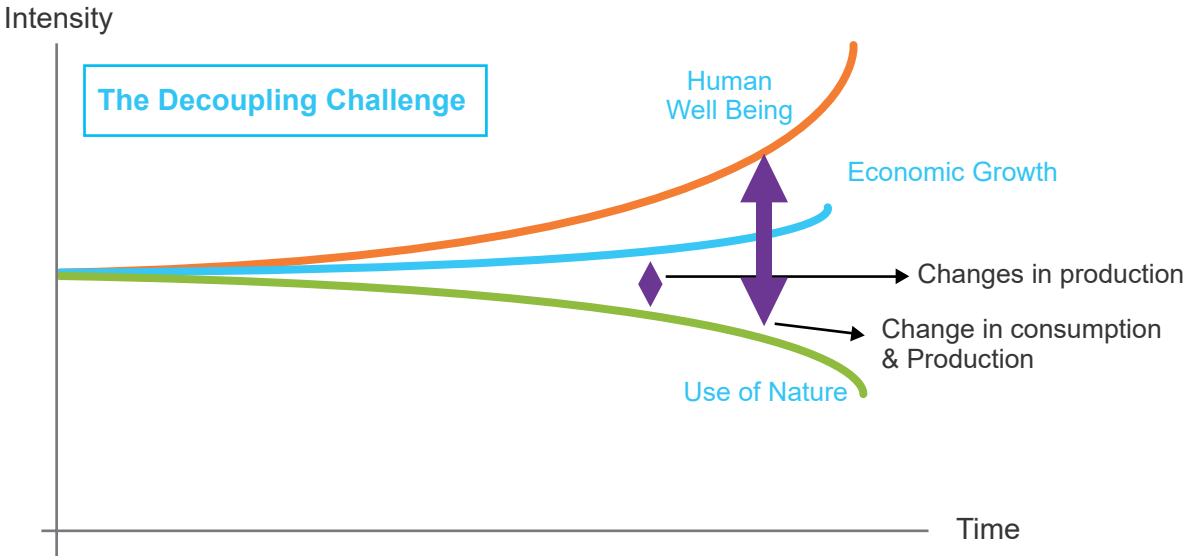


Figure 2. The decoupling challenge
Source: UNEP-Switch Asia Policy Guidance for SCP (2012)

2.3. What is lifecycle thinking?

When assessing environmental performance of a product it is essential to use a lifecycle perspective and consider all impacts associated with the product from "cradle to grave", including consumption of natural resources as well as emission of environmental pollutants. This means that we need to consider not only the environmental impacts of the product while it is being used (such as the energy consumption), but also the resource consumption and pollution associated with its end-of-life management (UNEP, 2012). **Figure 3** summarises the different stages of a product lifecycle.

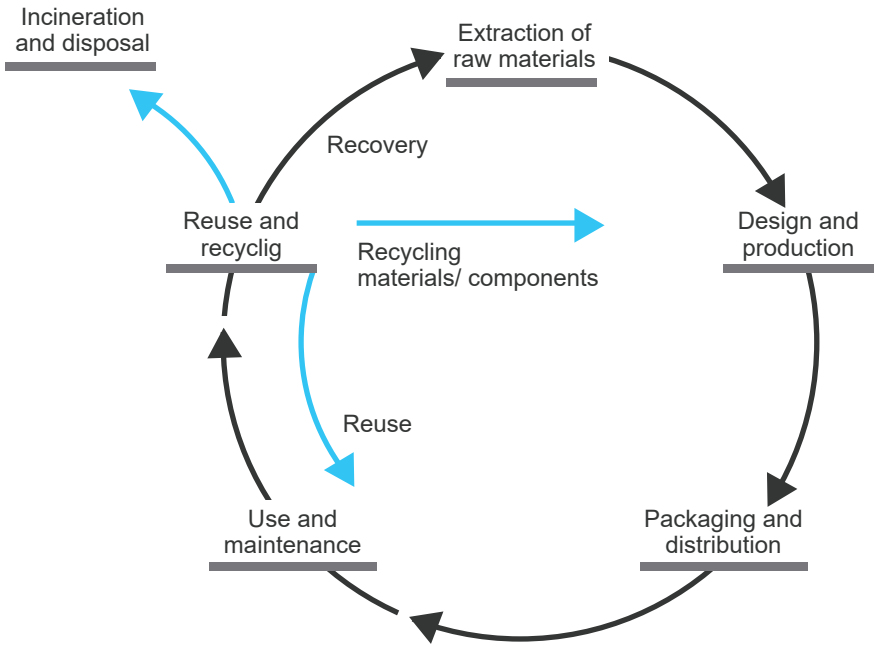


Figure 3. Lifecycle thinking covers all phases from raw materials extraction to end-of-life management
Source: UNEP (2012)

2.4. What is the rebound effect?

Some analysts believe that improvements in resource efficiency will simply inspire more production and consumption, effectively negating the efficiencies gained. This is known as the rebound effect. The rebound effect can result from efficiency improvements making products cheaper and more people therefore being able to afford to buy these products. At an economy-wide scale, it can result from technological efficiencies leading to price adjustments elsewhere in the economy, also leading to shifting consumer preferences and reorganisation of production processes (Maxwell et al., 2011). For example, having more fuel-efficient vehicles could reduce driving costs, and lead to more car usage. It is therefore important for SCP policies and regulations to consider how to avoid the rebound effect.

2.5. Opportunities for intervention in Sustainable Consumption and Production

There are many opportunities for SCP interventions in the economy and society, particularly through partnerships with the private sector. Examples of these opportunities are summarised in **Figure 4**.

Figure 4. Examples of interventions for sustainable consumption and production across the economy and society
Source: adapted from UNEP (2012)

3. Scoping Study Methodology

This scoping study has been led by the consultants, Fiona Lord (Institute for Sustainable Futures, University of Technology Sydney) and Leang Sovichea (independent national consultant), and the DGE of GSSD. The EU SWITCH-Asia Regional Policy Advocacy Component (RPAC) and the SWITCH-Asia SCP Facility have funded and reviewed the scoping study. The scoping study has been conducted through a literature review, consultation with relevant line ministries and development partners, and a peer review of the draft study by the relevant line ministries and development partners (see **Table 1**). The methodology was adapted in the context of the COVID-19 pandemic, which created limitations in the study team's access to stakeholders for consultation and in the ability to facilitate face-to-face workshops for the preparation of the study.

Table 1. Methodology for scoping study

Output	Desk review	Face to face meeting	Analysis	Study peer review	Discussion with Relevant stakeholders
Scoping study as a policy supporting document for the SCP Roadmap	Collect and review background information of previous and ongoing projects and actions that promote SCP in Cambodia (SCP status, regulations, policies, scoping study, roadmap and experiences from other countries)	Visit/ meet with relevant line ministries/ agencies to gather ideas and collect information	Identify existing challenges and opportunities, and outline strategic interventions of SCP	Facilitate peer review of the draft scoping study by ministries and development partners, and collect further inputs and ideas	Further discuss with ministries (e.g. MoE, MISTI, MAFF, UNEP) and relevant stakeholders (see stakeholder list below)

3.1. Stakeholder Engagement

The scoping study targeted engagement with the following stakeholders which have a role in supporting SCP in Cambodia. Priority stakeholders were invited to interviews, to support the analysis for the scoping study (see interview agenda and questions at Appendix One). A summary of the outcomes of the stakeholder meetings will be provided separately to this scoping study.

Ministries/Agencies: NCSD (climate change), Ministry of Industry, Science, Technology and Innovation, Ministry of Environment (waste management, natural resources management), Ministry of Agriculture, Forestry and Fisheries, Ministry of Mines and Energy, Ministry of Commerce, Ministry of Education, Youth and Sports, Ministry of Land Management, Urban Planning and Construction, Ministry of Public Works and Transport, Ministry of Tourism, Ministry of Women's Affairs, Ministry of Water Resources and Meteorology, Ministry of Labor and Vocational Training, Ministry of Interior, Ministry of Foreign Affairs and International Cooperation, Ministry of Rural Development, Ministry of Information, Ministry of Planning, Ministry of Health, Ministry of Post and Telecommunications, Ministry of Culture and Fine Arts, Supreme National Economic Council, National Committee for Sub-national Democratic Development.

Development Partners: European Union (SWITCH-Asia SCP Facility), Global Green Growth Institute (GGGI), World Bank, Asian Development Bank (ADB), Gesellschaft für Internationale Zusammenarbeit (GIZ), Japanese International Cooperation Agency (JICA), Australia, Korean International Cooperation Agency (KOICA), United Nations Development Programme (UNDP), UNEP, Cambodia Climate Change Alliance (CCCA), United Nations Industrial Development Organisation (UNIDO).

Private Sector: Federation of Associations for SMEs of Cambodia (FASMEC), Garment Manufacturing Association of Cambodia (GMAC), Cambodia Constructors Association, Cambodia Tourism Association, Cambodia Chamber of Commerce, Association of Banks in Cambodia, European Union Chamber of Commerce, American Chamber of Commerce in Cambodia, Mekong Strategic Partners.

Non-Government Organisations: Group for the Environment, Renewable Energy and Solidarity (GERES), Nexus for Development, Non-Timber Forest Products Exchange Program, Cambodia NGO Forum, Fondazione ACRA.

4. Experience in Southeast Asia with SCP

The Southeast Asia region has some strong examples SCP planning and SCP policy making. Three strong examples are highlighted below: (1) Thailand's *Sustainable Consumption and Production Roadmap (2017-2036)*; (2) Vietnam's *National Action Plan on Sustainable Consumption and Production (2021-2030)*; and (3) Philippines' *Green Public Procurement Roadmap until 2022 and Beyond*. The key strength of Thailand's Roadmap is that it addresses SCP at national, local and household levels, whereas the key strength of Vietnam's National Action Plan is that set specific targets for SCP to be monitored to enable performance to be tracked. The roadmap of the Philippines on green procurement has the strength of providing more specific guidance for the implementation of the green procurement processes across sectors and by multiple agencies.

4.1. Thailand

Under Thailand's *Sustainable Consumption and Production Roadmap (2017-2036)*, Thailand's SCP approach is underpinned by the "sufficiency economy" philosophy. A sufficiency economy is "...a method of development based on moderation, prudence, and social immunity, one that uses knowledge and virtue as guidelines in living", according to the Chaipattana Foundation.[3] Thailand's Ministry of Natural Resources and Environment is responsible for leading the implementation of the SCP roadmap and coordinating with other ministries and agencies for its implementation. Thailand is targeting SCP within six sectors: Industry; Agriculture and Food; Services and Tourism; Cities and local governments; Sustainable procurement; and Awareness raising and education.

Under Thailand's SCP roadmap, the Thai government has committed to the following strategies:

1. **Lifting Thai society to meet the sustainable production strategy**
   - 1.1 **Mobilising sustainable production at a national level** – strengthening sustainability in export sectors, integrating innovation into civil society processes of production, and promoting agricultural, material, energy and resource efficiency at the national level
   - 1.2 **Mobilising sustainable production at a local level** – strengthening sustainability in local authorities, service sectors, civil society processes, and promoting agricultural, material, energy and resource efficiency in local authorities
   - 1.3 **Mobilising sustainable production at a household or community level** – establishing good practices for production and service sectors in households or communities, strengthening SCP communication systems in households or communities, and strengthening practices of civil responsibility to manage resource and energy efficiency in daily life (home, school, transportation, office, leisure)

[3] "Philosophy of Sufficiency Economy". Chaipattana Foundation. Retrieved 3 December 2020.

2. **Lifting Thai society to meet the sustainable consumption strategy**
   - 2.1 **Green procurement in public and non-public organisations** – monitor and evaluation of green procurement processes, promote collaboration and networks amongst relevant organisations through knowledge transfer, promote eco-labelling for products or materials, mobilise product-oriented sustainability measures
   - 2.2 **Promote awareness on local SCP efforts** – knowledge sharing, innovation activities, update the education curricula
   - 2.3 **Improve human resources and educational system to respond to SCP** – improve human resources and the educational system to respond to SCP

3. **Lifting Thai society to apply supported factors for sustainability strategy**
   - 3.1 Sustainable **energy** management
   - 3.2 Sustainable **buildings** (office and resident) and construction management
   - 3.3 Sustainable **infrastructure** and **city planning**
   - 3.4 Sustainable **transportation** and **logistics**
   - 3.5 **Economic instrument** to support SCP
   - 3.6 Sustainable **human capital**-society-culture
   - 3.7 Data, knowledge, science and **innovation**.

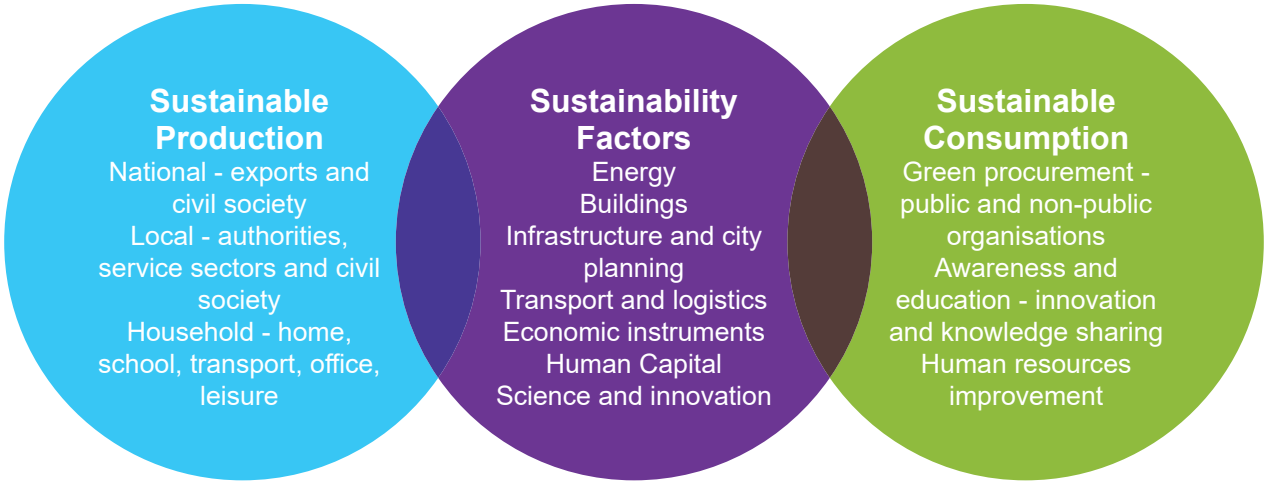


Figure 5. Summary of Thailand's Sustainable Consumption and Production Roadmap
Source: author

4.2. Vietnam

Vietnam's National Action Plan on Sustainable Consumption and Production (2021-2030) provides measurable objectives for 2021 to 2025 and 2030 (see **Table 2**), and a list of tasks to support these objectives (see **Figure 6**). Vietnam's Ministry of Industry and Trade has the prime responsibility to coordinate with the relevant ministries, sectors and localities to organise the implementation of the tasks. The Provincial level People's Committees are to monitor and report to their progress.

Table 2. Specific Objectives under Vietnam's National Action Plan on SCP

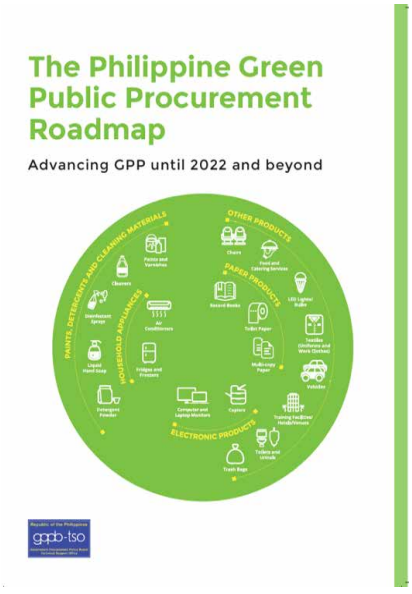
Between 2021 and 2025	By 2030
• Develop legal policy with regards to SCP • 5-8% decrease in resources materials used for production sectors (textiles, steel, plastics, chemical, cement, alcohol, beverage, paper and seafood processing) • 70% of industrial parks, clusters and trade villages organize communication on SCP • 20-30 models of SCP developed and applied • 80% of provinces and cities organize communication to raise awareness on sustainable lifestyles and consumption • 85% of supermarkets, commercial centres use and distribute eco-friendly packaging • 70% of provinces and cities develop action plans for implementing the National Plan on SCP; 50% of provinces and cities assign a relevant body to take charge of and assume responsibility for the plan implementation • Encourage mainstreaming of SCP into training curricula at all levels of training.	• Improve and implement legal policies on SCP • 7-10% decrease in resources materials used for production sectors (textiles, steel, plastics, chemical, cement, alcohol, beverage, paper and seafood processing) • 100% of industrial parks, clusters and trade villages organize communication on SCP • Disseminate, replicate models of cleaner production, and SCP • 100% of provinces and cities organize communication to raise awareness on sustainable lifestyles and consumption • 100% of supermarkets, commercial centres use and distribute eco-friendly packaging • 90% of provinces and cities develop action plans for implementing the National Plan on SCP; 70% of provinces and cities assign a relevant body to take charge of and assume responsibility for the plan implementation

a. Design legal policies for SCP	b. Sustainably manage resources, develop renewable materials and fuel	c. Develop sustainable, ecological design, reuse, recycling	d. Promote cleaner production, and life-cycle thinking	e. Develop system of sustainable distribution (import/export)
f. Promote eco-labelling and certification	g. Promote sustainable markets and provide consumer information	h. Promote sustainable procurement	i. Build capacity, education and implement sustainable lifestyles	j. Promote a circular economy for waste
k. Promote communication on SCP	l. Develop database system on SCP	m. Develop Science & Technology for SCP	n. Promote access to and support of green finance	o. Promote international cooperation on SCP

Figure 6. Summary of tasks under Vietnam's National Action Plan on SCP (2021-2030) (pages 4-10)

4.3. The Philippines

Under the Philippines' *Green Public Procurement Roadmap until 2022 and Beyond*, the Philippines Government aims to integrate green procurement practices into its public procurement system. The Philippines government believes it should take the lead in practicing green procurement and a market will be created for green products and services encouraging broader uptake. The roadmap outlines a process for green purchasing of common use supplies and equipment, centrally purchased through the Department of Budget and Management Procurement Service, and non-common use supplies and equipment directly purchased from government agencies. The implementation of the roadmap is led by the Philippines' Government Procurement Policy Board, in collaboration with other ministries, including the Department of Trade and Industry and the Department of Environment and Natural Resources.



Under this roadmap for green public procurement, Philippines will:

1. Establish green criteria and technical specifications for products (e.g. energy consumption and energy sources, carbon emissions, wastes to landfills and recycling options, packaging, water use, hazardous substances, local environmental pollution of air and water)
2. Trial the green criteria with initial set of products for green public procurement (e.g. paper, record books, chairs, trash bags, detergent powder, toilet paper, cleaners, disinfectant sprays, liquid hand soap, and LED lights/bulbs)
3. Verify the green procurement process through bidding and proof of compliance
4. Gradually advance expand the green procurement process to other products
5. Champion the implementation of the green procurement process for products
6. Integrate the green criteria and technical specifications into Philippines public procurement guidelines (Implementing Rules and Regulations, Generic Procurement Manual etc.)
7. Provide training for the government agencies on green procurement standards
8. Ensure support of the government leadership from each of the Ministries through advocacy
9. Undertake outreach to the suppliers, particularly SMEs, to ensure green supplies are available and encouraging business innovation and technology upgrading
10. Monitoring and evaluating the impact of the green procurement processes.

5. Current status of SCP in Cambodia

5.1.Cambodia's vision, goals and objectives for SCP

The RGC has set the following vision, goals and objectives for SCP in Cambodia for 2035, aligned to the Strategic Framework of NCSD (2018-2023).

Vision

Our vision is to drive sustainability in development in Cambodia that secures economic prosperity while safeguarding environmental quality and natural resource integrity. By 2035, our vision is for the development of all sectors of Cambodia's society and economy to follow pathways leading to a sustainable and prosperous future for all citizens, a healthy environment and thriving ecosystems.

Mission

Our mission is to provide guidance and direction for the public sector, private sector, academia, civil society, and development partners to consider economic, social, and environmental development with the new way of living required to realize sustainable consumption and production in Cambodia.

Goals

1. To promote sustainability in consumption and production of goods and services, thereby protecting the environment and social well-being while increasing business competitiveness and promoting innovation.
2. To identify and implement policies and programs, including incentives and regulations, which effectively and efficiently enable business and consumer practices to become more sustainable.
3. To strengthen research and development into business practices, government services and community consumption behaviours to enhance SCP across the economy.
4. To promote SCP leadership in the government sector through national and sub-national authorities implementing sustainable consumption and production practices.
5. To raise awareness and support amongst the Cambodian community for SCP, across all levels of society, including younger and older populations, low income and high-income groups, women and girls, and amongst the diverse range of communities within the population.
6. To demonstrate leadership on SCP in regional and global forums, including within the Association of Southeast Asian Nations (ASEAN) and the United Nations (UN).

5.2. Cambodia's overall approach to SCP (conventions, laws and strategies)

These goals and objectives for SCP align with *Cambodia's overall national development planning approach as summarised in **Figure 7** below. Under Cambodia's Rectangular Strategy for Growth, Employment, Equity and Efficiency, Phase IV*, Cambodia is aiming to gain high benefits from Association of Southeast Asian Nations (ASEAN) economic integration and move from a Lower-Middle -Income Country to and Upper-Middle-Income Country by 2030 and contribute to achieving the *Cambodian Sustainable Development Goals* (2016-2030). Under Cambodia's *National Strategic Development Plan* (NSDP) (2019-2023), environmental sustainability is highlighted as an important element of economic development, as follows "the management of the environment and natural resources, including climate change, is an important issue in terms of sustainability and stability of Cambodia's economic growth and development" (page 21). The NSDP (2019-2023) highlights the following challenges for environmental sustainability and economic growth:

- strengthening the capacity for cross-sector coordination and cooperation on issues such as land, forests, and air quality in urban and rural areas
- the need to focus on reforestation to restore forest cover
- managing the effects of climate change, urbanization and industrialization growth which will put an additional burden on Cambodia's natural resources and ecosystems.

Under the NSDP (2019-2023), the RGC has established the priority strategy to "Ensure the environmental sustainability and pre-emptive response to climate change" (Section 6.4). The NSDP (2019-2023) commits to SCP through the following action: "Promoting resource efficiency and sustainability by implementing the principle of sustainable consumption and production" (Action 4.190, page 219).

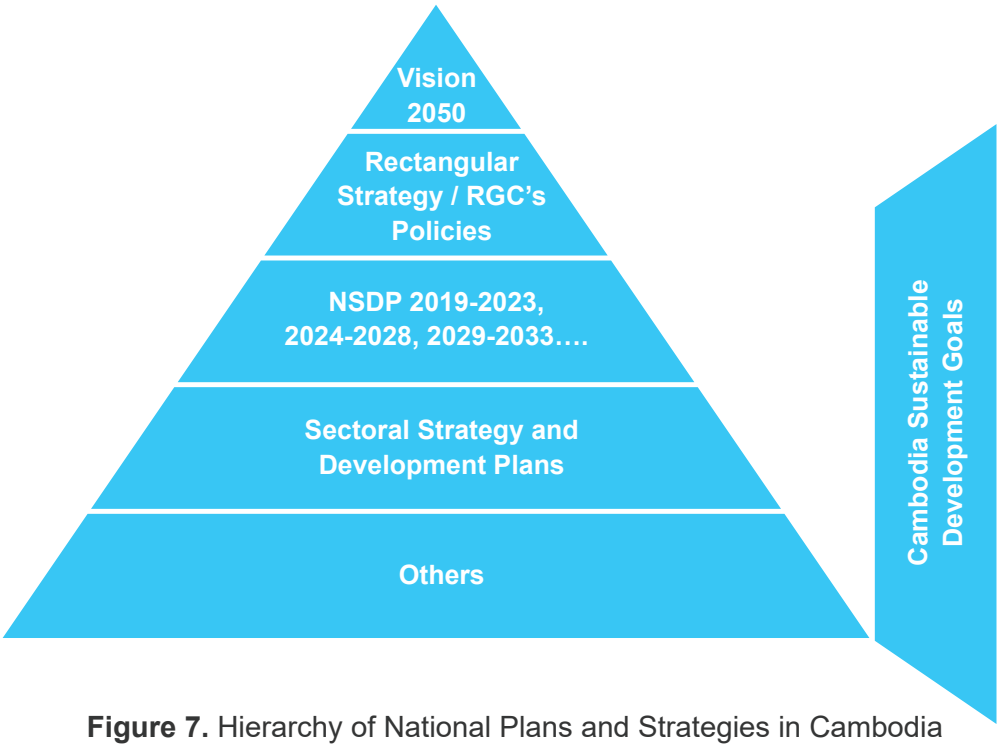


Figure 7. Hierarchy of National Plans and Strategies in Cambodia

Cambodia has adopted a number of conventions, regulations, policies and accelerating strategies that support SCP in Cambodia, responding to the United Nation's *10-Year Framework of Programmes (10-YFP) on Sustainable Consumption and Production*, including:

- Stockholm Convention related to the reduction of Persistent Organic Pollutants (POP)
- Minamata Convention on Mercury for Mercury usage reduction
- Sub-Decree No. 113 on Municipal Waste and Solid Waste Management
- Sub-Decree No. 238 on Environmental and Social Fund
- Sub-Decree No. 16 on the Management of Electrical and Electronic Waste
- Sub-Decree No. 168 on the Management of Plastic Bags
- Sub-Decree No. 235 on the Management of Sewage System and Wastewater Treatment.[4]

SCP actions are integrated into the draft *Environment and Natural Resources Code*, drafted under the leadership of the NCSD and MoE. The draft *Environment and Natural Resources Code* aims to promote the adoption of SCP practices, including sustainable procurement, and intends for SCP to be integrated in different sectors including industry, tourism, construction and agriculture.[5] The draft *Environment and Natural Resources Code* focuses on the following measures to support SCP:

Sustainable Consumption

- Programs to improve environmental performance of consumption patterns, including through the increased supply and demand for more environmentally friendly products, services and technologies.

[4] RGC, Voluntary National Review, Cambodian SDGs, June 2019, page 75.
[5] RGC, Voluntary National Review, Cambodian SDGs, June 2019, page 75.

- Policies to engage the private sector, civil society organisations, the relevant ministries or institutions, and citizens and promote more resource-efficient and less environmentally damaging consumption, including but not limited to areas of water and energy consumption, hazardous waste generation, waste management, tourism and infrastructure development.

Sustainable Production

- Programs to improve environmental performance of products and production practices.
- Policies to engage the private sector, civil society organisations, the relevant ministries or institutions, and citizens and promote more resource-efficient and less environmentally damaging production.[6]

Since SCP reflects such a significant shift away from the current 'take-make-dispose' culture, the RGC recognises that systemic change is necessary.[7] This requires shifting from the 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.[8] Supporting this transformation, Cambodia's *Circular Economy Strategy and Action Plan* (2021) is complementary to the proposed SCP Roadmap (see **Box 1**).

Box 1. Circular Economy Strategy and Action Plan's - Vision, Mission and Goals

VISION: Cambodia develops towards a circular economy which strives to achieve a prosperous economy, a thriving and inclusive society, and a healthy environment.

MISSION: To create an enabling environment for the public, private sector, academia, civil society, and development partners to drive the economic, social, and environmental transformations required to realise a circular economy.

The Mission will be achieved by the following GOALS:

1. Increase sustainable production and energy use
2. Increase sustainable consumption
3. Reduce waste generation at source
4. Improve effectiveness of waste collection, management, segregation and transport
5. Promote product reuse and repair
6. Increase recycling, composting and energy recovery
7. Ensure environmental controls at all waste management sites
8. Promote widespread environmental education and awareness raising

[6] RGC, Draft Natural Resources and Environmental Code, version 9.1, 25th July 2017. Book 3, Title 3, pages 198-199.
[7] RGC, *Cambodia's Voluntary National Review 2019 on the Implementation of the 2030 Agenda for Sustainable Development,* page 75., and Cambodia's Circular Economy Strategy and Action Plan (2021)
[8] Ibid.

Appendix Two provides the full list of relevant policies, laws, strategies and action plans, and further analysis of the relevant documents by sector is provided in section six of this scoping study.

5.3. Cambodia's Sustainable Development Goals and SCP

Cambodia has established a fully localized framework for the SDGs, known as the Cambodian SDGs (C-SDGs). The C-SDGs comprise 18 goals, 88 nationally relevant targets and 148 globally and locally defined indicators. Cambodia's first Voluntary National Review of C-SDG implementation was submitted in 2019 to the United Nations (RGC, 2019). SDG-12 is the most relevant to the SCP roadmap and includes 11 global targets that have been adapted in the Cambodian context **(Box 2)**.

Box 2. Global SDG12 targets - Responsible production and consumption

12.1 Implement the **10-year framework of programmes on sustainable consumption and production**, all countries taking action, with developed countries taking the lead, taking into account the development and capabilities of developing countries

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

12.3 By 2030, **halve per capita global food waste** at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses

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

12.5 By 2030, substantially **reduce waste generation** through prevention, reduction, recycling and reuse

12.6 Encourage **companies**, especially large and transnational companies, to **adopt sustainable practices** and to integrate sustainability information into their reporting cycle

12.7 Promote **public procurement practices** that are sustainable, in accordance with national policies and priorities

12.8 By 2030, ensure that people everywhere have the relevant **information and awareness** for sustainable development and lifestyles in harmony with nature

12.A Support developing countries to strengthen their **scientific and technological capacity** to move towards more sustainable patterns of consumption and production

12.B Develop and implement tools to monitor sustainable development impacts for **sustainable tourism** that creates jobs and promotes local culture and products

12.C **Rationalize inefficient fossil-fuel subsidies** that encourage wasteful consumption by removing market distortions, in accordance with national circumstances, including by restructuring taxation and phasing out those harmful subsidies, where they exist, to reflect their environmental impacts, taking fully into account the specific needs and conditions of developing countries and minimizing the possible adverse impacts on their development in a manner that protects the poor and the affected communities.

In Cambodia's SDGs, local targets have been set for SDG-12, Responsible Production and Consumption (C-SDG-12) **(Figure 8)**. Cambodia's Voluntary National Review of the C-SDGs identified that Cambodia is tracking ahead of its target for reducing waste generation (target 12.5), however, is falling behind on its target regarding the reduction of Persistent Organic Pollutants (POPs) (target. 12.4.1). Cambodia is on track with implementing its target for reducing the release of mercury (target 12.4.2), but also falling behind in its target for the effective management of hazardous waste and biological and radioactive waste (12.4.3) (see **Figure 8**).

	Tagets & 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	Ahead

Figure 8. Cambodia's Progress of CSDG-12
Source: Voluntary National Review of C-SDGs (June 2019)

Additionally, the SCP roadmap will support the implementation of the following Cambodian SDGs:

- CSDG 2 – End hunger and achieve food security and improved nutrition and promote sustainable agriculture
- CSDG 6 – Ensure availability and sustainable management of water and sanitation for all
- CSDG 7 – Ensure access to affordable, reliable, sustainable and modern energy for all
- CSDG 8 – Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
- CSDG 9 – Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
- CSDG 11 – Make cities, and human settlements inclusive, safe, resilient and sustainable
- CSDG 13 – Take urgent action to combat climate change
- CSDG 14 – Life below water
- CSDG 15 – Life on Land
- CSDG 17 – Strengthen the means of implementation and revitalize the global partnership for sustainable development.

5.4. Institutional arrangements for SCP

NCSD was established in 2015 as an inter-ministerial platform under the direction of the Minister for Environment to coordinate sustainable development policies and programs across sectors and levels of government **(Figure 9)**. For NCSD, the development of a national roadmap for SCP is a key policy priority, and NCSD is the institution responsible for coordinating with other relevant ministries or institutions to develop policy documents and laws related to SCP.[9] The NCSD established the SCP Technical Working Group (TWG) as the primary inter-ministerial platform for reviewing policies and commenting on SCP, including the drafting of the SCP roadmap. There are 24 representatives from 13 line-ministries and agencies joining SCP TWG led by NCSD.

[9] Draft Environment and Natural Resources Code, version 9.1, 25th July 2017. Book 3, Title 3, Articles 198-199.

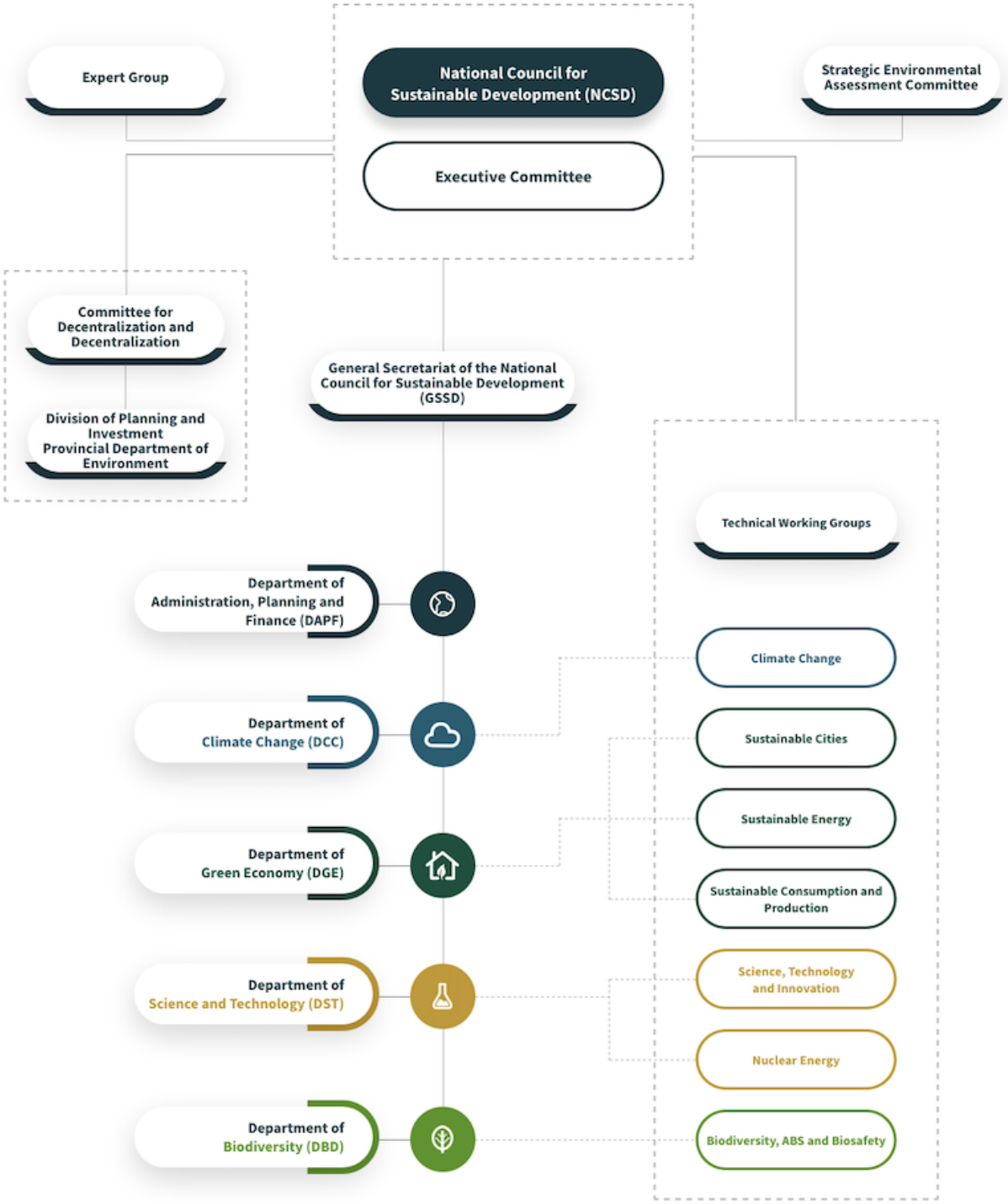


Figure 9. Cambodia's National Council for Sustainable Development organisational structure
Source: NCSD website

5.5. Relevant sectors and interventions for SCP in Cambodia

The following sectors provide opportunities for SCP to be mainstreamed in Cambodia's development:

1. Industry – promoting opportunities for the use of sustainable materials, energy efficiency, renewable energy, water use efficiency and environment pollution control in manufacturing
2. Construction and real estate – energy efficiency, green building design, water use efficiency
3. Tourism and the hospitality services sector – provide responsible and sustainable tourism opportunities, considering the promotion and protection of Cambodia's environment and natural resources
4. Sustainable public procurement – all government sectors and agencies could be promoting sustainable products and services through their procurement practices
5. Eco-labelling for consumer products – providing a voluntary scheme that identifies the life cycle so that importers, retailers and consumers can review the sustainability of the product
6. Solid waste management sector – opportunities for reuse, repair, recycling, compositing, waste to energy and waste reduction
7. Agricultural sector, fisheries and forestry – food systems can be more responsible in production processes, including through managing chemicals, reducing deforestation and managing soils better, sustainable forest management and certification of timber, woodfuel and NTFP products, sustainable fisheries management, and sustainable management of waste generated by agriculture and fisheries
8. Sustainable transport sector – promoting sustainable mobility while reducing vehicle emissions, through energy efficient vehicles and electric vehicles, and long-term improvements toward transit-oriented development (buses, rail, cycling, walking)
9. Water consumption and use – water use efficiency technology, wastewater treatment facility, water use reduction and renewable water
10. Energy production and consumption – promoting generation of energy from sustainable renewable sources and energy efficient consumption practices in households and businesses
11. Mining – sustainable management of the extraction of mineral resources, including laterite, limestone, sand, gravel, gold and gemstones
12. Financing – the Cambodian banking and financing sector can incentivise more sustainable businesses
13. Education – promotion of sustainability in schools and workplaces, promoting sustainable and responsible consumption and sustainable lifestyles.

The following section of this scoping study provides an overview of existing policy commitments, laws, strategies and programs in Cambodia related to these relevant sectors and interventions. It also provides a summary of the challenges and opportunities in each of these areas. Following this detailed analysis of each sector, the scoping study provides a synthesis of the overall gaps and opportunities and makes recommendations regarding the strategic focus areas of the SCP roadmap.

6. Analysis of legal and policy settings, opportunities and challenges for SCP in Cambodia

6.1 Sustainable industries – opportunities for the use of sustainable materials, energy efficiency, renewable energy, water use efficiency and environmental pollution control in manufacturing

Relevant policies, strategies & laws supporting sustainable industries

Cambodia has established laws for the management of factories and the control of factories' pollution supporting sustainable production. *The Law on Administration of Factory and Handicraft* (2007) regulates the establishment and operation of factories. This law stipulates:

- factory floors should be free of smoke, dust and other pollutants
- all industrial waste should be discharged in accordance with national standards and regulations 'of competent institutions'
- discharging of toxic industrial wastes or hazardous substances without prior treatment is prohibited
- management of industrial waste is the responsibility of the factory owner.

Further environmental regulations for factories are provided under the Ministry of Environment (MoE). The technical and environmental standards for factories are provided under *Instruction/ Sechkdey Nainoam No. 87 SCN on Factory Hazardous Waste Management*, including standards for the following: desludging and sludge storage; prohibition of disposal of factory sludge with household waste; prohibition of discharging of sludge to waterbodies; the need for permission to transport sludge. Water effluent standards are established under the *Sub-decree No. 27 on Water Pollution Control* (1999), which provides the thresholds (standards) for treated wastewater to be released into the public waterways and environment, in line with the *Law on the Environmental Protection and Natural Resources Management* (1996), including requirements to treat waste products such that emissions standards are met. Air and noise pollution standards are provided in *Sub-decree No. 42 on Air Pollution and Noise Disturbance Control*. The *Declaration/ Prakas No. 83 (2001)* gives license to Sa Rom Trading Co Ltd to construct an industrial solid waste dump and comply with Cambodia's environmental protection laws, including sub-decree No. 72 on Environmental Impact Assessment (EIA) process.

Cambodia is aiming to boost its industrial capacity under its Industrial Development Policy (IDP) (2015 - 2025). The IDP aims to transform and modernize Cambodia's industrial structure from a labour-intensive industry to a skill-driven industry by 2025, supporting a technology-driven and knowledge-based modern industry. To support sustainable production in the industrial sector, the IDP aims to set clear standards and guiding principles on environmental protection and production safety for investment projects located in SEZs and other industrial zones (Appendix D, page 5).

It also aims to continue to strengthen the institutional framework and capacity of the Institute of Standards of Cambodia, and improve the standards assurance including for quality and environment (Appendix D, page 12). Regarding technology and innovation, the IDP aims to promote the transfer of new technology in manufacturing and test the feasibility of technology parks linked to industrial parks and SEZs (Appendix D, page 17). All of these measures will support the sustainability of industries in Cambodia.

Cambodia's national green growth policies promote green and resource efficient production in industries. Under the *National Strategic Plan on Green Growth* (2013-2030), Cambodia has committed to green investment and green jobs creation, including through green industry that encourages use of renewable energy, energy saving and efficiency, and effective use of raw resources, including production of industrial parks with high quality (page 5). Specific commitments include:

- mainstreaming a sustainable consumption and production framework into the investment projects concerning the use of natural resources (page 27)
- strengthening practices and awareness raising of clean products and efficient practices, according to a legal standard (page 42)
- establishing green industry and integration into national strategic development (page 42)
- developing industries, especially SMEs for sustainable economic development (page 45).

Cambodia's updated *Nationally Determined Contribution* to the United Nations Framework Convention on Climate Change (UNFCCC) released in 2020 includes measures to promote sustainable industries for climate change mitigation. The mitigation actions identified for industry include:

- Promote sustainable energy practices in manufacturing (garments, brick, food and beverage)
- Improvement of process performance of energy efficiency by establishment of energy management in buildings/industries
- Introduction of efficient electrical motors and boilers
- Centralized recycling facility for industrial waste from the garment sector
- Emission management from factories (air quality monitoring and permits for factories).

Cambodia's plans for sustainable urban development also commit to the sustainability of industries as a key economic activity within cities. For example, the *Phnom Penh Sustainable City Plan* (2018-2030), includes the following objectives for the environmental sustainability of the manufacturing sector:

- develop industrial zoning provided with supportive green infrastructure
- reduce water pollution from the manufacturing sector
- increase energy efficiency in manufacturing industry
- carry out energy efficiency audits and establish energy efficiency management plans in large manufacturing plants
- carry out water us audits and establish water use management plans in large manufacturing plants.

Cambodia's *Climate Change Action Plan for the Energy Sector* (2021-2023) includes actions to promote energy efficiency in the industrial sector. In particular, it includes an action to "conduct a study on a sustainable business model to introduce efficient and clean thermal energy for all sectors" (see action 10). Under this action plan, Ministry of Mines and Energy (MME) aims to pilot the use of energy efficient boilers and develop minimum energy performance standards for boilers. Another action of is "establish an energy management program for large buildings and factories and voluntary scheme for SMEs for *National Energy Efficiency Policy* implementation". Under this action, MME aims to develop an energy audits assessment tool for building or factory owners/managers in carrying out an energy audit, as well as building energy benchmarking tools. These tools will support building managers undertake retrofitting projects according to the extent of energy savings identified in audits.

Cambodia's draft *Environment and Natural Resources Code* supports environmental reforms. This Code will support the sustainability of industries, through the following provisions:

- General Obligations for Pollution Control – the draft provisions prohibit pollution of the aid, water or land by a natural person or legal entity (Article 685)
- Environmental Quality Standards and Effluent Standards (Articles 696-701)[10]
- Management and control mechanism for hazardous substances and liabilities (Articles 704-707)
- Prohibition of persistent organic pollutants (Article 706)
- Promotion of Sustainable Consumption and Production (Articles 198-222).

New policies to promote a circular economy and energy efficiency also support sustainable industries in Cambodia. For example, the *Circular Economy Strategy and Action Plan* (2021) commits to:

- promote use of sustainable energy and materials and energy efficiency, including piloting sustainable energy and energy efficiency benchmarking for the garment sector (PA1.1)
- develop eco-industrial parks (PA1.6).

Furthermore, the draft National Energy Efficiency Policy (2021-2030) drafted by MME also includes priority measures and a roadmap to strengthen energy efficiency in the industrial sector.

Relevant programs and partnerships supporting sustainable industries

The Ministry of Industry, Science, Technology and Innovation (MISTI) is working with companies to adopt sustainable practices through a range of capacity building measures, including training, workshops, technical demonstration projects, and pilot projects. MITSI is supporting the principles of SCP through projects and guidelines for SMEs that promote resource efficient, cleaner production, improvements to the production supply chains, low-carbon development, waste management, improved layout in factories, environmental accounting, and corporate social responsibility. MITSI has also been raising awareness of SCP amongst companies in Cambodia through green industry awards and competitions, and through promoting scientific and technology capacity development towards SCP.

[10] note standards are to be developed and standards can be established for sustainable production and consumption.

Cambodia has several projects providing capacity building and technology transfer support to the industrial sector to enhance sustainability, with multilateral organisations, non-government organisations (NGOs) and the private sector. The current Country Partnership between Cambodia and the United Nations Industrial Development Organisation (UNIDO) Program, include a focus on industrial diversification, innovation and the development of special economic zones (SEZs), with projects supporting sustainability including:

1. Design of Masterplan for the Multi-purpose SEZ of Sihanoukville province
2. Global Cleantech Innovation programme: accelerating cleantech innovation and entrepreneurship in start-ups and SMEs
3. Technology needs assessment and action plans to support climate-friendly technology implementation for SEZs in Sihanoukville province
4. Supporting industrial policy decisions and monitoring of industries' contribution to SDG achievement through the enhancement of industrial statistics in Cambodia.

Under the SWITCH-Asia programme, the 'Switch Garment' project led by GGGI in 2020 to 2024 will support sustainable industries. The project aims to:

- promote the adoption of sustainable energy practices in garment manufacturing in Cambodia
- support to regulatory and enforcement measures,
- stimulate demand for sustainable energy technologies/services and increasing the supply of technologies/services, and
- provide financial solutions for cleaner production.

Another pilot project is GGGI's 'Refused Derived Fuel' project, under which GGGI is undertaking feasibility analysis on refused derived fuel (RDF) and the process in which combustible waste is used as a fuel instead of going to landfill; the heat from this incineration can be used to make cement or electricity.

A private sector-led project that is supporting sustainable industries is Chip Mong's recently launched eco-cycle facility, which has a co-processing technology for industrial waste. In this facility, waste products such as rice husks are burnt at high temperatures to provide fuel for cement manufacturing.

Challenges to achieving sustainable production in Cambodia's industrial sector

Cambodia's industries face several sustainability challenges including their limited energy efficiency, insufficient pollution control, and achieving water use efficiency. With the fast growth in the economy, the electricity demand and consumption of Cambodia has seen a dramatic increase in the last decade. The total electricity consumption by end-use sectors has increased by around five folds in ten years, from 2,514.80 GWh in 2010 to 11,298.09 GWh in 2020 with an average year on year growth rate of around 18%. In terms of per capita annual electricity consumption, this represents 4.2-fold increase from 161.48 kWh in 2010 to 673.12 kWh in 2020. Most of the electricity was consumed by residential sector (34%) followed by the industry sector (26%).

Small business, service, commercial, industrial, and administration connected from Low Voltage accounted for 28% of the total power consumption. The remaining 8%, 4% and 0.1% are for medium to large commercial sector time of use (TOU) commercial and industry sector and rural schools, health centres and hospitals respectively (EAC salient features, 2020).

The garment industry is the largest industry in Cambodia, accounting for 80% of total exports, and employing around 600,000 people. The replacement of outdated and inefficient equipment and technology is required in many factories to support energy efficient production. A study in 2018 by GERES found that for most factories, wood is the major fuel supply for steam generation in boilers, and that total wood consumption in the garment industry could be reduced by the introduction of more energy efficient boilers (GERES, 2018). Brick and garment industries together consume 0.8 million ton of firewood as inputs to production per annum. Currently, the high energy costs in factories, even with discounted electricity tariffs, limits their economic sustainability.

Improving occupational health and safety and improving working conditions is a priority for sustainable production in industries, particularly for social sustainability. Some factories find it challenging to provide adequate workplace ventilation and avoid worker exposure to toxic chemicals. Some factories are using on-site incinerators that burn textile residuals, and without control measures, these incinerators can emit hazardous substances (e.g. dioxin) in the air.

Monitoring and enforcement of the existing pollution control standards in factories by the relevant ministries is challenging and requires support, due to capacity and financial constraints.

The location of factories also creates challenge for the sustainability of urban areas and land use in Cambodia. The location of many industries is adjacent to residential or agricultural land uses, resulting in emissions from industries causing significant problems for people living and working nearby. Many factories are also clustered around flood prone areas in the peri-urban areas, which are highly vulnerable to increased flooding with climate change (GGGI, 2018). Furthermore, many factories are located within areas that have unsuitable transportation access and cause traffic congestion.

Opportunities support sustainable production in Cambodia's industrial sector

<u>Pollution control</u>

- Design of new Environmental Quality and Effluent Standards for factories (see: draft *Environment Natural Resources Code*, Articles 696-701).
- Strengthen monitoring and enforcement of pollution emissions standards and reporting of environmental data by factories.
- Build wastewater treatment plants in factories: all water pollution emitters in manufacturing must be connected to a wastewater treatment plant.
- Capacity strengthening for government officials enforcing standards and auditing factories.

Technology upgrading

- Develop a program for environmental technology verification for industry and a register of verified environmental technology (see: draft *Environment and Natural Resources Code*, Articles 200-201).
- Provide access to financing for energy efficiency and pollution control, as this would provide capital facilities for lending to energy efficiency and pollution control projects in manufacturing.[11]
- Provide financial incentives to interested companies to implement energy efficiency strategies and other sustainability measures.
- Develop a new investment law (green industries) to make legally binding provisions for SCP in manufacturing, including for mandatory reporting on waste and promoting clean technologies.[12]

Energy efficiency

- Establish an energy management program, through legislations, which shall form the basis to identify opportunities for energy efficiency upgrades either through retrofits or adoption of new technologies and other approaches.[13]
- Set up regulations system for the empanelling and rating of Energy Service Companies (ESCOs)[14].
- Develop Regulations to enforce compliance of Designated Energy Consumers with mandatory provisions of energy management program envisaged by the energy efficiency policy.
- Develop Measurement, Reporting and Verification (MRV) protocols for energy efficient technologies of high energy/GHG emission savings potential[15].
- Provide project preparation support to partner agencies and industrial facilities (e.g. market assessment and feasibility studies, guidelines for technical and commercial appraisal of energy efficiency projects, etc.
- Provide support for financing industrial energy efficiency through innovative forms of finance, investor matchmaking services, transaction advisory services etc.

[11] See for example, See: Emerging Markets Consulting, 'Fund to support energy efficiency', pre-feasibility study (2016).
[12] Suggested by the Ministry of Industry, Science, Technology and Innovation in the consultations for the SCP Roadmap.
[13] As supported by the draft *National Energy Efficiency Policy (2021-2030), page 32.*
[14] An ESCO will develop, design, build, and arrange financing for projects that save energy, reduce energy costs, and decrease operations and maintenance costs at their customers' facilities. As supported by the draft *National Energy Efficiency Policy (2021-2030), page 33.*
[15] As supported by the draft *National Energy Efficiency Policy (2021-2030), page 33.*

Resource efficiency

- Design a legal instrument for Resource Efficiency Assessments and promotion (see: draft *Environment and Natural Resources Code*, Articles 215-219), including institutional arrangements.
- Establish a reporting and auditing system to verify Resource Efficiency Assessments for large factories and SMEs (see: draft *Environment and Natural Resources Code*, Article 220).
- Establish guidelines, networks and training for industry on resource efficiency, reducing environmental impacts from product consumption and cleaner production (see: draft *Environment and Natural Resources Code*, Article 221).
- Ensure resource use assessments are conducted for major industrial sectors, looking in particular at material flows and opportunities for using waste flows from some industries as inputs into other industries.
- Promote the use of local resources for manufacturing that reduce consumption of raw materials.
- Establish shared sustainability/green incentives for industrial clusters (SEZs), whereby factories within the cluster are motivated to share the costs and benefits within the cluster.[16]

Spatial planning

- Implement spatial (land-use) planning to redirect factory locations away from highly vulnerable flood prone areas and agricultural areas that are adjacent to cities.
- Provide opportunities for knowledge sharing and networking amongst businesses to share experiences with SCP, including best practices and show-casing role model factories.[17]

Recommendations for SCP Roadmap[18]

1. Design new mandatory Environment Quality and Effluent Standards for factories in Cambodia, and strengthen monitoring, reporting and enforcement of these mandatory standards.
2. Establish Resource Efficiency Assessment guidelines and auditing processes for certification of factories and incentives towards sustainability, including for energy and water use efficiency.
3. Improve manufacturing processes and the design of products to promote the use of sustainable materials and make products more easily recyclable.
4. Establish and enforce spatial land-use plans in all urban and peri-urban areas to direct industries away from flood prone areas, agriculture and residential areas.

[16] Suggested by Price Waterhouse Coopers (PWC), in the draft report for United Nations Industrial Development Organisation (UNIDO), "Assessment of Current Policy and Institutional Framework Targeting Industrial Development and Recommendations to Include Resource Efficiency within the existing Legal Framework", 11 March 2021, page 185.
[17] Suggested by the Ministry of Industry, Science, Technology and Innovation in the consultations for the SCP Roadmap.
[18] The recommendations under the section below on energy, waste and water will also support SCP in industries.

6.2 Sustainable building construction and real estate – enabling green building design, including energy efficiency, recycled materials, water efficiency

Relevant policies, strategies & laws supporting sustainable building construction

Cambodia's construction law includes quality requirements for building construction but does not focus on environmentally sustainable building design. Cambodia's *Law on Construction* (2019) No. NS/RKM/1119/019 determines the principles, technical regulations, rules and procedures for the management of the construction sector in Cambodia. Under the law, since November 2019:

- Every construction business shall have a license granted by the Ministry of Land Management, Urban Planning and Construction (MLMUPC) or a permit from Capital/ Provincial Hall Administration according to the activity contemplated (i.e. Project Study Design or Construction).
- Construction material, equipment and products are required to assure construction quality and construction users' safety shall be accredited or certified for compliance with technical building regulations, by the MLMUPC or the Cambodian Standards Council.
- All building or demolition work requires permission from the competent authority.
- Every design document used for building or demolition work shall be responsibly signed by an architect who holds a license or permits granted by the MLMUPC.[19]

The *Sub-Decree No. 43 on Urbanization of the Capital City, Towns, and Urban Areas* regulates land use within a construction plot, and places limits on the construction footprint within a parcel of land to ensure that adequate open spaces remain for trees and gardens. This sub-decree helps to provide environmental sustainability, as the green spaces provide a cooler environment, provide opportunities for on-site rainwater capture and flood mitigation, as well as natural ventilation corridors.

Several national strategic and action plans promote green building design in Cambodia. MLMUPC has established a *Climate Change Action Plan 2015-2018*, which envisages that green building design and low-carbon technologies will be considered in future building codes (page 7). The *National Strategic Plan on Green Growth* (2013-2030) promotes green building and construction, based on renewable energy, energy efficiency, water saving and environmental beauty (page 5) and commits to:

- Develop green infrastructure in finance and banks by using green technology, green building and green spaces (pages 35-36)
- Preparation of land use planning in sustainability, and promotion of zoning identification as a basis for land use planning implemented by MLMUPC (page 39).

At the sub-national level, the Phnom Penh Sustainable City Plan (2018-2030), supports sustainable building construction through the following objectives for built environment (construction) sector:

- Adoption of green building standards for buildings to be constructed from 2020 onward
- Reduce energy use in existing buildings
- Support low-income housing units designed or retrofitted to be resistant to natural disasters (number of upgraded units vs. total urban housing stock) (page 5).

[19] Cambodia's New Law on Construction, Sciaroni & Associates (accessed 14 December 2020).

Cambodia's draft *Environment and Natural Resources Code* supports environmental reforms. The draft *Environment and Natural Resources Code* supports sustainability in construction and real estate, by requiring:

- the MLMUPC to issue construction permits for development projects only when approval has been given for Environmental Impact Assessment (EIA) (Article 229)
- construction projects and plans to comply with land use planning requirements, such as meaningful stakeholder consultation, goals and plans to reduce and offset carbon emissions and waste flows, and a requirement to address flood prevention through drainage and runoff management (Article 233)
- all cities to establish a sustainable city strategic plan, which support a sustainable built environment (Article 241).

New policies to promote a circular economy and energy efficiency also support sustainable building construction in Cambodia. The *Circular Economy Strategy and Action Plan (2021)* commits to:

- promote use of sustainable energy and materials and energy efficiency, including piloting sustainable energy and energy efficiency benchmarking for the property and construction sectors (Priority Action 1.1.1.b)
- establish guidelines and certification for green buildings (Priority Action 1.1.2.g).

The Ministry of Mines and Energy (MME) are currently drafting a *National Energy Efficiency Policy* (2021-2030) that will include energy efficiency measures for the building sector. As the building sector is one of the leading energy consuming sectors, the potential for energy efficiency is considerable and is centred around energy efficient household appliances and building design practices. Due to the high urbanization rates and the increase in income levels, more heavily consuming electrical appliances such as refrigerators or air-conditioners shall be used in the future, and therefore energy efficient performance of these appliances will be of significant importance. Also, energy efficient building design practices offer enhanced thermal comfort and lead to reduced energy demand in buildings. The strategies and interventions of the buildings sector shall be the basis to formulate and prioritize in following:

- establish regulations for the empanelling and rating of Energy Service Companies (ESCOs)
- develop regulations to enforce compliance of Designated Energy Consumers with mandatory provisions of energy management program
- develop Measurement, Reporting and Verification (MRV) protocols for energy efficient technologies of high energy/GHG emission savings potential
- provide support for financing buildings energy efficiency through innovative forms of finance, investor matchmaking services, transaction advisory services etc.
- develop awareness raising programs on energy efficiency for buildings and their associations.

Relevant programs and partnerships supporting sustainable building construction

The RGC is designing policy and regulation to support the green building construction. The guidelines and certification for green building is being led by NCSD and MoE; the building technical regulation is led by MLMUPC, and a Building Energy Code (BEC) for residential and commercial buildings is in the development process which shall be developed by MME. Energy efficiency opportunities in this sector are centred around major energy consuming applications in buildings which involve, but are not limited to, comfort cooling, lighting, water supply systems, elevators and escalators, and other receptacle loads depending on the building type.

NCSD's Department of Green Economy is currently developing a Green Buildings certification system. This is supported by the project on design of Guidelines and Certification system for Green Buildings in Cambodia (2019-2021) implemented by NCSD and the Korean Institute of Civil Engineering and Building Technology (KICT), under support of Mekong-RoK Cooperation Fund (MKCF). This project aims to:

1. Formulate guidelines (criteria), a certification scheme and operations scheme
2. Establish interim institutional arrangements for certification
3. Pilot the guidelines and certification process in residential and government office building
4. Improve awareness of industry, government and households on green building certification and design
5. Improve knowledge sharing and network between Korea and Cambodia on green buildings.[20]

Under the private sector, a Cambodia Green Building Council has been established through the Cambodia Energy & Environmental Leadership (CAMEEL) a program for green buildings and communities. This Green Building Council aims to provide third-party credentialing and certification for several rating systems relating to the built environment. The credentials will create leadership in green building and distinguish building professionals with the knowledge and skills. Certification will be performed through third-party technical reviews of CAMEEL-registered projects.[21]

Challenges to achieving sustainable building construction and real estate in Cambodia

Significant new investments in high-rise apartments, condominiums, entertainment complexes, commercial buildings and satellite cities are energy intensive and not currently using energy efficiency measures. Previous attempts to develop energy efficiency projects in the building construction sector have not been particularly successful, mostly due to the limited awareness of possible operational cost savings among building end-users. In the absence of a Building Energy Code (BEC) in the residential sector, the building practices in Cambodia do not consider energy efficient design measures, thereby leading to inefficient energy use.

[20] PowerPoint Presentation of Nop Sokhai, Deputy Director of DGE, GSSD and Project Coordinator of Guidelines and Certification for Green Buildings in Cambodia.
[21] Cambodian Green Building Council website: https://camgbc.org/about-us.html (accessed 14 December 2020).

Many buildings are not resilient to climate change, particularly to increased temperatures and flooding. Vulnerable buildings could include both residential and commercial buildings, which are designed and constructed without consideration of the potential impacts of natural disaster events. Informal housing in informal settlements is often made from recycled materials that are more vulnerable to urban flooding events.There is a lack of awareness of energy efficiency opportunities in the building construction sector in Cambodia, despite the potential opportunity to reduce high electricity costs. There is a lack funding for a dedicated Cambodian government program on building energy efficiency. However, the initiative to set up a revolving fund for energy efficiency is being taken by the Ministry of Economy and Finance and will help to address this financing gap.

Research by Durdyev and Serdar et al. (2018) shows that the main barriers to sustainability in the building construction sector in Cambodia are:

- a lack of awareness and knowledge
- reluctance to adopt new sustainable technologies
- the higher cost of sustainable building options
- lack of government incentives
- other economic needs are of a higher priority
- lack of statutory requirement that covers sustainable procurement
- lack of professional capabilities/ designers
- lack of client demand.

Opportunities to support sustainable building construction in Cambodia

The benefits of sustainable building construction include energy and resource conservation, cost efficiency, well-being, consistent quality and health and safety (Durdyev, S. et al., 2018).

Energy Efficiency in Residential and Commercial buildings

To address the sectoral challenges of the Buildings Sector, for both residential and commercial buildings, MME haves been used as the basis to formulate and prioritize the following Energy Efficiency strategies and interventions as the basis to formulate and prioritize:

1. Develop Standards & Labelling (S&L) programs with the introduction of regulation for Minimum Energy Performance Standards (MEPS) for appliances and equipment, in particular for refrigerators, air conditioning, fans, lighting, washing machines, televisions, chillers, motors, air compressors, etc. (see *eco-labelling section* below)

2. Develop a Building Energy Code (BEC) for residential and commercial buildings, including an MRV protocol for the consumption of energy.
3. Provide training to architects, builders, ESCO service providers, staff of line ministries (building energy regulators) as well as other relevant stakeholders on energy efficiency practices in buildings.

Other opportunities to support sustainable building construction include:

- Develop green building guidelines for constructing or retrofitting energy-efficient and resource-efficient buildings (residential and commercial), enabling heat, energy and GHG emissions management and pollution management.
- Integrate minimum building energy-efficiency requirements in the building technical regulations (under the *Law on Construction*) that are currently drafted by the RGC.[22]
- Disseminate technical guidelines for the guidelines (building energy code) to developers and constructors.
- Require large developments and luxury hotels to adhere to green building guidelines.
- Require public buildings to be designed according to an established green building standard; all municipal and other government buildings with suitable roofs are to have solar PV installed; existing public buildings are held to a high energy efficiency performance standard.
- Implement building energy reporting systems, either voluntary or mandatory, for large electricity consuming buildings to allow government to collect energy consumption data, which can be used to improve the regulations and design of energy efficiency programs.[23]
- Enforce green building regulations through independent assessors for compliance check and create a roster of professionals outside the public sector.[24]
- Pilot demonstration of low-cost energy and resource efficient housing.
- Establish a Green Buildings Information Resource Centre and a Green Building Council or institute.
- Educate architecture students in green building design, and provide professional training opportunities for architects and urban planners in green building design.

[22] UNDP, 2020. Energy Efficiency in Buildings – Accelerating low-carbon development in Cambodia: policy brief and in-country case studies.
[23] UNDP, 2020. As above. Note: Setting energy reduction targets for such large buildings will also lower electricity bills and reduce operational costs.
[24] UNDP, 2020. As above.

Resilience of buildings[25]

- Develop guidance for flood proofing buildings.
- Develop flood management guidelines for property development (e.g. optimum type of trees, canopy cover, rainwater harvesting and retention, use of permeable surfaces).
- Develop green infrastructure guidelines for integration into city master plans (promoting natural habitats in cities that provide cleaner air, flood protection, cleaner water and ecological habitat).
- Require new large construction projects to dedicate sufficient space for green corridors and adhere to green building standards.

Recommendations for SCP Roadmap

1. Design and pilot Guidelines and a Certification system for construction and retrofitting of Green Buildings in Cambodia.
2. Propose options for institutional arrangements, such as establishing a Green Building Council or Institute, led by Government or a public-private partnership with support from NCSD and MLMUPC.
3. Update building codes and construction regulations with minimum green building requirements.
4. Deliver capacity building and awareness raising and partnership amongst architecture and planning professionals and the community on green buildings.

6.3 Sustainable tourism and the services sector – providing responsible and sustainable tourism opportunities, considering the promotion and protection of the environment and natural resources

Relevant policies, strategies & laws supporting sustainable tourism

Cambodia's enabling and regulatory frameworks support sustainable tourism, including ecotourism, and consist of several laws and policies, including the *National Ecotourism Policy (*2019-2030), *Protected Areas Law* (2008), *Law on Concession* (1998), *Land Law* (2001), *Tourism Law* (2009), the *National Protected Areas Strategic Management Plan* (2017-2031), the *National Strategic Plan on Green Growth* (2013-2030), *Tourism Development Strategic Plan* (2012-2020), and the draft *Environment and Natural Resources Code*.

[25] As supported by the Phnom Penh Sustainable City Plan's sustainability objectives for the construction sector, and the MLMUPC Climate Change Action Plan 2015-2018, pages 20-21.

Under the *National Ecotourism Policy* (2019-2030), Cambodia is focusing on development of:

1. Large- and small-scale ecotourism operations
2. Priority tourism sites
3. Private sector participation in ecotourism.

Cambodia's *Tourism Development Strategic Plan* (2012-2020), prioritized tourism into four main destinations including eco-tourism zone. The Strategic Plan identifies the southern tourism corridor (coastal zone) as having strong ecotourism potential, including the Cardamon mountains, with rich biodiversity. Ecotourism is also promoted in the northeast of Cambodia and great lake peri-zone.

The *Cambodia National Protected Areas Strategic Management Plan* (2017-2031) aims to strengthen conservation and expand community participation and benefits in protected areas management. The *Cambodia National Protected Areas Strategic Management Plan* (2017-2031) supports sustainable tourism, in noting "one of the more readily available means of supporting both conservation of protected areas and local livelihoods is the expansion of ecotourism opportunities that incorporate community provision of tourism and services" (page 13).

Under the *National Strategic Plan on Green Growth* (2013-2030), Cambodia has committed to green tourism, which refers to tourism development without any damage to the sustainable green environment and natural resources, while also upholding cultural identity. Under this *Strategic Plan*, Cambodia has committed to expand green tourism through (page 17):

- Promoting eco-tourism and community-based tourism
- Encouraging green investments in the tourism sector that reduce the use of energy, water, waste, and maintain the value of ecosystems and natural heritage
- Promoting tourism development in cities, based on the concept of "clean city, green city"
- Encouraging the private sectors on green tourism
- Encouraging tourists to be engaged in green transport.

Under the National Strategic Plan for Green Growth (2013-2030), Cambodia has also committed to green growth in Cambodia's coastal areas, which are an important strategic asset for the tourism sector. Under the National Strategic Plan for Green Growth (pages 15-16), enhancing the sustainability of coastal areas will occur through:

- Managing solid and liquid waste in cooperation with relevant ministries, local authorities and people living near beaches
- Identifying marine areas for development and conservation goals
- Preparing for use of shorelines to build infrastructure, residences, public and private buildings to serve tourism
- Studying and assessing in more detail the activities along the coastline, sea, marine areas, tributaries, rivers and islands
- Managing marine resources and other marine related resources
- Raising awareness of green growth at the coastline and providing education about it to the public.

Cambodia's draft *Environment and Natural Resources Code* supports environmental reforms. The draft *Environment and Natural Resources Code* supports also sustainable tourism, through the following legal provisions:

- Each existing tourism project or facility, shall be required to perform a sustainability review (Article 245)
- Any tourism project or facility that causes environmental impacts in exceedance of any permitted or approved limits or that is not in compliance with the standards of the sustainability review shall be required to perform a resource efficiency assessment (Article 246).

The draft *Environment and Natural Resources Code* also notes that the Ministry of Tourism, in cooperation with MoE shall develop a legal instrument on the development and management of sustainable and responsible collaboratively managed, community-based ecotourism (Article 249).

Relevant programs and partnerships supporting sustainable tourism

The **restart domestic tourism program** in Cambodia led by the Ministry of Tourism in 2020, resulted in Cambodian people went on tour to all tourism destinations, including approximately 1.5 million people travelling on the Khmer New Year Day extension. Major destinations were rural camping and Community Based Tourism (CBT) / Community Based Eco-Tourism (CBET). All tourism destinations and operators applied safety measure against Covid-19.

Sustainable tourism initiatives have been established by the RGC, multilateral development banks, non-government organisations and the private sector. Under the Ministry of Tourism, the National Committee for Clean City Assessment has supported sustainable tourism through issuing of certificates to companies, enterprises, hotels, restaurants, etc, which promote clean and green cities. The World Bank has set up the Cambodia Sustainable Landscape and Ecotourism Project (US$50.66 million) (2019-2025) with Ministry of Environment and Ministry of Rural Development. It aims to improve protected areas management and promote ecotourism opportunities and non-timber forest product value chains in the Cardamom Mountains – Tonle Sap landscape.

Certification projects led by the private sector are promoting sustainable tourism, such as Clean Green Cambodia certification for sustainable tourism, and the Cam Conscious Tourism initiative that provides capacity building, skills training and consultancy services for sustainable tourism.

Community-based eco-tourism is becoming increasingly important to the tourism sector and sustainable development in Cambodia (Siphannara & Ros, 2019). Ecotourism sites have been set up through community partnerships with NGOs, such as the Wildlife Conservation Society (WCS) Tmatboey Ibis Ecotourism Project in Kulen Promtep Wildlife Sanctuary, established in 2005, and the WCS and USAID project - Keo Seima REDD+ Project, supporting protected areas, reducing deforestation and community benefit sharing in Mondulkiri since 2010. The Worldwide Fund for Nature (WWF) is also working on endangered species conservation and community benefit sharing projects for ecotourism in Northeast Cambodia. Furthermore, WSC is also supporting biodiversity conservation and CBT development in Koh Kong. Community-based eco-tourism has contributed to income generation and job creation for local people, community development, and the protection of natural resources (Siphannara & Ros, 2019).

Challenges in enabling sustainable tourism in Cambodia

Cambodia's tourism industry is a key contributor to economic growth. In 2019, international tourists arrivals to Cambodia numbered around 6.61 million and contributed 12.1% of GDP, generating approximately US$5 billion, and providing 630,000 direct employment opportunities. In 2020, the number of international tourists declined by 80.3% equal 1.31 million visitors and contributed only 3% of Cambodia's GDP. Therefore, the economic sustainability of the tourism sector in Cambodia has been severely impacted by the COVID-19 pandemic. It has been estimated that there has been a loss of revenue of US$2.77 billion, which is affecting 1 million jobs (Rawlins et al., 2020).

Capacity constraints are currently hampering the potential of expanding eco-tourism in Cambodia. The potential of ecotourism is currently not being realised, partly because of a lack of human capital and tourism experience in local communities and on-ground development does not facilitate ecotourism (Carter et al., 2015). Uneven regional development still sees Siem Reap and Angkor Wat, and a few other places, receiving most tourist visitation (Carter et al., 2015). As new destinations emerge, they will need to have carefully considered sustainable tourism strategies and policies in place that recognise and protect local physical and cultural assets and values (Carter et al., 2015). There is currently no clear guidance for ecotourism investment projects, a lengthy process to set up these projects, and a lack of clarity in the roles of Ministry of Environment in managing ecotourism in protected areas (Rawlins et al., 2020). Beside these capacity constraints, the lack of CBT/CBET development plan is considered as one of the major challenges in all eco-tourism sites.

Community engagement is crucial for the success of sustainable tourism initiatives as part of strategies to alleviate poverty, protect the environment and improve the well-being of communities. To realise the potential of ecotourism, communities in Cambodia will need to have the technical capacity to fully understand the tourism system, market needs, the process of product development and marketing, as well as the financial capital to invest in tourism products (Carter et al., 2015). High foreign investment rates in Cambodian tourism means that leakage is a concern that can leave communities vulnerable to exploitation and missing an equitable share of the benefits of tourism (Carter et al., 2015).

Community-based ecotourism needs to overcome the challenges associated with potentially unequal benefit sharing, as well as reduce the reliance of local communities on NGOs to run the tourism sites, to ensure sustainability (Müller et al., 2020; Siphannara & Ros, 2019). The legal and regulatory frameworks for community-based ecotourism should be strengthened in Cambodia to help address the challenges in the sector (Siphannara & Ros, 2019).

Opportunities to support sustainable tourism in Cambodia

Promotion of rural tourism and ecotourism[26] including community-based eco-tourism

- Promote tourism potential of iconic landscapes, such as the Cardamom mountains, which have a wealth of natural assets that allow for new tourism opportunities for domestic and international markets.
- Promote Rural Tourism and Eco-Tourism, aligned to the 2020-2021 agenda for World Tourism Day, which was "Tourism and Rural Development". The main objective during the Covid-19 outbreak, is to promote rural and eco-tourism as the main destination for domestic tourism.

Financing support to rural tourism and ecotourism, including community-based eco-tourism

- Set up funding mechanisms to enable rural tourism and eco-tourism revenue to support the management of Cambodia's protected area network and protect ecosystem services provided by protected areas.
- Mitigate the impacts of COVID-19 on the rural tourism and ecotourism industry, for example through scaling up existing social protection schemes and providing tax relief to the tourism sector.

Strengthening capacity, planning and regulations for ecotourism

- Strengthen legal and regulatory frameworks for rural tourism and ecotourism, including community-based ecotourism.
- Development of CBT/CBET Development Plan (5-years), including destination planning, which identifies the investment opportunities, development plans, and operation of CBE/CBET.
- Strengthen key institutions and partnerships for rural tourism and ecotourism development.
- Strengthen rural tourism and ecotourism destination planning, management, and marketing (including through incentive schemes for sustainable hotels and travel services).
- Enable and support the private sector in tourism.
- Provide capacity building support for local communities to protect the environment and promote rural tourism and eco-tourism opportunities in each province.[27]
- Promote cultural and environmental preservation in CBE/CBET.

[26] As supported by Rawlins, Maurice; Kornexl, Werner; Baral, Sumit; Baromey, Neth; Martin, Natasha; Ray, Nick. 2020. Enabling Ecotourism Development in Cambodia. World Bank, Washington, DC. © World Bank. https://openknowledge.worldbank.org/handle/10986/34321 License: CC BY 3.0 IGO.

[27] Suggested by the Ministry of Tourism in consultations for the SCP Roadmap.

Community benefit sharing

- Develop and pilot opportunities to integrate private sector and communities to develop innovative ecotourism itineraries, ensuring that eco-tourism improves incomes and provides jobs.
- Ensure community-based eco-tourism sites have clear internal policies or guidelines on income generation and benefit-sharing for community members, as well as mechanisms to monitor benefit sharing within the community.[28]

Recommendations for SCP roadmap

1. Prepare rural tourism and ecotourism destination planning and management.
2. Set up funding mechanisms to strengthen rural tourism and eco-tourism, especially community-based eco-tourism.
3. Establish a public-private partnership to deliver a Cambodian rural tourism and eco-tourism certification program, which is aligned to international eco-tourism certification programs.
4. Expand rural tourism and eco-tourism projects with community benefit sharing and payments for ecosystem services.

6.4 Sustainable procurement practices (green public procurement) – opportunities for government sectors and agencies to be promoting sustainable products and services

Relevant policies, strategies & laws supporting green public procurement

Cambodia's Law on Public Procurement (2012) aims to ensure the process of public procurement of goods, works, renting services, and consultant services to be proceeded in a transparent, accountable, fair, effective, distinguished, equal, economical, and timely manner and to ensure a unified public procurement system in Cambodia. This law prescribes the rules, methods, procedures, and structures for governing and implementing all public procurements in Cambodia.

The draft *Environment and Natural Resources Code* includes provisions to establish a legal instrument on sustainable procurement (Article 202). The legal instrument will mainstream SCP through inclusion of environmental criteria for the procurement of goods, services, works and utilities, and will consider the whole lifecycle of products and services, based on international standards. The draft code also requires all ministries and institutions responsible for procurement to produce an annual report on the implementation of the legal instrument on sustainable procurement, which includes:

- A list of environmentally friendly products and services purchased during the fiscal year
- Analysis of integration and implementation of the environmental criteria in procurement
- Annual plans for procuring priority environmentally friendly products and services (Article 207).

[28] See: Siphannara, P., Ros, B. 2019. Briefing Note: Overview of Community-Based Ecotourism for Sustainable Development in Cambodia, page 6.

NCSD has developed a *Guideline on Green Office and Green Events and Evaluation Mechanism,* to be used by Ministries and Institutions, as well as by organisations outside of government, such as the private sector and non-government organisations, to promote environmental quality and resource efficiency. This guideline aligns with green public procurement practices.

Relevant programs and partnerships supporting green public procurement

The Government of Cambodia, through NCSD, is scoping a project to study the potential for sustainable procurement, through the GIZ Project *'National Green Public Procurement and Environmental Labels,'* with support from Thailand Environment Institute. Based on initial analysis, the project has proposed a mechanism for green public procurement, which proposes that NCSD in cooperation with the Ministry of Economy and Finance (MEF) and a technical committee (including MISTI and MoE) shall develop a legal instrument on sustainable procurement. This procurement standard will be based on relevant international standards. The procuring entities (Ministry or institutions) can develop bidding documents or pre-qualification documents for environmentally friendly products based on the green product standards. The General Department of Procurement, MEF, will take responsibility to oversee all green public procurement activities, including monitoring and validation reporting from ministries for green public procurement.[29] This project aligns to the global 10-YFP Programme on Sustainable Public Procurement (SPP) which is a multi-stakeholder platform that supports the implementation of SPP around the world.

Challenges in enabling green public procurement in Cambodia

Cambodia has a strong enabling environment and high-level of government commitment to sustainable public procurement, given its primary focus on sustainable development in the Rectangular Strategy Phase IV and NSDP (2019-2023). There have been no studies to date on the factors that could hinder the uptake of sustainable procurement in Cambodia. However, a global review of sustainable procurement by UNEP, identified some challenges faced in other countries:

- Perception that sustainable/green products and/or services are more expensive
- Lack of mandatory green public procurement rules
- Lack of sustainable products and/or services to purchase
- Insufficient monitoring, evaluation and/or enforcement of green procurement policies
- Competing procurement priorities
- Lack of training of procurement staff in green public procurement
- Lack of information on the sustainability of practices and operations of suppliers.[30]

The consideration of some of these challenges faced in other countries may be relevant to Cambodia in the design of a sustainable procurement standard.

[29] Thailand Institute of Environment, Draft Report – Analysis Study on National Green Public Procurement and Environmental Labels in Cambodia, 8 December 2020.
[30] United Nations Environment Programme (2017) – Global Review of Sustainable Public Procurement.

Opportunities to support green public procurement in Cambodia

The benefits of green public procurement include government agencies are leading by example and sending strong market incentives; reducing greenhouse gas emissions, improving resource efficiency, and supporting recycling; and improving equity and respect for core labour standards; and supporting the transfer of skills and technology, promoting innovation (UNEP, 2017). Furthermore, encouraging locally made products through sustainable procurement methods will support the expansion of local businesses and the creation of employment opportunities locally.

MEF plans to amend the *Law on Public Procurement* under the *Public Procurement Reform Program* (2019-2025). Currently, the General Department of Public Procurement is in the process of collecting inputs and doing desk review to prepare the amendment of Law on Public Procurement. It expects to finish by end of 2023. MEF has noted that the elements of Green Public Procurement expect to be included in the amended law.[31]

As envisaged under the draft Environment and Natural Resources Code (version 9.1), Article 203, the SCP Roadmap could support design of a legal instrument for sustainable procurement by:

- Designing categories and priority rankings of products and services
- Defining minimum environmental criteria and performance requirements for each product and services based on their environmental impact (for example: resource efficiency, reduction, reuse, recycling of waste, integrated waste management, and cleaner production)
- Defining reporting requirements for categories of products, services and magnitude of procurement
- Providing guidance for selecting appropriate suppliers
- Providing guidance for decision-making on environmental considerations
- Listing sanctions for breaches of environmental performance of products and services
- Defining measures for Ministries or Institutions responsible for procurement to encourage and assist stakeholders in undertaking sustainable procurement practices.

Recommendations for SCP roadmap

1. Set up a green public procurement standard, under the National Council for Sustainable Development and Ministry of Economy and Finance (Note: NCSD is starting to prepare the green public procurement roadmap and MEF will be involved in this process).
2. Design environmental criteria and performance requirements for priority products and services to be procured by the government.
3. Integrate green public procurement standards into the public procurement system under the Ministry of Economy and Finance (including the amendment of public procurement law).
4. Provide technical guidance to Ministries and agencies in implementing the green public procurement standards, and monitoring and reporting on the standards.

[31] Lao Poliveth, Deputy Director, Macroeconomic and Fiscal Policy Department, Ministry of Economy and Finance, Presentation on Contribution to Sustainable Consumption and Production (Workshop on SCP Planning, hosted by GIZ and NCSD, Feb 2021).

6.5 Eco-labelling for consumer products – voluntary schemes that identifies the lifecycle & sustainability of the product or service

Relevant policies, strategies & laws supporting eco-labelling

The Law on Standards of Cambodia (2007) provides for the establishment of an Institute of Standards of Cambodia (ISC) and sets out the procedure for the adoption of Cambodian Standards and Standard Marks, the procedure for approval of Cambodian Standards and Standard Marks, Issuance of Product License, Systems Certification, and Accreditation and Registration Certificates.

The National Standard is the Cambodian Standard Marks certified by ISC. ISC offers two types of licensing which are license for products related to health and safety conforming with mandatory standards and license for products conforming with voluntary standards.

Mandatory certification is used to control the circulation of products deemed dangerous for the public. Product Certification Schemes are administered by the ISC Certification Department within MISTI, which provides rules for a third-party certification system with conformity with technical regulations through product testing and the assessment of factory products. The Ministry of Commerce is responsible for the testing laboratory, which is responsible for testing samples of food for contaminants, supporting food inspection activities in local markets. Non-food products are tested under the Industrial Laboratory Centre of Cambodia, under MISTI. There are also other national laboratories for testing of agricultural products (in the Ministry of Agriculture, Forestry and Fisheries), health products (in the Ministry of Health) and for the presence of GMOs and LMOs (in MoE).[32]

Cambodia's *Climate Change Action Plan for the Energy Sector* (2021-2023) includes an action to 'develop and implement Energy Efficiency Standards and Labelling Program to support National Energy Efficiency Policy Implementation' (Action 8). The draft *National Energy Efficiency Policy (2021-2030)* also identifies the need for a Standards and Labelling programs for appliances and equipment (page 37). Aligned to this draft policy, MME has developed draft energy efficient standards and labelling for electrical appliances and equipment. Under the draft sub-decree, minimum performance standards for each category of appliance and equipment will be developed. MME also proposes to develop energy efficiency standards for building (energy building codes), energy audit and mandatory reporting schemes, and to implement capacity building for energy efficiency, including the testing capability for energy efficient products.

[32] See Cambodia Trade Integration Strategy (2019-2023), pages 170-173.

Relevant programs and partnerships supporting eco-labelling

The GIZ Project with NCSD, discussed above under 'sustainable/ green public procurement', is also supporting the scoping of the design of environmental labels or eco-labels in Cambodia. NCSD will lead the policy development and coordination of the eco-labelling program design, which will be implemented by MoE with relevant line ministries and agencies.

While Cambodia does not have its own eco-labelling program, a large number of exporters have registered ecolabels from all over the world to access new markets and boost sales. Eco-labels present in Cambodia primarily focus on exported products only and include:

- Audubon International (certification of communities, neighbourhoods, new land developments, land development renovations, schools, businesses, golf courses and lodging facilities)
- Certified Wildlife Friendly
- Green Globe Certification (for sustainable tourism)
- Clean Green certification (for hotels, restaurants, shops, eco-tours)
- Programme for Endorsement of Forest Certification (PEFC) (certification of sustainable forest management)
- Ibis Rice initiative certification of wildlife-friendly rice grown in communities where biodiversity values are protected, supported by the Wildlife Conservation Society
- TCO certified (sustainability certification of IT products, appliances, textiles, shoes and bags, furniture).[33 and 34]

The European Union (EU) and UN Food and Agriculture Organisation (FAO) are working with Cambodia's Forestry Administration (FA) on a timber tracking system to verify sustainable origins, known as the Forest Law Enforcement, Governance and Trade (FLEGT) Programme. GERES in Cambodia is also working towards the development of a sustainable, legal and traceable wood-fuels value chain, including through sustainable biomass sourcing and production.[35]

A previous SWITCH-Asia Grant Project on "Sustainable Rattan" also contributed to SCP policy development by establishing international 'sustainability' standards in the rattan supply chain production, the Rattan Association of Cambodia (RAC) was established in 2009 and became a provisional member of the World Fair Trade Organization (WFTO) in 2011.

[33] Asia-Pacific Roundtable on Sustainable Consumption and Production (APRSCP), Report on Ecolabelling and Sustainable Public Procurement in the ASEAN+3 Region: Development of a Feasibility Study for Regional Ecolabelling Cooperation (2014).

[34] Thailand Environment Institute (TEI). 2020. Analysis Study on National Green Public Procurement and Environmental labels in Cambodia (Draft Report) Proliferation Sustainable Consumption and Production (SCP) in Asia - the Next 5 Countries (SCP Outreach), Issue. GIZ.

[35] See GERES program website: https://www.geres.eu/en/our-actions/countries-of-intervention/cambodia/.

Another project that previously provided technical assistance to Cambodia on eco-labelling, was the project 'Capacity building on environmental labelling', supported by China to facilitate establishment of a national environmental labelling program in Cambodia. Completed in 2018, the project compiled a National Report on Ecolabelling, and provided training for Cambodian officials on the experiences of China's Environmental labelling as well as international labelling.

Furthermore, the project 'Non-Timber Forest Products – Exchange Program (NTFP-EP) Southeast Asia' – is supporting the provision of protocols and standards of non-timber forest products (NTFPs), for example for sustainable and responsible honey and bee management. The project is a collaborative network of over 60 non-government organisations and community-based organisations working with forest-based communities on the sustainable management of natural resources in Southeast Asia.

For eco-labelling related to energy efficiency, there has been previous technical support project that have provided guidance to Cambodia's MME on energy efficiency standards and labelling. For example, in 2013, the ASEAN Japan Energy Efficiency Program Scheme, under coordination of the ASEAN Centre for Energy supported the drafting of a regulation on energy efficiency standards and labelling for air conditioners (Ministry of Mines and Energy, 2020). Furthermore, Korea supported to develop an indicative energy efficiency label in 2017, under the ASEAN+3 Member States in GHG Mitigation cooperation program (Ministry of Mines and Energy, 2020). However, the regulations designed are yet to be completed and adopted, and MME is seeking technical assistance under its Climate Change Action Plan for the Energy Sector *(2021-2023) to set up the labelling program.*

Challenges in enabling eco-labelling in Cambodia

Most appliances in Cambodia are imported and without checking on their energy performance. Thus, there is a need for a mechanism to ensure compliance with minimum energy performance standards, which can be made possible with the development of a Standards & Labelling (S&L).
Some of the potential challenges identified in implementing eco-labelling programs include:

- There is currently no clear guidelines or regulations in Cambodia for eco-labelling
- Lack of consumer awareness in Cambodia about the need for environmentally friendly products
- Consumers are generally focused on cheaper products rather than higher quality products
- Some consumers cannot read a product label that is in English (i.e. eco-label written in English)
- Technical skills to develop national labelling schemes and set up testing facilities are limited.

Opportunities for implementation of eco-labelling in Cambodia

Develop national standards

- Through the Institute of Standards of Cambodia and other relevant ministries (such as MME and NCSD), national standards & guidelines for eco-labels can be developed for products, commodities, materials, services, practices and operations.[36]
- Stakeholder consultation in drafting of the standards will help to build consensus with industries and consumers on the standards and promote the quality and safety of products and services.[37]

Eco-labelling of exported products

- Manufacturing is increasingly an important economic sector in Cambodia, particularly in textiles and shoes, and Cambodia has the opportunity to add value to its export products through eco-labelling (for example, through TCO certification).
- Harmonisation and recognition between trading partners (especially within ASEAN) of standards and conformity assessment results is a way to reduce or eliminate trade barriers. There should be agreement on the methods used for testing and inspection, and certification; the reports and certificates established in one country should be accepted in other countries.[38]

Eco-labelling in tourism and services

- Cambodia has a fast-developing tourism sector, and certification of tourism activities and venues for sustainability can add value (e.g. Green Globe Certification, Clean Green certification).
- Services are the largest economic sector – including trade, transport and communications, hotel and real estate, and finance – certification of buildings and hotels, as well as vehicles for transport and export products, could add value and provide sustainability assurance.

Promotion of eco-labelling

- Opportunities for the RGC to support eco-labelling implementation include:
  - Awareness raising, knowledge sharing about eco-labelling programs, including in schools
  - Use of the Cambodian Standard mark or international labelling programs to certify sustainable products made in Cambodia
  - Participation in networks of sharing knowledge and experience related to Eco-labelling.

[36] Nop, S. Environmental Labelling Capacity Building Training Program for Cambodia, Report and PowerPoint Presentation, 18-19 October, 2018, Beijing, China.
[37] As above, footnote 31.
[38] See Cambodia Trade Integration Strategy (2019-2023), page 166.

Recommendations for SCP roadmap

1. Design an eco-labelling program for export products manufactured in Cambodia (such as garments and textiles, footwear, food and beverages).
2. Design an eco-labelling program for sustainable cookstoves, household appliances, electronics and other domestic household items.
3. Promote international eco-labelling programs for the tourism and services sectors in Cambodia (e.g. Green Globe Certification).
4. Provide support to SMEs seeking to obtain certification through the eco-labelling program and promote the program amongst SMEs.

6.6 Solid waste management sector – opportunities for waste reduction, composting, recycling and sustainable waste management

Relevant policies, strategies & laws supporting sustainability in waste management

Cambodia has established several sub-decrees to regulate and minimise solid waste.

The *Sub-Decree No. 36 on Solid Waste Management* (1999) aims to regulate solid waste management in a proper technical and safe manner in order to protect human health and the conservation of biodiversity. Under Article 2, the sub-decree applies to all activities related to disposal, storage, collection, transport, recycling, and dumping of garbage and hazardous waste. Article 7 states that waste disposal in public areas or any unauthorised site is prohibited. Hazardous waste from factories, clinics or hospitals shall be separated from domestic waste, under the sub-decree. The sub-decree provides procedures for monitoring and inspection of hazardous waste management, and outlines penalties for illegal activities.

The *Sub-Decree No. 27 on Water Pollution Control* (1999) prohibits the disposal of solid waste or any garbage or hazardous substances into public water areas or into the drainage system, under Chapter 2, Article 8. The storage or disposal of any solid waste or hazardous substances that lead to the pollution of public water areas is strictly prohibited under the sub-decree.

The *Sub-Decree No. 168 on the Management of Plastic Bags* (2017) aims to increase effectiveness of plastic reduction on importation, production, distribution and the use of plastic bag in order to improve the public health, environment and landscape. This sub-decree bans only single use plastic bag (of a specific size) and establishes a new levy of 400 riels for plastic bags in supermarkets and mall. In addition to this sub-decree, MoE is also preparing a draft sub decree on Plastic Products and Materials Management, which has broader coverage on plastic management.

The *Sub-Decree No. 16 on Electrical and Electronic Waste Management (E-waste management)* (2016) covers all activities regarding the disposal, storage, collection, transport, and dumping of e-waste. Under the sub-decree, dumping of e-waste in landfill, public space, and water is strictly prohibited. Any person who wishes to conduct business activities in line with e-waste management shall apply for licences from MoE. Importation of e-waste into Cambodia is also subject to approval from MoE.

The *Directive on Managing Medical Waste in Cambodia* (2008) aims to provide common identification of medical waste for proper, environmental management. The directive provides for labelling, classification and specific techniques for managing medical waste (e.g. waste separation, collection, storage, transportation and disposal) (Sethy, 2017).

The *Sub-Decree No. 113 on Municipal Waste and Solid Waste Management* (2015) decentralised responsibilities to the provincial, municipal and district levels (including the 12 districts in Phnom Penh). The Sub-Decree No. 238 on the establishment of environmental and social funds (2016) covers all activities concerning the management, usage and organisation of the social and environmental funds in order to safeguard environmental protection and preservation, and to enhance environmental conservation and biodiversity in Cambodia.

The *Sub-Decree No. 235 on the Management of Drainage and Wastewater Treatment System* (2017) decentralised responsibilities for operation and maintenance of drainage and wastewater treatment system to Capital, municipal, district and khan administration. This sub-decree encourages participation of development partners, private sectors to develop or to invest in construction, operation and maintenance of drainage wastewater treatment system.

Several policies and action plans are also support the minimisation of waste, recycling and improving the sustainability of the waste sector. Cambodia has adopted the *4Rs Policy* – Refuse, Reduce, Reuse, and Recycle. In 2019, the Ministry established a special taskforce to tackle plastic waste. The aim is to mobilize the government, businesses, and citizens to effectively implement 4R covering the entire lifecycle of plastic from production and use to disposal and recycling. *Draft sub-decree on plastic products and material management* including new measures on single-use plastic items. It aimed to manage and reduce the usage of plastic products and material in Cambodia, by

- Identifying roles and responsibility of implementers on importing, delivery, and usage of plastic products and material
- Identifying measures for managing plastic products and material
- Identifying monetary measures for import, delivery, and usage plastic products and material
- Reducing plastic products and material
- Promoting and motivating in plastic waste recycling, biodegradable plastic, and alternatives.

The *Municipal Solid Waste Management Policy* (2020-2030) aims to promote public health, protect the environment and ensure the attractiveness of centre area due to rapid urbanization and economic growth. It also aims to establish a modern, inclusive, economically efficient financially viable and sustainable urban waste and solid waste management system. It includes the following targets:

1. Increase the effectiveness and scope of service providing in municipal solid waste management based on the integrated measure, especially 3R principles with available technology.
2. Strengthen the effectiveness and efficiencies in implementing municipal solid waste management function of capital city, municipal and district administrations.
3. Develop legal framework and institutional measures, technical, technology and financing in supporting the municipal solid waste management.
4. Put into force all measures of the Royal Government to foster participation of private sectors in municipal solid waste management.
5. Promote education and dissemination and foster public participation in implementing the duties in municipal solid waste management with environmental safety.

The revised *Policy on village, commune, and district safety* (2021) provides a revised the framework of the so-called safe village-commune policy and renamed it the safe village-commune-district policy. The new safe village-commune-district policy also included principle to build harmonious, secure and safe living environments for local communities.

MoE has prepared a draft *Plastic Action Plan and Roadmap for Cambodia*, which has identified five potential short-term policy options:

1. Restrictions on sale and ban of use of certain single use plastic items in restaurants and hotels
2. Ban of single use plastic toiletries in hotels
3. Consumer fee imposed on plastic food containers, cutlery, cups and lids
4. Producer and importer fee imposed on plastic bag
5. Ban on placing on the market plastic straws and drink stirrers.

Improvements in solid waste management and waste reduction are also supported in cities and sub-national administrations. The RGC's *Phnom Penh Sustainable City Plan* (2018-2030) includes sustainability objectives for the waste sector:

- Expand quality solid waste management collection services (number of districts covered)
- Reduce organic waste going to the landfill or incinerator (percentage of total organic waste)
- Waste separation to enable recycling by households, markets and commercial enterprises (percentage of separated waste vs. total)
- Implementation of the 4R principle (reduce, reuse, repair, recycle) (percentage reduction in volume of collected waste).

Furthermore, the RGC's *Sustainable City Strategic Plan for Seven Secondary Cities (2020-2030) (draft)* includes the sustainability objective to "develop sustainable urban infrastructure for the sewerage and drainage system, wastewater management, solid waste management, water supply and transport", with the following priority actions in secondary cities:

- Improve municipal solid waste management through increased planned collection frequency and collection coverage and community engagement
- Upgrade existing landfills to better manage environmental impacts, such as leachate and gas. Develop new landfills with appropriate technical standards
- Develop separation and recycling facilities for both solid inert waste (glass, plastic) and organic waste
- Facilitate community-based participation in waste recycling programs through incentives and waste separation in households and businesses; educate community on waste minimisation practices (e.g. reducing the use of single-use items, such as plastic bottles and plastic bags)
- Establish carefully planned waste-to-energy facilities (e.g. anaerobic digestors, refuse-derived fuel, or incinerators with appropriate environmental controls).

The *Phnom Penh Waste Management Strategy and Action Plan* (2018-2035) includes specific targets and strategies to improve waste management. The following targets are in the plan:

1. Waste generation/ capita stabilises at 1kg/cap/day
2. Improve waste collection rates from 75% to 100% (by 2035)
3. Non-organic waste recycling rates increase by 95% (by 2035)
4. Organic waste recycling increases by 20% or more (by 2035).

The *Phnom Penh Waste Management Strategy and Action Plan* (2018-2035) also includes strategies to enhance sustainability by:

- Strengthening systematic waste discharge and collection systems and enhance service quality
- Promoting recycling through waste separation, involving private sector and promoting the use of recycled products
- Promoting environmentally sound management of waste disposal and mitigating impact on the environment and human livelihoods
- Managing special waste streams (construction and demolition waste, medical waste, industrial waste, Waste Electrical and Electronic Equipment)
- Sharing visions and engaging stakeholders for collective action.

Furthermore, under Cambodia's *Circular Economy Strategy and Action Plan* (2021), the following strategies related to waste reduction and management are included:

- Increasing the efficient use of raw materials, promoting sustainable design, production, remanufacturing and distribution
- Promoting sustainable consumption and effective reuse and report (for example, through reducing single-use plastics)
- Enhancing waste collection and recycling
- Ensuring effective management of residual waste
- Stakeholder engagement, awareness and capacity building.

The draft *Environment and Natural Resources Code* also provides updated legal provisions for waste management under Book 6. The draft *Environmental Code* includes criminal penalties, including strict liability provisions, for both natural and legal persons who might be responsible for breaking the law, for example for:

- disposal of hazardous substances (Article 1206)
- discharge of pollutants from a point source to surface water or groundwater resources (Article 1212) and
- exceeding the standard of emissions from air pollutants (Article 1217).

Relevant programs and partnerships supporting waste reduction and management

Development partner funded waste projects

- The *SWITCH-Asia SCP Facility* is providing technical assistance to the General Secretariat for Sustainable Development (GSSD) on preparing a policy analysis report on waste reduction in the garment sector, in consultations with stakeholders and SWITCH-Asia Grant projects.
- *The Embassy of Japan and JICA:* General Waste Management, JICA implemented a project on solid waste management improvement for the municipality of Phnom Penh including capacity building and infrastructure development (October 2006 – March 2008).
- *The Embassy of Korea:* General Waste Management, identified as a priority sector for 2020 (KOICA, 2017). In 2019, the Government of Korea provided waste management trainings through the World Bank to Government officials of Cambodia.
- *Asian Development Bank (ADB)*: Under the ADB's Second Urban Environmental Management in the Tonle Sap Basin project with the Ministry of Public Works and Transport. In 2019, ADB is supporting sewage treatment plants, drainage, and solid waste landfill construction.
- *The World Bank* will develop a new loan financed project on waste management, possibly focusing on Sihanoukville and Siem Reap provinces as well as plastic management.
- *The Asia Foundation* provided technical support for solid waste management planning in Kep province, as well as worked with Coca Cola on awareness raising activities on plastic targeted at local schools.
- *GGGI and UNIDO*: supporting plastic and organic waste recycling in Battambang city. GGGI is also supporting a pilot of Refuse Derived Fuel (RDF) and supporting the city of Kep in setting up cost recovery schemes for waste and wastewater management.
- *United Nations Development Programme (UNDP)*: Under BESD project to develop a Circular Economy in Cambodia with a projected two-year timeline of 2019-2020.
- *UNDP*: Under "combatting marine plastic litter" project to reduce plastic (2021-2023).
- *United Nations Environment Programme (UNEP)*: Southeast Asia Circular Economy for Plastic Management, which includes Cambodia.
- *Global Environment Facility (GEF)*: earmarked US$7.5 million for a regional project on waste management in Phnom Penh's largest dumpsite, Choeung Ek.
- *SNV* Cambodia Waste to energy project funded by EU, SWITCH-Asia
- *United Nations Educational, Scientific and Cultural Organization (UNESCO)*: Anti-plastic bags campaign.

Private sector led waste projects:

- *ATEC Biodigesters International*: designed a patented home biodigester for rural families in Cambodia and other Asian countries to manage their organic waste.
- *TWIN AGRI Co. LTD*: collects organic waste and creates compost which is then sold to farmers throughout the country.
- *GOMI Recycle*: is a small-medium scale recycling facility located in Phnom Penh and Svay Rieng Special Economic Zone (SEZ) and recycles all types of plastic (except PVC).
- *Battambang Plastic Product*: recycles plastic bags for plastic pellets.
- *Coca Cola*: Coca Cola has been providing waste bins for local schools and promoting upcycling their bags of sugar into reusable tote bags for shopping.
- *Chip Mong Insee Cement Corporation*: Waste to Energy project.
- *Bokashi*: sells home composting kits and a mixture which helps citizens to compost at home.
- *Funky Junk Recycled*: upcycle plastic bag waste into handicrafts and other usable products.
- *Naga Earth*: collects used cooking oil and converts it into biofuel.
- *Rehash Trash*: upcycles plastic bag waste into handicrafts and sell them to tourists.

NGO led waste projects and campaigns

- *Koh Rong Environmental Conservation Association*: promote environmental education among schools on the islands about plastic pollution and its impacts on marine life.
- *GoGreen Cambodia*: focused on waste management issues in Cambodia.
- *GERES*: worked with organic waste to develop sustainable green fuel (rice millers to transform rice residuals into a rice husk briquette for fuel)
- *Compost City*: promotes home composting.
- *Cambodian Education and Waste Management Organization (COMPED)*: has worked in the waste management sector around Cambodia.
- *Community Sanitation and Recycling Organization (CSARO)*: works with organic composting project and also informal waste pickers
- *Flora and Fauna International (FFI)*: marine plastic initiative.

Challenges in enabling waste reduction and effective waste management in Cambodia

With population growth, urbanisation and increased incomes, the volume of waste has increased. For example, in Phnom Penh, there has been significant annual increase of municipal solid waste disposal from 250,000 tonnes in 2004, to 950,000 tonnes in 2018.[39] Around 62.7% of solid waste is collected in Cambodia in 2015, and less than 8% of the waste was recycled in the same year.[40] Some rural areas have no access to formal waste collection services, although urban areas are better serviced. In Phnom Penh the formalised waste collection coverage is reported to be up to 83% (Ricardo, 2018). Waste collection is unreliable or non-existent in the outlying or peri-urban areas where most low-income residents live.

There are both behavioural barriers and service delivery challenges in waste management. Uncollected waste is routinely dumped into local rivers and ponds, burned or remains uncollected (Daudey & Matsumoto, 2017). While roughly 80% of residents put their rubbish in designated areas on their street, few rubbish bins exist in the cities and homes and businesses are expected to purchase their own rubbish bins for waste collection (Zanzanaini, 2015). Littering of plastics is common, even when consumers have higher levels of awareness of its environmental impacts (Zanzanaini, 2015). Uncollected waste is scattered and often blocks local drainage channels and creates unsanitary conditions (Daudey & Matsumoto, 2017). There are financial constraints for the waste collection companies in delivering services to outer peri-urban areas and in rural areas, and limited access and facilities to service the peri-urban areas. There are high operational costs associated with the transport of waste, purchase of land for the land-fill sites, recycling and treatment equipment, and the permits required.

There are behavioural barriers to using less plastic and increasing recycling in Cambodia. Neither the consumer or the vendor generally feels it is his or her responsibility to reduce plastic bag consumption; both parties need to feel empowered to initiate the change (Zanzanaini, 2015). Efforts to provide bins for collection has had limited success. Some businesses have removed waste disposal infrastructure (rubbish bins) as they felt they had congregated smelly rubbish in their vicinity (Zanzanaini, 2015).

Some of the key technical solutions identified to address the waste problems (Sethy, 2017) include:

- Financial and technical support is needed to improve the landfill sites (including decommissioned landfill) which are causing environmental harm.
- Fee collection for waste management services is inconsistent and can undermine the financial sustainability of the waste service provision.
- Enforcement of existing laws and regulations regarding illegal waste disposal is difficult and should be improved.

[39] PPCA, IGES, Nexus, UN Environment, CCCA. (2018). Phnom Penh Waste Management Strategy and Action Plan 2018-2035. Phnom Penh, Cambodia.
[40] UNEP, MoE and IGES. 2017. National Waste Management Strategy and Action Plan for Cambodia (Draft)

Opportunities for implementation of waste reduction and effective solid waste management

Cambodia's *Circular Economy Strategy and Action Plan* (2021) identifies a range of actions for the waste sector, which should be implemented, and which support SCP in Cambodia:

- Promote production of alternatives to single-use plastic (SUP)
- Develop Extended Producer Responsibility schemes and plastic production standards
- Reduce consumption of SUPs and other single-use materials
- Strengthen fee collection and effective waste collection
- Improve waste segregation and recycling
- Improve organic waste management
- Provide effective business support for waste and resources sector
- Improve landfill disposal and operations
- Support waste-to-energy for residual waste treatment.

Furthermore, the *Phnom Penh Sustainable City Plan* (2018-2030) identifies priority actions which are opportunities for enhancing the sustainability of waste management:

- strengthen resources and capacity of district and municipal authorities responsible for managing waste collection companies
- ensure there is a competitive market for waste collection service provision
- encourage entrepreneurship in waste collection
- provide public awareness campaigns should encourage waste separation by households, businesses, markets and manufacturing sites
- public awareness campaigns to promote alternatives to plastic use
- plastic bags are banned and replaced with reusable (eco-friendly) bags.

Recommendations for SCP roadmap

1. Establish incentives (levy or subsidies) and regulations to control the production, importing and sales to minimize the use of single-use plastics, and promote production of single-use plastic alternatives.
2. Develop Extended Producer Responsibility schemes, and plastic production standards.
3. Strengthen enforcement of existing laws on illegal waste disposal and enforce waste separation and effective collection for treatments of recyclable materials (e.g., organics, plastic, paper, metals etc.).
4. Strengthen support to subnational (commune, municipalities, district and provincial) authorities in implementation of the four Rs policy (Refuse, Reduce, Reuse, and Recycle).
5. Provide financial and technical support to improve landfill sites (including decommissioned landfills) that are causing environmental harm.
6. Increase the consistency of the fee collection for waste management services to enable financial sustainability of waste collection services.

6.7 Agriculture, fisheries, forestry and protected areas – food, fibre and natural resources systems that can be more sustainable and responsible in production processes

Relevant policies, strategies & laws supporting sustainability in agriculture, fisheries, forestry and protected areas management

Cambodia has several plans, policies and laws that support agricultural development as part of its green/ sustainable development plans. Under Cambodia's *National Strategic Plan on Green Growth* (2013-2030), Cambodia is committed to: Management and Sustainable Land Use (page 14); Conservation, Management and Sustainable Use of Natural Resources (page 15); and Conservation and Sustainable Fisheries Management (page 16). Under Cambodia's *Agricultural Sector Strategic Development Plan* (2014-2018), Cambodia aims to "increase the agricultural growth around 5% per annum". The *Agricultural Sector Strategic Development Plan* aims to accelerate agricultural development, including enhanced agricultural productivity, diversification and commercialization, promotion of livestock farming and aquaculture, land reform and sustainable management of natural resources.

The Ministry of Agriculture, Forestry and Fisheries (MAFF) has developed the Cambodian Good Agricultural Practices (CamGAP) standard, which includes an environmental management module, under Ministerial Proclamation No. 099 MAFF (2010). A CamGAP certification system is to be implemented by MAFF, with cooperation from producers, consumers, suppliers, and with support of a traceability system.

The *Green Infrastructure Guide* (2019) for Cambodia, developed by Ministry of Public Works and Transport and NCSD, support climate resilient infrastructure for agriculture, including for the construction and upgrading of roads.

Cambodia's legal/policy framework on sustainable fisheries includes:

- *Cambodia National Policy for Fisheries* (2005)
- *Law on Fisheries* (2006)
- *Sub-decree on Community Fisheries Management* (2007)
- Prakas on *Guidelines for Community Fisheries* (2007)
- *Strategic Planning Framework for Fisheries* (2014-2018)
- *National Strategic Plan for Aquaculture Development in Cambodia*
- *Camcode: Cambodian Code of Conduct for Responsible Fisheries*; Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries (2015)
- *Strategic Planning Framework for Fisheries* (2015-2024).

Cambodia's legal/policy framework for the forestry and natural resources sector includes:

- *National Forest Sector Policy* (2002)
- *Forestry Law* (2003)
- *Protected Area Law* (2008)
- *National Forest Programme* (2010-2029)
- *Sub-decree on Community Forestry Management* (2003)
- *Sub-decree on the Procedures for the Establishment, Classification and Registration of Permanent Forest Estate* (2005)
- *Guidelines on Community Forestry* (2006)
- *Guidelines on Community Protected Area and the Land Law* (2001)
- *National Forest Programme* (2010-2029)
- *National REDD+ Strategy* (2017-2026)
- *National Protected Area Strategic Management Plan* (2016-2030)
- *Prime Minister's Decree No 244 (Decision on the Harvesting Ban of Timber and NTFPs from Natural Forests in SLCs)(2018) and Prime Minister's Decree No 252 (Decision on the Harvesting Ban of Timber and NTFPs from Natural Forests in ELCs)* (2018)
- *Production forest Strategic Plan (2018-2032)* (draft).

Under the National Forest Programme, the overall vision is to "provide optimum contribution to equitable macro-economic growth and poverty alleviation particularly in rural areas through conservation and sustainable forest management, with active participation of all stakeholders". In the *National Forest Programme*, Cambodia classifies the Permanent Forest Estate according to forest functions in three major kinds: Production forests, Protection forests and Conversion forests.

The draft *Environment and Natural Resources Code* includes provisions for "sustainable forest management" (Title 4) and "sustainable fisheries" (Title 9). The draft Code provides on forestry:

- Sustainably managed forests shall be classified as Private Forests, Sustainable Production Forests, Restoration Forests, Stock Forests, or Economic Land Concessions (Article 369).
- The ministries/institutions responsible for sustainable forest management must establish a land use map of sustainably managed forests, which should be completed prior to permitting production or other uses in forests (Article 370).
- Five-year sustainable use plans, and five-year management plans are required for all sustainably managed forests (Article 372).
- All existing Economic Land Concessions must be managed in accordance with these requirements (Article 375).
- The use of sustainable charcoal and firewood consumption and production should be promoted through financial and fiscal incentives for certified sustainable producers; this will be developed in a legal instrument (Article 393).
- A legal instrument will be developed to support international forest product and management certification (Article 395).
- There will be a nation-wide licensing and monitoring system to track the production and use of all timber products originating from sustainably managed forests (Article 397).

The draft *Environment and Natural Resources Code* provides the following on sustainable fisheries:

- Fisheries management should manage and mitigate environmental risks and consequences of aquaculture development (Article 612).
- Ministries or institutions responsible for regulating fisheries are required to develop and implement conservation and management measures to prevent over-fishing and destructive fishing, based on the best scientific evidence available and supported by ongoing research and data collection (Article 614).
- Regulations are to be established for freshwater fisheries (Article 615) and marine fisheries (Article 616) to support conservation and sustainable management.
- Measures are to be established to avoid or mitigate the environmental impacts of aquaculture (Article 621).

The draft *Environment and Natural Resources Code* also provide the following on protected areas:

- Protection of biodiversity conservation corridors and natural protected areas (Articles 296-300, Articles 302-303)
- A moratorium on commercial and development activity in biodiversity conservation corridors and natural protected areas (Article 301)
- Management responsibilities and planning requirements for biodiversity conservation corridors and natural protected areas (Articles 304-327).

Relevant programs and partnerships supporting sustainable agriculture, fisheries, forestry and protected areas management

MAFF supports training programs to increase agricultural productivity and compliance with CamGAP, including for increasing post-harvest quality the use of modern technology for agriculture. MAFF also supports fisheries in assessing their waste from their fish processing and has provided guidance on animal waste for biomass and composting.

Sustainable agriculture projects

- UNIDO's project with the former Ministry of Industry, Mines and Energy in 2013 promoted the development of agricultural-residue biomass utilisation.
- SWITCH-Asia project (2012-2015), Waste to energy in the rice milling sector: Rice husk gasification technology was promoted through technological improvements and establishment of business services. This project supported waste-to-energy technologies utilising rice husk as fuel biomass. The project improved rice husk gasification technologies and promoted standardised technology in 150 rice mills. The project developed a national standard for waste-to-energy technology and a licencing procedure that will encourage millers to switch to waste-to-energy. Linkages were made with local banks in Cambodia that have loan and credit schemes, available to support technology upgrading (de Jong, 2017).

- ADB-Pilot Program on Climate Resilience (PPCR) - Greater Mekong Sub-region Flood and Drought Risk Management and Mitigation project (Component 1, Project 2: Enhancement of Flood and Drought Management in Pursat Province) (US$47.95M, including US$39M in concessional loans). This project will upgrade water infrastructure and protect it against damage from extreme weather events, strengthen regional data, information and knowledge base for flood and drought management; and improve community preparedness to manage disasters.
- ADB-PPCR – Climate Resilient Rice Commercialization Sector Development Program (Component 2, Project 2: Climate Proofing of Agricultural Infrastructure and Business-Focused Adaptation) (US$87.93M, including US$60M in concessional loans). The project aims to support the transformation of the rice subsector into a commercially oriented subsector by removing legal and regulatory constraints impeding rice commercialisation, improving the productivity of paddy crops, enhancing rice value chain support services, and addressing risks of climate change through adaptation. Resilience will be increased through improved infrastructure and development of a weather-indexed crop insurance scheme.
- ADB-PPCR – Greater Mekong Subregion Biodiversity Conservation Corridors Project (Component 2, Project 1: Promoting Climate-Resilient Agriculture in Koh Kong and Mondulkiri Provinces) (US$28.9M in grants). This project aims to enhance the climate resilience of communities and reduce the vulnerability of ecosystems in Koh Kong and Mondulkiri through construction of climate resilient irrigation schemes and rainwater harvesting ponds, as well as supporting income diversification schemes in pilot areas.

Sustainable fisheries projects

- WWF and Cambodia's Fisheries Administration, is working in northeast Cambodia to assist local communities to develop community fisheries.

REDD+ and projects promoting sustainable forestry and protected areas management

- Forest Carbon Partnership Facility phase two: aims to prepare Cambodia for implementation of REDD+ under the UNFCCC (US$5.5 million) (2017-2020)
- Non-Timber Forest Products – Exchange Program (NTFP-EP) Southeast Asia – see above.
- USAID Environment and Resilience programme – this project is supporting the preservation and conservation of natural resources, through community support and governance reforms to watershed management and protected areas. The project is supporting improved implementation and compliance with Cambodia's environmental laws, international commitments and participation in the UN's Reducing Emissions from Deforestation and Forest Degradation (REDD+) program
- FAO-FLEGT - The EU and FAO are working with Cambodia's Forestry Administration (FA) on a timber tracking system to verify sustainable origins, known as the Forest Law Enforcement, Governance and Trade (FLEGT) Programme
- There are a range of REDD+ projects supported by international NGOs, including Conservation International, Wildlife Conservation Society, and Wildlife Alliance.

Challenges in enabling sustainable agriculture, fisheries, forestry and protected areas management

Challenges in sustainability of agriculture

The main challenges in confronting the sustainability of the agricultural sector are (GGGI, 2018):

- sustainably increasing productivity to meet demand and ensure food security
- adapting to the adverse impacts of climate change (climate change poses an imminent threat to the sustainability of Cambodia's agricultural sector, in particular due to temperature increases and sporadic, extreme rainfall)
- reducing greenhouse gas emissions.

Agricultural infrastructure requires upgrading to maintain economic sustainability. An estimated 2,400 existing irrigation schemes for agriculture in Cambodia are in dire need of rehabilitation or reconstruction (GGGI, 2018). The sub-standard performance of irrigation schemes in Cambodia is most often due to their unsuitable system design and poor quality of construction.

Financing and capacity constraints also limit the sustainability of agriculture. Cambodian farmers have limited access to rural credit to support agricultural development. There is also limited access to extension services and agricultural skills including soil management, selection of seed varieties, fertilizer and other technologies. There is inadequate post-harvest process management and market development in the agricultural sector in Cambodia.

High electricity costs are also an impediment to increasing the competitiveness of the agricultural sector, as many farmers rely on electricity for irrigation. While the RGC is working to reduce the costs of electricity and transport for the agriculture sector, the costs remain high in some areas. According to Sevea (2019) while renewable energy (biodigesters and solar water pumps) presents opportunity to reduce electricity costs, their level of uptake is challenged by three main factors:

- limited awareness of renewable energy technologies
- high upfront costs of investment in renewable energy technology
- limited financing solutions (such as end-user financing from companies, loans from micro-finance institutions or loans from non-government organisations).

Cambodia's agricultural sector has also faced challenges in enabling agro-processing, which would add value to the raw products produced through linking agricultural production and manufacturing. According to the market research survey by the firm BDLINK in 2016 one of the main constraints to the agro-processing sector is the irregular and insufficient supply of raw materials.

Environmental sustainability also needs to be more strongly embedded within Cambodia's agricultural policy, according to the World Bank's 2015 report "Cambodian Agriculture in Transition". The World Bank highlights that the expansion of cultivated land for agriculture is coming at the cost of forest land, and that some land is being degraded with soil fertility loss due to some farming practices that are not maintaining soil nutrients. In other areas of Cambodia, cultivated land expansion is putting pressure on water resources. Another emerging issue is the increasing use of chemicals for vegetable and other crop production in Cambodia, which requires environmentally sound pest management strategies to be implemented, according to the World Bank's 2015 report.

Strengthening of agricultural research capacity is needed in Cambodia to support increased productivity and sustainability of the sector. Currently Cambodia's agricultural research system is fragmented, and while Cambodia's researcher numbers are steadily increasing there are still only a small fraction of researchers that are PhD-qualified (ASTI, 2020). Agricultural research spending is also low in Cambodia, despite the steady rise in spending since 2000 (ASTI, 2020).

Challenges for sustainable fisheries

- Over-fishing and dam construction place considerable pressure on the sustainability of Cambodia's freshwater and marine resources (GGGI, 2018).
- Climate change places increased pressure on water resources and fisheries.
- Deforestation causes reduced ecological buffers, creating soil erosion and reducing water quality, and reducing productivity of fisheries and agriculture (GGGI, 2018).

Challenges for sustainable forestry and protected areas management

There are several regulatory barriers to sustainable forestry and forest management in Cambodia. Deforestation and forest degradation in Cambodia is driven by commercial logging and infrastructure projects and inadequate government capacity to manage forests in these areas (RGC, 2017). Currently, forest concession boundaries in Cambodia are poorly delineated and defined. As a result, forest loss occurs frequently (GGGI, 2018). Enforcement of forest management laws and regulation is weak due to a lack of clearly designated concession areas, and a lack of monitoring of forests and the land use sector.

Rapid expansion of agriculture into forest lands, including through grants of large-scale agro-industrial economic land concessions and distribution of social land concessions between 1996-2012, also contributed to Cambodia's higher deforestation rates (RGC, 2017). Rural poverty and a lack of alternative livelihoods, as well as population increase and demand for agricultural land, has driven these land use changes and increased deforestation (RGC, 2017).

The opportunities for communities to obtain economic benefits from forest-based alternatives to illegal logging are currently limited by Cambodia's policy settings. Full opportunities to obtain economic benefits from community forestry are not yet realised because the procedure to have community forestry is lengthy and complicated and the rights under existing policy frameworks are limited (Maguigad, 2020). In protected areas rights for economic development of Non-Timber Forest Products (NTFPs) are also limited (Maguigad, 2020). Conflicting policies regarding NTFPs create confusion and are hampering access to transport and trade and scaling-up of community forestry activities (Maguigad, 2020). The existing policy framework does not include support for commercialisation of NTFPs and local capacity development.

Opportunities for implementation of sustainable agriculture, fisheries, forestry and protected areas management

Opportunities for sustainable agriculture

Climate-smart agriculture (CSA) presents an opportunity for agriculture to become more sustainable and climate-resilient. CSA enables farming techniques that increase yields and incomes, strengthen capacities to adapt to climate change and reduce greenhouse gas emissions. CSA can be supported in Cambodia through introducing and employing new drought management technologies, such as alternate wetting or rain-fed rice production, to limit drought impact. A system of rice intensification that employs alternative wetting and drying techniques for rice production has resulted in increased yields of 15-20%, reduced water requirements, increased plant strength, reductions in rice density and decreased risks posted by disease, pests and extreme weather (GGGI, 2018). CSA can also be supported through the use of climate resilient crops in the agricultural sector, by relaxing import restriction on climate-resilient seeds such as the International Rice Research Institute (IRRI) rice varieties (GGGI, 2018).[41]

Sustainable agriculture also requires infrastructure upgrading, particularly in irrigation systems. Agricultural expansion requires the construction of new irrigation schemes and converting rain-fed rice production to irrigation (GGGI, 2018). Cambodia should enforce the standards for road construction infrastructure to strengthen resilience towards climate change set out in its *Green Infrastructure Guide*.

[41] Any relaxed import restrictions should be accompanied by enforcing quality standards for imported seeds.

Opportunities for sustainable fisheries

The introduction of a traceability and certification standards for aquaculture operations, fish and fish products will support the implementation of SCP in the fisheries sector. The draft *Environment and Natural Resources Code* includes provides for Cambodia to develop a legal instrument on traceability to improve the identification of fish and fisheries product origins (Article 621), and design and implement certification standards for aquaculture operations, fish and fish products, including source and quality of feed (Article 621).

Furthermore, engaging in fishery ecolabeling could be an opportunity to access additional sustainable sources of funding for implementing community fisheries' action plans (Lieng et al., 2018).

Opportunities for sustainable forestry and protected areas management

Non-Timber Forest Products (NTFPs) present a significant sustainable opportunity for livelihoods, as an alternative to illegal logging for communities that rely on forests for their livelihoods. The introduction of a policy/ law that provides secure clear rights for forest dependent communities to forest resources and NTFPs, and a simplified application procedure for expansion of community tenure and traditional rights, will support the expansion of NTFPs (Maguigad, 2020). According to Maguigad (2020), Cambodia should develop a more expansive and inclusive policy and corresponding program that supports enterprise development, value addition, product quality, production system, investment and financing, and technology related to NTFPs with greater attention to benefit micro-small NTFP community enterprises and address their challenges.

Other opportunities to promote sustainable forestry and forest management include:

- Sustainable forest management for production and conservation values can be supported through the use of remote-sensing and Geographic Information System technologies which provide greater information and transparency of forest area land use and conservation.
- Finalise the mapping of economic land concessions (ELCs) clarifying boundaries of land use to improve regulation and enforcement of the law on ELCs (GGGI, 2018).
- Cambodia should use international forest certification systems to promote access to high-value timber markets e.g. through the Forest Stewardship Council, the Programme for the Endorsement of Forest Certification, and the International Tropical Timber Organisation.
- Provide communities with support for community forestry, through institutional, logistic, financial and materials support, enabling more community forest areas to be approved and to rehabilitate degraded forests or protect healthy forests from exploitation.
- Develop a legal instrument to promote sustainable charcoal and firewood, promoted through financial and fiscal incentives for certified producers (draft Environment and Natural Resources Code, Article 393).

Recommendations for SCP roadmap

1. Establish policy framework for Non-Timber Forest Products (NTFPs) that promotes enterprise development, value addition, product quality, production systems and investment and financing, delivering benefits to communities.
2. Establish a traceability system and certification standards for aquaculture, fish and fish products, to provide consumer information on the sustainability of fish products and help finance community fisheries.
3. Expand agricultural extension services and regulatory incentives for climate-smart agriculture, supporting climate-resilient crops, resilient agricultural infrastructure and enable importing of resilient seed varieties.
4. Develop incentives (levy or subsidies) and a certification system to promote sustainable forest products and forest management, including charcoal and firewood, to provide consumer information on the sustainability of forest products and help finance community-based natural resources management (e.g. community forestry and community protected areas).

6.8 Sustainable transport sector – improving mobility, while reducing greenhouse gas emissions and air pollution (buses, cycling, walking, electric vehicles)

Relevant policies, strategies & laws supporting sustainability in transport

Several laws, policies and strategies impact the sustainability of the transport sector in Cambodia.

Legal requirements for sidewalks to be reserved for pedestrians and parking management are provided under the *Road Traffic Law* (2015), *Road Law* (2014), and *Sub-decree 42 Urbanisation for the Capital, City and Urban Areas*. Sidewalks and parking management are important for sustainable transport.

The following plans support the development of Cambodia's transport sector:

- Cambodia's *Logistics Master Plan* (2018) focuses on the development of roads, railways, inland waterways, ports, multimodal transport facilities and air cargo hubs.
- Cambodia's *Railway Masterplan* (2014) provides a list of priority projects, including the construction of the railway link from Phnom Penh to the new Phnom Penh Autonomous Port, a new 258km railway link from Phnom Penh to the Vietnam border, and a multi-modal logistics facility at Steung Bod on the border with Thailand.
- *The Intermodal Transport Master Plan (2021-2030) (draft)*: seeks to promote Cambodia's connectivity, reduce transportation and logistics costs, integrate the Kingdom into the region and the globe, and increase competitiveness, as well as diversify the economy to boost sustainability.

The *Climate Change Action Plan for the Transport Sector* (2014-2018) from the Ministry of Public Works and Transport (MPWT) identities the need for green transportation, including integrated public transport systems in the main cities, and to enhance maintenance and inspection of vehicles.

At the sub-national level, Cambodia's capital city is aiming to promote sustainable transport solutions. The *Phnom Penh Sustainable City Plan* (2018-2030), includes the following objectives for sustainability in the transport sector:

- Reduce transport sector greenhouse gas emissions
- Bus-based public transportation system in place, covering key transportation corridors in the city
- Reduce traffic accidents
- Reduce traffic congestion.

The draft P*hnom Penh Urban Transport Masterplan (2014-2035)* proposes the following five strategies which support the sustainability of the transport sector:

1. Formulation of people and environmentally friendly urban transport system with high mobility for the citizens
2. Formulation of a physical framework for the city (road network) and creation of a smooth connection between the major cities in the Mekong sub-regions
3. Maximum use of existing transport spaces including underground and elevated spaces in the city centre
4. Efficient traffic flow (including through traffic management measures and a public transport system) and efficient freight transport system
5. Environmental and social considerations and appropriate transport-related organisations are fundamental concepts of the masterplan.

Under *Cambodia's Basic Energy Plan* (2019), the RGC includes the following action plans and policies to promote energy savings in the transport sector (see section 1.1.2):

- Import restrictions on old cars (medium or long-term policy)
- Preferred tax system for fuel-efficient cars (medium-term policy)
- Fuel consumption regulation by type of vehicle (long-term policy)
- Promotion of alternative energy (including bio gasoline[42], electric vehicles, electric bikes and compressed natural gas)
- Establishment of quality specifications for petroleum products (to ensure quality assurance, and reduce air pollution)
- Strengthening the regulations aimed at preventing accidents in the fields of oil storage, transportation, sales and consumption.

[42] Under the Cambodia's Basic Energy Plan (2019) (page 11) the introduction of bio-gasoline, as a domestically produced liquid fuel is considered to be important for the improvement of national energy supply security. Bio-gasoline can be developed from industry chains of cassava cultivation, bio-methanol manufacturing, and bio-gasoline production.

Furthermore, under the draft *National Energy Efficiency Policy (2021-2030)*, priority measures for energy efficiency in the transport sector are identified, including the introduction of fuel efficiency norms for vehicles in road transport, training programs for staff in relevant ministries on sustainable transport, and promotion of clean technologies such as electric vehicles (page 43).

The Sub-Decree No 18. on reduced taxation for imported vehicles established in February 2021, reduces the import taxation for vehicles imported to Cambodia. Electric vehicles (EV) are given preferential tax treatment, as the import tax rate has been reduced from 30% to 10% for EV, comparing to family vehicles from 70% to 55%, and commercial vehicles from 40% to 30%.

The draft *Environment and Natural Resources Code* also includes provisions for the regulation of fuels and fuel additives, to determine which fuels and fuel additives will not produce emissions that will endanger the environment, including the maximum sulphur content requirements for diesel fuel (Article 782). The draft *Environmental Code* also proposed a vehicle buy-back program, enabling cash incentives to retire older polluting vehicles (Article 783). The draft *Environmental Code* also proposed that measures be introduced to promote the import and purchase of environmentally friendly vehicles and prevent the import of vehicles with a high environmental impact (Article 867).

The General Department of Custom and Excises, Ministry of Economy and Finance, and Ministry of Environment are working together to conduct deeper study about the following measures for transport:

- possibility of banning import of too old vehicle which are harmful to environment
- providing fiscal and regulatory incentives to electric vehicle imports, which will be jointly conducted by the Ministry of Economy and Finance and Ministry of Environment
- reducing the rate of custom duty of importing new vehicles, particularly with smaller engine size and clean fuel types, to promote environmental friendliness (which has already been implemented through the sub-decree No. 18 released in February 2021).[43]

Relevant programs and partnerships supporting sustainable transport

- ADB – Supporting Sustainable Integrated Urban Public Transport Development (2018-2020) (US$1.5M, technical assistance). The project will improve management of the urban public transport system in Phnom Penh to achieve a sustainable integrated system and promote its use by (i) developing policy guides and a planning toolkit for relevant public transport authorities; (ii) formulating candidate integrated urban public transport improvement programs; and (iii) providing capacity development training to the public transport authorities to improve their system management capacity, and public awareness-raising workshops to promote use of the system.

[43] Lao Poliveth, Deputy Director, Macroeconomic and Fiscal Policy Department, General Department of Policy, Ministry of Economy and Finance, Presentation on Contribution to Sustainable Consumption and Production (Workshop on SCP Planning, hosted by GIZ and NCSD, Feb 2021).

- Climate Technology Centre & Network (CTCN) - Development of a low-emissions mobility policies and financing proposals for Cambodia (2019-2020), which aims to develop a policy action plan for sustainable and low-emissions policies for Cambodia including an action plan for cleaner and efficient fuels and vehicle policies, and also to develop a sustainable and low-emissions transport proposal in Cambodia for possible submission to global environment funds.
- GGGI-Green Climate Fund – readiness preparation support project to promote green mobility, which aims to transform the growing fleet of motorcycles in Cambodia to low-emission motorcycles, shifting from gasoline to electric motorcycles.

Challenges in enabling sustainable transport

A growing number of vehicles (cars, tuk-tuks, motorcycles) and insufficient transport infrastructure is contributing to increased greenhouse gas (GHG) emissions, air pollution and traffic congestion in Cambodia. From 1997 to 2015, annual vehicle registration grew at a rate faster than the preceding decade, with an average annual growth rate of 11.3% for cars, vans and trucks, and 21.8% for motorbikes (Clean Air Asia, 2019). The majority of vehicles are second-hand and have low efficiency, and consequently high emissions. Urban areas experience heavy traffic due to inadequate road network infrastructure, a lack of public transportation infrastructure, and weak enforcement of traffic management laws. The transport sector is expected to account for an increasingly larger share of GHG emissions in Cambodia.[44]

Mass public transit systems do not currently exist in Cambodia's major cities, including Phnom Penh. The bus and ferry system are marginal in their capacity. The modal share of railways for passengers and freight in Cambodia is negligible (ADB, 2019). There are currently no laws/ regulations to govern railway infrastructure, operation and technical standards and specifications (ADB, 2019).

Spatial planning in cities has not adequately considered the transport needs of the residential or commercial areas. Some residential projects (e.g. satellite cities or borey) have been developed without consideration to road network access and traffic dispersal. Roads are deteriorating in some areas due to a lack of planning for heavy vehicles serving factories and construction depots. Freight transport is also impacted by slowing traffic and degraded roads.

[44] Climate Technology Centre and Network – Technical Assistance Response Plan – Cambodia (2019).

The main barriers to low-emissions mobility in Cambodia include:

- Lack of information (consumers, policy makers and vehicle manufacturers are not fully aware of the environmental and economic benefits of cleaner fuels and vehicles)
- Policy and planning do not support low-emissions vehicles, as there are no dedicated fiscal or regulatory policies to incentivise the uptake of cleaner fuels and vehicles[45]
- Institutional capacity is limited, as there has been a lack of capacity to develop national electric mobility projects
- Economic and market barriers – there is a need for charging infrastructure development, and fiscal policies to support investments in transportation that promote the uptake of sustainable transport technologies.[46]

Opportunities for implementation of sustainable transport solutions

- Establish a plan to encourage cycle use in cities, including consideration of segregated lanes and cycle pathways.
- Improve the pedestrian friendly environment in cities, through enforcement of parking regulations.
- Establish vehicle emission standards, particularly for sulphur and hydrocarbon limits for fuel, in line with regional standards.
- Introduce incentives to encourage low-emission vehicles (with better emissions performance standards, e.g. hybrid or electric); fiscal and regulatory incentives to be considered include duty rates and special tariff rates based on the engine size and fuel type, fuel economy labelling, and setting age limits for the importation of vehicles.[47]
- Increase the availability of information on low-emissions vehicle options, for example, through fuel economy labelling (informing consumers of the level of fuel efficiency of vehicles).[48]
- Strengthen traffic management systems and enforcement of traffic regulations, including through smart city initiatives whereby increased use of information technology can enhance mobility and reduce traffic congestion.
- Implement the masterplans to support the financing of mass public transit systems in cities.
- Support the use of biofuels, especially bioethanol, enabling a reduction in the importation of gasoline and reduction of greenhouse gas emissions.

[45] The establishment of bioethanol policies and related regulations, such as bio-gasoline specifications, safety regulations and roadmaps, is required to support bio-gasoline production.
[46] Climate Technology Centre and Network – Technical Assistance Response Plan – Cambodia (2019).
[47] Clean Air Asia. 2019. *Regulatory and Fiscal Policies for Road Transport Vehicles in Cambodia; output 3: Final Assessment Report and Policy Recommendations*.
[48] Clean Air Asia. 2019. *Regulatory and Fiscal Policies for Road Transport Vehicles in Cambodia; output 3: Final Assessment Report and Policy Recommendations*.

Recommendations for SCP roadmap

1. Establish vehicle emissions standards for pollutants (Nox, CO, SOx, & PM) and fuel quality standards.
2. Enable pedestrian and bicycle mobility through sidewalks and cycling infrastructure, and enforcement of parking regulations.
3. Provide fiscal and regulatory incentives and infrastructure to shift to low-emissions vehicles, including electric motorbikes and cars, and study options for phasing out old vehicles.
4. Increase public and private investment in urban public transport improvement programs (railway, rapid bus transit, ferries).

6.9 Water consumption and use – opportunities for water use efficiency technology, wastewater treatment facility, water recycling and water use reduction

Relevant policies, strategies & laws supporting sustainability water consumption

The *Sub-Decree No. 27 on Water Pollution Control* (1999) aims to minimise and phase out the various activities which cause pollution in public water areas in order to sustain good water quality that is suitable for human usage by improving wastewater management. The *Sub-Decree on Water Pollution Control* outlines the responsibilities and obligation of owner of pollution sources in water environment management. The *Sub-Decree on Water Pollution Control* includes: (i) general provisions; (ii) provisions on waste and hazardous waste discharge; (iii) effluent discharge permits; (iv) monitoring of pollution sources; (v) water pollution monitoring in public water areas; (vi) inspection procedure; (vii) penalties; and (viii) final provisions. The *Sub-Decree on Water Pollution Control* focuses on the routine monitoring of water quality at public water areas and effluent, which discharges from industrial and other pollution sectors. The Sub-Decree on Water Pollution Control stipulates effluent standards for the proper treatment of wastewater. If the wastewater discharges into the public water areas without treatment, the Ministry of Environment (MoE) will fine the person(s) who violates the legal instruments. The owner or manager of factories must ask for a permission towards the discharge of treated wastewater. The Sub-Decree provides standards for:

(i) Effluent standard for pollution sources discharging wastewater to public water areas or sewer
(ii) Type of pollution sources required having a permission from Ministry of Environment before discharging or transporting their wastewater
(iii) Water Quality Standard in public water areas for biodiversity conservation
(iv) Water Quality Standard in public water areas for public health protection.[49]

[49] http://www.wepa-db.net/policies/law/cambodia/02.htm

Additional regulations and guidelines that support sustainable water consumption include:

- *Sub-Decree No. 86 for Construction Permits* that requires all houses and buildings to install septic tank systems.
- *Sub-Decree No. 39 on Management of Borey* (2011) that requires that developers should put in place minimum infrastructure, including for sewerage and wastewater treatment (Article 8).
- *Sub-Decree No. 235 on Management of Drainage and Wastewater Treatment System* (2017) that transfers the functions of operations and maintenance of drainage and wastewater treatment systems to the capital, municipal, district and khan administrations. MoE is responsible for monitoring the wastewater treatment system process, including the preparation of policies or strategic plans for water pollution management in public water areas.
- The Wastewater System Operation and Maintenance Guideline (2018) provides technical guidance on the design and operational processes for sewerage and wastewater treatment system infrastructure, including the monitoring of water quality of effluents following the treatment stage.

Other relevant laws and policies supporting sustainability of water management and use include:

- *National Policy for Water Supply and Sanitation* (2003)
- *Water Resources Policy* (2003)
- *Law on Water Resources Management* (2007)
- *National Strategic Plan for Rural Water Supply, Sanitation and Hygiene* (2011-2025).

The draft *National Energy Efficiency Policy (2021-2030)* identifies the need for energy efficiency in municipal wastewater management, through substituting diesel generator pumping systems with more efficient systems and establishing guidelines for their operations and maintenance (page 42).

At the sub-national level, the *Phnom Penh Sustainable City Plan* (2018-2030), includes the following objectives for addressing urban vulnerability including ensuring the sustainability of water use:

- Ensure secondary treatment of wastewaters generated in inner city areas
- Ensure households in peri-urban areas have improved and secure sanitation systems that will prevent pollution dispersion during high rain and flooding events
- Improve the natural lakes and wetlands in the city, which serve as natural flood control and wastewater management systems
- Create or restore green corridors throughout the city.

Relevant programs and partnerships supporting sustainable water consumption

Projects supported by Multilateral Development Banks

- The Water Supply and Sanitation Improvement Project (2019-2024) ($55 million, implemented by MPWT and MISTI, support from World Bank); The project is divided into two main parts:

    1. Part One, to be implemented by MISTI focuses on supply of clean water and building new water supply systems in Sen Monorom in Mondulkiri province; Stung and Santuk districts in Kampong Thom province; Prasat Bakong and Sotun districts in Siem Reap province; Phnom Proek in Battambang province; and in Samaki Meanchey and Teuk Phos districts in Kampong Chhnang province.
    2. The second part of the project to be implemented by MPWT is hygiene oriented, with a focus on supporting the development and construction of a drainage network that will be connected to the current sewage system in Siem Reap, so that homes and businesses can connect directly to the whole sewage system in the city. This project includes provisions for development of a national regulation on tariff setting for urban sanitation services.
- ADB – Integrated Urban Environmental Management in Tonle Sap Basin (US$52 M, 2016-2021)
- ADB – Provincial Water Supply & Sanitation Project (US$30M, 2017-2022)
- ADB – Greater Mekong Sub-region: second corridor towns project (US$38M, 2016-2020).

Projects supported by non-government organisations

A number of NGOs are active in both water and sanitation in Cambodia, particularly in the rural areas (ISF - UTS, 2011). A Global Sanitation Fund US$5 Million Rural Sanitation and Hygiene Improvement Program implemented by Plan International was launched in March 2011. NGOs have pioneered a range of innovative approaches, including sanitation marketing, school-based sanitation, and sanitation for floating communities. The Australian Government through AusAID, supported water and sanitation activities implemented by NGOs, SNV Development Organisation and Oxfam.

Challenges in enabling sustainable water consumption

Wastewater treatment is limited by inadequate infrastructure in Cambodia. The majority of wastewater is managed by on-site systems, septic tanks, as there are limited wastewater treatment plants, and limited sewerage treatment. Many households in peri-urban areas and low-income areas have weak sanitation facilities that use pour flush latrines, which leach directly into local drains and water courses. Unsanitary living conditions and health problems are created by practicing of open defecation in poorer areas. Facilities for disposing of sludge from septic tanks are limited, and sludge from commercial buildings and households are often dumped illegally into drainage channels and low-lying wetlands.

The sustainability of urban wastewater management and treatment is further challenged by:

- Rapid urban development and climate change: that is increasing flood risk and exposing increasing populations to water pollution (without sufficient water treatment), particularly in peri-urban areas.
- Insufficient financing: wastewater tariffs are currently not used, and the financing of wastewater treatment infrastructure is therefore not financially viable in many areas.
- Low-cost options are less utilised: Most urban water investment studies have focused on capital-intensive, centralized wastewater systems and have not considered decentralized development.
- Insufficient planning: urban sanitation is not integrated into the multi-annual investment planning cycle for municipality urban development plans.

Opportunities for implementation of sustainable water consumption

- Introduction of wastewater tariffs, to support financial viability of wastewater treatment.
- Investment in restoration of green infrastructure (green corridors, natural lakes etc.) can provide natural water filtration and flood mitigation.
- Investment in decentralised or semi-centralised wastewater treatment infrastructure (DEWATS), particularly in the poorer peri-urban communities.
- Raise household demand for DEWATS, which could accelerate micro-financing in the sector.
- Improve drainage systems in flood-prone areas through using integrated systems of rainwater retention and restoration of natural hydrological systems, green areas and engineering measures.
- Support households to use improved and secure household sanitation systems that prevent pollution dispersion during high rain events.
- Support increased capacity of NGOs and the private sector to scale-up the implementation of sanitation facilities, through increased training and awareness raising.
- Support school-based sanitation as an integrated approach combining DEWATS with health-hygiene education.
- Substitute diesel generator operated municipal wastewater pumping systems with more efficient systems to improve energy efficiency.
- Increase the private sector’s involvement in microfinancing for sanitation.

Recommendations for SCP roadmap

1. Develop national regulations on wastewater tariff settings to support the sustainable financing of sanitation infrastructure.
2. Improve drainage in flood prone areas through green infrastructure that uses natural hydrological systems.
3. Promote public-private investment in decentralised wastewater treatment infrastructure in new urban developments and schools.
4. Strengthen monitoring, reporting and enforcement of water pollution control regulations, including effluent standards in both industrial and residential areas.

6.10 Sustainable energy sector – supporting energy efficient consumption and sustainable energy production

Relevant policies, strategies & laws supporting sustainable energy

The Royal Government of Cambodia has, in the past, recognized the role that energy efficiency could play in realizing Cambodia's economic development aspirations. The National Energy Policy of October 1994 states the need for reliable and affordable energy services as a means of supporting Cambodia becoming a middle-income country by 2030, ambitions that can be supported through a more efficient use of energy. This policy is one of the earliest national documents laying out the basis for a dedicated policy on energy efficiency. In addition, the aims, and goals of several national policies, strategies and action plans could be supported by such policy. In particular, the Electricity Law, adopted in 2001 with amendments in 2007 and 2015, establishes there regulatory and organizational basis for all activities related to the supply of electricity and associated services. The draft *National Energy Efficiency Policy* (2021-2030) will further complement the provisions of the Electricity Law by laying out a framework specifically covering Energy Efficiency activities.

The *National Policy on Rural Electrification by Renewable Energy* (2006) has the objectives of:

1. Providing access to reliable, safe electricity services, with insignificant impact on the environment
2. Encouraging the private sector to participate in providing electricity services by renewable energy in the rural areas
3. Acting as a market enabler, through various incentives
4. Encouraging of using renewable energy technologies
5. Promoting electricity systems by renewable energy at least cost for renewable communities, through research and pilot development, and
6. Empowering the poor involving in rural electrification to participate.

Generation of energy from solar PV is permitted under certain conditions. In 2018, the Electricity Authority of Cambodia (EAC) issued the "Regulations on General Conditions for Connecting Solar PV Generation Sources to the Electricity Supply System of National Grid or to the Electrical System of a consumer connected to the Electricity Supply System of National Grid" to regulate the installation and operation of the Solar PV system in Cambodia. All investors, who are allowed to invest in Solar PV projects for connecting it to the Electricity Supply System of National Grid must comply with the technical standard, safety and other certain conditions set forth in this regulation.

The *Rectangular Strategy Phase IV*, adopted in September 2018, identifies strategic goals and priority areas to support Cambodia achieving its vision of an inclusive, sustainable, and high-income country by 2050. The Strategy broadly identifies "Efficiency" as one of its four core goals, alongside growth, employment, and equity. The Strategy also highlights a set of priority areas that could be supported with a wider adoption of Energy Efficiency, which include enhanced competitiveness of businesses, the promotion of industrial innovation and entrepreneurship, and the sustainable management of natural resources. The Strategy makes references to the challenges of high energy prices, especially oil, and the need to ensure energy security in the long-term, both of which could be addressed through a dedicated policy on Energy Efficiency.

The *National Strategic Development Plan* (2019-2023) (NSDP), which was adopted in September 2019, was formulated to support implementation of Rectangular Strategy Phase IV, and defines policy priorities for the Sixth Legislature of Cambodia's National Assembly. Among energy sector policies, the promotion and development of energy efficiency and energy savings is well identified as a priority of the NSDP, which could be further supported through this energy efficiency policy.

Cambodia's *Industrial Development Policy* (2015-2025), approved by the Council of Ministers in 2015, aims to instil a transformation of Cambodia's industrial sector from a labour-intensive to a skill- based industry, focusing on innovation, technology, and higher productivity. The policy stresses the need of enhancing the industrial competitiveness of national industries, especially at the global level. While Energy Efficiency does not feature in the policy as a specific approach to improve industrial competitiveness, it could support some of the strategies identified forth at end, in particular the reduction of electricity prices and the increased access to reliable electricity supply.

Cambodia's trade and investment laws currently provide partial support to renewable energy projects. Under Cambodia's *Investment Law*, renewable energy investment projects are entitled to 100% exemption of export tax, 100% exemption of import duties on construction materials, equipment, raw materials and spare parts (if the company is government-owned).[50]

[50] https://agep.aseanenergy.org/wp-content/uploads/2019/10/RE-Financing-in-CLM.pdf; note: this exemption is not exclusive to renewable energy projects.

Cambodia's Updated *Nationally Determined Contribution* (NDC) to the Paris Agreement on climate change, formally submitted to the UNFCCC on 31 December 2020, sets out the national plans, programs and activities on climate change mitigation and adaptation, including scenarios and targets for 2030. Energy efficiency interventions feature prominently in the NDC, being highlighted as important sectoral and cross-sectoral GHG emission reduction activities. The NDC also recognizes that these as well as other mitigation activities could make strong contributions to sustainable development in Cambodia. Accordingly, a national policy on energy efficiency could lay out the enabling conditions to accelerate the implementation of energy efficiency projects featured in the NDC. In December 2020, Cambodia's Prime Minister also announced a renewable energy target for the production of electricity in Cambodia of 25% by 2030, as part of Cambodia's NDC update.[51]

Cambodia's *Climate Change Strategic Plan* (2014–2023) has the strategic objective of promoting low carbon planning and technologies to support sustainable development. The Strategy encourages all line ministries to share the responsibility of reducing GHG emissions by preparing their respective Climate Change Action Plans. It identifies Energy Efficiency as an important approach to reduce GHG emissions, highlights its positive impacts on health, well-being, and energy security. The Strategy recommends the promotion of "low-carbon planning and technologies", and accelerating the uptake of energy Efficiency in demand side, which could be supported with a dedicated policy on Energy Efficiency.

Cambodia's *Climate Change Action Plan for the Energy Sector* (2021-2023) includes strategic objectives and action that support the sustainable production and consumption of energy, as well as greenhouse gas mitigation and low-carbon development. In particular, the Action Plan proposes a strategic objective of "implementation of the GHG emission management approach for the energy sector". Cambodia intends to update its Energy Development Master Plan and its National Energy Efficiency Policy (NEEP) (see actions 1 and 2). Further strategic actions related to SCP include:

- Provide the remaining and remote off-grid villages with low carbon energy (action 6)
- Provide and implement energy efficiency projects to support NEEP implementation (action 7)
- Develop and implement Energy Efficiency Standards & Labelling Program to support NEEP implementation (action 8)
- Conduct study on clean and sustainable energy for cooking and implement the best available options for cooking (action 9)
- Conduct study on sustainable business model to introduce efficient and clean thermal energy for all sectors (action 10)
- Establish energy management program for large buildings and factories and voluntary scheme for SMEs for NEEP implementation (action 11)
- Implement capacity building in renewable energy and energy efficiency (action 12)
- Raise public awareness on energy saving (action 13).

[51] Minister for Environment, HE Say Samal, press release: https://www.moe.gov.kh/en/index/27889

Ministry of Mines and Energy (MME) has been preparing the National Energy Efficiency Policy (2021-2030) that is designed with the vision of an energy sector in Cambodia is to be more efficient and modern, enabling economic growth and social inclusiveness, ensuring competitiveness of businesses, and improving human health, while also preserving the valuable natural capital of the country. MME has also been preparing a new policy framework for energy efficiency that will underpin the Energy Efficiency Sector Development Program (EESDP) that is planned for 2022. MME has already made a requested for ADB support to structure the EESDP as an umbrella mechanism that can leverage many partners interested in energy efficiency.

At a sub-national level, the *Phnom Penh Sustainable City Plan* (2018-2030) includes sustainability objectives for the energy sector, as follows:

- Increase the share of solar energy in electricity supply
- Reduce electricity consumption in commercial and service companies through the introduction of energy efficiency measures
- Reduce electricity consumption in households through the introduction of energy efficiency measures
- Municipal and other government buildings with suitable roofs have solar PV installed.

The *Phnom Penh Sustainable City Plan* (2018-2030) also includes the following priority actions for the sustainability of the energy sector:

- Energy efficiency audits are conducted as standard practice across all municipal services and properties, energy management plans are instituted, and energy efficiency measures (and renewable energy installations) are implemented
- All electrical appliances and cook-stoves are tested and labelled following national standards, and energy efficiency labelling is in Khmer language
- A market for energy efficiency services is established
- All new government, commercial and industrial buildings have renewable energy installed.

Relevant programs and partnerships supporting sustainable energy

Utility scale Solar projects[52]:

- 10MW solar plant in Bavet city, Svay Rieng province (operational 2017)
- 5MW solar plant in Bavet city, Svay Rieng province (Operational 2018)
- 80MW solar plant in Kampong Speu province, operational in Dec 2019
- 120 MW solar plant (30MW in Banteay Meanchey, 30 MW in Pusat, 60MW in Kampong Chhnang), operational in 2020
- 60MW solar plant in Kampong Chhnang (EDC-ADB project) (to be operational in 2022).

[52] http://cleanenergycambodia.org/cleanenergymap

Off-grid solar projects

- Solar micro-grid system, enabling pooling and sharing of energy produced by solar for off-grid access.
- A range of other solar projects including solar home systems, and solar irrigation in rural areas.

Wind projects

- 80MW wind farm Bokor Mountain, Kampot province (planned)[53]

Development Projects

- The Rural Electrification Fund (REF) established in 2004 with support from the World Bank and the Global Environment Facility (GEF), supports rural households and private electricity suppliers to improve electricity infrastructure in rural areas; including renewable and non-renewable technology.
- ASEAN-German Energy Programme – supporting renewable energy project financing in Cambodia, Lao PDR and Myanmar.
- EU SWITCH-Asia and People in Need, Switch to Solar project (2020-2024, EUR5.3M) will target greater access to environmentally-friendly products and services from target micro SMEs. The project is focused on agro-processing by supporting Micro, Small and Medium Enterprises (MSMEs) to access finance for solar technologies and solutions. The main objective of the project is to contribute to sustainable and inclusive economic growth in rural areas of Cambodia by reducing the environmental impacts of MSMEs energy consumption and generating green employment opportunities. More specifically, the project aims to improve consumption patterns and behaviors in rural areas of Cambodia by supporting MSMEs to switch from unsustainable energy to solar energy sources.
- GEF project – Building adaptive capacity through the scaling up of renewable energy technologies in rural Cambodia, implemented by International Fund for Agricultural Development and Ministry of Agriculture, Forestry and Fisheries (US$25.8M, from 2015).
- GGGI – Facilitating ESCO investments in Cambodian SMEs: aims to mobilise private investment of USD25 million to energy efficiency projects in manufacturing SMEs through ESCOs.
- GEF-UNIDO Project (US$1.5M) – Reduction of GHG emissions through promotion of investments in biogas mini-grids, which promotes the use of biogas technologies for electricity generation in commercial animal farms, by converting methane emitted from animal waste into energy for productive use.
- EU SWITCH-Asia: Meet-Bis Cambodia project (2014-2015, EUR1.97 M) aimed to mainstream energy efficiency through business innovation support. The project developed business support packages for SMEs involved in the energy efficiency value chain.
- UNDP: Building and Enabling Environment for Sustainable Development project to mainstream solar for the national energy mix and provision of micro-DC grid for off-grid communities.

[53] http://cleanenergycambodia.org/cleanenergymap

- ADB – Grant Agreement (ADB Strategic Climate Fund- SREP): National Solar Park Project (2019) (total financing is US$26.71M, including US$3M grant and US$18.64M in concessional loans). The project will support EDC in constructing a 100-megawatt capacity solar park and transmission interconnection to the nearest sub-station.
- ADB – Power Grid Expansion project (US$127.8M) to support the construction of transmission lines and substations to help Phnom Penh and three other Cambodian provinces with stable and reliable electricity supply. The project will also pilot the first utility-scale battery energy storage system, funded by a $6.7M grant with finance from the Scaping Up Renewable Energy Program in Low-Income Countries, and the Clean Energy Financing Partnership Facility.

Challenges for sustainable energy in Cambodia

Cambodia has undergone a rapid transformation in electrification growth in the last decade, leading to increased electricity demand. The electrification rate has increased from 34.11% in 2010 to 81.6% in 2019. According to preliminary estimates made as part of Cambodia's Power Development Master Plan (2020-2040), prior to the onset of the COVID-19 crisis, electricity demand was expected to grow from 1,800 MW in 2019 to 10,927 MW by 2040 at a Cambodian growth rate of 7.19%.[54] As per the medium growth projections of the *Power Development Master Plan*,[55] the industrial and services sectors are expected to have a major share (on account of increased industrial and commercial activity) in the energy consumption. Textile and Food and Beverage account for major industrial sub-sectors. The services sector includes commercial buildings, public services like municipal wastewater pumping, streetlighting and government buildings. The growth rate of electricity consumption in residential, services, and industrial sectors in medium growth scenario is 3.44%, 7.47%, and 13.14%, respectively.

Despite the growing demand for energy, the dependence on imported energy, and energy prices being higher than neighbouring countries, the potential for energy efficiency in Cambodia is not yet fully exploited. So far, the energy efficiency implementation depends on technical assistance from development partners, bilateral, multilateral, or regional cooperation. Energy efficiency projects have also been implemented in the garment, textile and footwear industry sectors due to the requirements of buyers and brand owners, awareness, cost reduction, and environmental protection. Regional and global experience shows that the establishment of a policy framework to support is the first step in the transition towards an energy-efficient economy. Currently, Cambodia's national policy framework generally supports energy efficiency, so Cambodia needs a specific policy to overcome obstacles in developing energy efficiency projects and promote the widespread use of energy efficiency potential.

[54] MME, Draft Power Demand Forecasts, Power Development Master Plan (2020 – 2040), ADB Consultant's Projections, March 2020.

[55] These are preliminary estimates made as part of Cambodia's Power Development Master Plan, as of June 2020, which is being developed with the technical assistance of ADB.

The Cambodian government currently does not have any policies or regulations to promote or incentivize grid-connected solar/ Photovoltaic (PV) systems. To enable more sustainable solar home systems, Cambodia should introduce regulations that require quality-verified solar kits, enforcing quality standards, and increasing the capabilities of technicians (for example - through certification programs as recommended by Regulatory Indicators for Sustainable Energy (RISE)).[56]

The use of traditional cookstoves is a significant challenge for sustainable energy consumption in Cambodia. An estimated 70% of total energy consumption in Cambodia is biomass which is primarily used for cooking; fuel used for cooking in Cambodia is typically wood sourced from illegal deforestation (World Bank, 2018). Burning biomass for cooking in traditional ways produces toxic smoke that pollutes the air and is a health risk for asthma and respiratory disease. Only 32.9% of Cambodian households (including 77.1% of urban households), use a clean fuel stove as their primary stove. LPG stove is the most popular (prevalent) type of clean fuel stove (World Bank, 2018). Charcoal for cooking is generally produced and sold by informal SMEs, and these enterprises generally do not know or are about producing it sustainably (de Jong, 2017). Affordability and a lack of consumer information are key issues preventing the transition away from is traditional cookstoves to using LPG. Cleaner fuels are more expensive. Studies have shown that of the 10% of households that use a clean fuel stove as their primary stove, they allocate on average more than 5% of total spending on fuel (World Bank, 2018). To expand the use of cleaner fuels and technologies, affordability needs to be tackled through innovations in business models for stoves and fuels (such as pay-as-you-go arrangements), as well as through targeted support for special groups, such as low-income and female-headed households (World Bank, 2018). On the other hand, other studies have shown that charcoal remains popular in cities and amongst wealthier people, and therefore sustainable sources of wood fuel for charcoal production are necessary for sustainable cooking (GERES, 2013).

Opportunities for sustainable energy in Cambodia

To support opportunities for energy efficiency development in Cambodia, the strategic framework for energy efficiency shall be achieved through interdependent and well laid strategic pillars that would bolster Cambodia's efforts towards a more energy efficient economy, and the overarching goal of a more competitive, resilient and sustainable economy. Five Strategic Pillars have been identified by MME, as follows: 1-Creation of a legal and regulatory framework for energy efficiency; 2-Mobilization of funding for Energy Efficiency; 3-Governance and coordination mechanisms; 4-Building human capital; and 5-Awareness raising and sensitization. These strategic pillars are essential to the creation of an enabling environment for energy efficiency, which would lead to investments, both public and private, on more energy efficient technologies and approaches in energy consuming sectors. At the same time, piloting and demonstration are required to establish investor confidence, build national capacities, and enable a transition towards larger feasible projects.

[56] RISE results for Cambodia can be viewed at: http://rise.worldbank.org/country/cambodia

Cambodia has significant renewable energy potential, including in solar and wind. Cambodia's high solar potential results from the high-quality irradiance and cheap land availability. Solar PV can be developed on rooftops, where land access is difficult. Cambodia has the potential to generate 700MW of electricity per year through solar power, which can be installed on 1,400 hectares of land (de Ferranti, R. et al., 2016). Cambodia also has the potential to generate wind power, with potential mostly in the mountainous districts of the southwest and coastal regions (e.g. Sihanoukville, Kampot, Kep, Koh Kong). Wind and solar power stations can be built in a much quicker time than hydropower or coal, and are complementary to hydropower, as these sources can make up the difference in power generation during the dry season. Agricultural waste such as rice husk biomass also has significant potential for renewable energy generation particularly in rural areas (Pode, R. et al, 2015). Furthermore, municipal solid waste and sewerage are potential sources of bioenergy to be developed.

The introduction of policies supporting Cambodia's renewable energy target would increase the uptake of sustainable renewable energy. Utility-scale solar PV can be supported through implementation of a transparent and competitive auction mechanism, with a standardised Power Purchase Agreement (UNDP, 2019b). Regulatory measures, such as value-added tax (VAT) exemptions would encourage the development of sustainable energy sources and the formalisation of SMEs in the renewable energy sector (de Jong, 2017). The development of a roadmap or a masterplan for clean biomass cooking stoves would also support the uptake of sustainable cookstoves, including the development of national standards, testing, and certification of biomass cookstoves.

Recommendations for SCP roadmap

1. Establish regulations to promote energy efficiency and renewable energy development.
2. Develop standards and labelling program for electrical appliances and equipment, including testing and certification procedures.
3. Conduct energy efficiency audits across all government services and properties and establish energy management plans for each Ministry.
4. Promote energy efficiency through education and awareness raising for the public, residential and commercial sectors.

6.11 Mining – sustainable and responsible extraction of mineral resources

Relevant policies, strategies & laws supporting sustainable mining in Cambodia

Mineral operations (from prospecting stage until production stage and management of mineral exports) is regulated under Cambodia's *Law on Minerals Resource Management and Exploitation* (2001). A company that wishes to exploit industrial minerals such as gold, copper, iron ore or bauxite must first get an exploration license. After the mineral resource deposit is defined, the applicant must submit a technical, financial, environmental, social and economic analysis (Article 11(6)). Mining licences are regulated by:

- *Law on Mineral Resource Management and Exploitation* (2011)
- *Amendment Law on Mineral Resource Mineral Management and Exploitation* (2018)
- Sub-Decree No. 72 on t*he Management of Mineral Resource Exploration License and Industrial Mining License*
- Inter-Ministrial Prakas
- Ministry of Mine and Energy Prakas and Circulars
- Mining Licence Condition Prakas
- Circular No. 360 on *Guideline for Granting Mineral Exploration License*
- Sub-decree No.72 on *Environmental Impact Process* (1999).

Before a mining license is granted, an Environmental Impact Assessment (EIA) study of the mining project is required to be approved by the Ministry of Environment, which includes a management plan for minimizing environmental and social impacts. The licensee must provide financial guarantees and prepare a plan for restoration after the project is over. The licensee must protect the health of workers and the public, and must also educate, train and provide jobs to Cambodian citizens.

The *National Policy on Mineral Resources (2018-2028)* outlines the government's vision, priorities, objectives and roles in managing the nations mineral resources and in ensuring the production of mineral resources is carried out in a sustainable, productive, successful and consistent manner. The policy aligns with the principles of SCP, as it sets a vision of ensuring mineral resources are managed and developed sustainably, bringing benefits to the local communities, supplying raw materials for the development of infrastructure and construction and creating a new source of revenue for Cambodia. The policy includes the following objectives:

1. Strengthening public institutions in the management and development of mineral resources
2. Promoting sustainable and responsible mining operations
3. Developing mineral resources and community
4. Developing artisanal and small-scale mining
5. Mineral resources and exports.

The *Strategic Plan on Management of Mercury in Artisanal and Small-Scale Gold Mining in Cambodia* (2012-2016) supports the environmentally sound management of mercury and mercury-contaminated waste generated from artisanal and small-scale gold mining activities in Cambodia.[57]

[57] Ministry of Environment and United Nations Environment Programme (UNEP), National Assessment Report on Mercury in Cambodia, August 2016.

The draft *Environment and Natural Resources Code* also proposes new regulations for responsible extractive industries (see: Book 3, Title 7), including:

- Requirements for sector-based Strategic Environmental Assessments for the exploration or extraction of each extractive industry (including oil, gas, minerals, metals, and other geological materials) (Article 282), including for existing exploration and extraction resource industries (Article 283)
- Establishment of a legal instrument on artisanal and small-scale mining to ensure safe, efficient and environmentally sustainable practices (Article 285)
- Exclusion of mining and extractive activities from prohibited areas (Article 286)
- Use of best available technology and avoid environmental harm in extractive industries (Articles 287-290)
- Requirements for the use of cyanide and mercury in gold and silver mining, to ensure safety and environmental sustainability (Articles 291-293).

Relevant programs and partnerships supporting sustainable mining in Cambodia

One private sector led project is the Mesco Gold partnership with Development and Partnership in Action (DPA) to support indigenous communities and sustainable mining and socio-economic development in Ratanakiri province.[58]

Another sustainable mining practice is Okvau Commune Development Project that involves multi-stakeholders including representatives from Okvau Commune Council, Commune representatives, local authorities, and Ministry of Mine and Energy.

Challenges for sustainable mining and production

The primary objective of mineral resource development is to ensure that the mining and production develop sustainably and responsibly. Economic, social and environmental matters are the decisive factors to consider in a mineral investment project. The integration of these three matters is essential to avoid problems and negative impacts, and to ensure sustainable mineral development.

However, the sector still faces a challenge of illegal mining activities that still re-exist in some illegal mining areas. Those illegal mining activities have been cracked down by Inter-Ministerial Task Force lead by Ministry of Mine and Energy or local provincial Task Force.

There is a lack of on-ground data reporting and monitoring across sectors, including in the environmental protection provisions and standards in Cambodia. Increased operational budget is needed for developing monitoring frameworks and enforcing standards for sustainable mining.[59]

[58] PACT, Partnership for Environment Project, website (accessed 8 January 2020).
[59] Price Waterhouse Coopers (PWC), draft report for United Nations Industrial Development Organisation (UNIDO), "Assessment of Current Policy and Institutional Framework Targeting Industrial Development and Recommendations to Include Resource Efficiency within the existing Legal Framework", 11 March 2021.

Much of Cambodia's mineral resources lies in the northeast of the country, in Mondul Kiri, Ratanak Kiri and Kratie, which have diverse ecosystems and sensitive biodiversity. These areas contain protected wildlife sanctuaries and protected forests. However, it is estimated that 22% of these protected areas were covered by mining concessions.[60] Mining should be excluded from these protected areas to sustain the biodiversity and natural resources of these areas.

Mercury contamination has resulted from artisanal gold mining. Miners have used mercury for the first extraction of gold and some miners have used cyanide for a second extraction (Murphy et al., 2008). The release of mercury into the environment has extensive impacts, threatening human health and ecosystems.

Opportunities for sustainable mining

Sustainable mining projects provide opportunities to partner with local communities for social-economic development, while ensuring environmental sustainability of mining operations.

Recommendations for SCP roadmap

1. Exclude mining and extractive projects from protected areas (wildlife sanctuaries and protected forests).
2. Establish a legal instrument on artisanal and small-scale mining to ensure safe, efficient and environmentally sustainable practices.
3. Prepare a sector-based Strategic Environmental Assessment (SEA) for each extractive industry (including oil, gas, minerals, metals etc).
4. Encourage public-private partnerships that enable responsible mining practices, including jobs and education opportunities for local communities, including Indigenous peoples.

6.12 Financing – opportunities for the banking and finance sector to support more sustainable business practices and sustainable consumption

Relevant policies, strategies & laws supporting sustainable financing

Cambodia's *National Strategic Plan on Green Growth (2013-2030)*, commits the RGC to supporting sustainable financing for the green economy in Cambodia, the following ways:

- Enhancement of green investments including for green products, green services and green finance markets (page 4)
- Mainstreaming green growth into financial, banking and economic systems (page 5)

[60] WWF website "Cambodia's eastern plains landscape under threat: Mining in the eastern plains landscape" (accessed 8 January 2020).

- Promoting and enhancing financial reform management of the public and private sector by implementing good governance principles, especially transparency, accountability and responsibility (page 6)
- Creating a favourable enabling environment for financial firms, financial institutions, and the National Bank of Cambodia to improve access to green finance at national and sub-national levels (page 8)
- Developing policy and legal formalities to pay for environmental protection services (page 9).

Under Cambodia's *Financial Sector Development Strategy (2011-2020)*: Cambodia aims to achieve a sound, efficient, diversified, and inclusive market-based financial system with supporting sustainable economic growth, raise people's income, reduce poverty and align economic and financial integration.

There are several laws that regulate the financial sector, including:

- *Secured Transaction Law* (2007) – raises the efficiency of collateralised loans
- *Law on Financial Leasing* (2009) – enables banks to conduct financial leases to SMEs lacking in collateral.

The *Credit Bureau of Cambodia* conducts credit background checks of individual borrowers, helping financial institutions to assess the creditworthiness of new borrowers (Eisinger & Cochu, 2016).

The *Cambodian Sustainable Finance Principles* have been adopted by the Association of Banks of Cambodia (ABC). These principles aim to create a level playing field and raise standards across the sector. Implementation Guidelines have been developed for Cambodian Banks and Microfinance Institutions to develop their own sustainable finance approaches, in line with the Cambodian Sustainable Finance Principles.[61]

Cambodia established an SME Bank in 2020 as a state-owned bank to provide better and affordable access to financing for SMEs in key priority sectors, including food manufacturing and processing, the manufacturing of local consumer goods, waste recycling, production of goods for the tourism sector and making finished products, spare parts or assembling parts to supply other manufacturing, research and development associated with information and technology (IT), or the supply of IT-based services and enterprises located in SME cluster zones and enterprises developing a cluster zone.[62] SME bank of Cambodia's SME Co-financing Scheme (SCFS) is jointly supported by the Government and Participatory financial institutions (Banks and MFIS). The SCFS aims to facilitate SMEs to have access to affordable and adequate financing in an active and sustainable manner. The scheme priories SMEs who invest in sustainable businesses like material recovery processing. Given the SME bank's inclusion of waste recycling as a priority, the SME Bank is expected to increase access to finance for SCP related investments by SMEs in Cambodia.

[61] Cambodian Sustainable Finance Principles Implementation Guidelines, February 2019.
[62] Sok Chan, 5 November 2020, Khmer Times "SME Bank of Cambodia Open for Business".

The draft *Environment and Natural Resources Code*, proposes new economic and financing measures to support environmental and social sustainability (see Book 8), including:

- Development of a legal instrument to determine economic measures (such as taxation, subsidies and other fiscal measures) in support of strategic development; biodiversity; conservation; climate change; sustainable development; and environmental & natural resource protection, enhancement and environmental restoration (Article 867)
- Taxation benefits for businesses that use sustainable energy sources, or support the commercialisation, installation or technical support for sustainable energy devises (Article 868)
- Import tariff exemptions for devises for the generation of sustainable energy or energy efficiency (Article 868, d)
- Establishment of mechanisms for providing payments for natural resource services to natural persons, communities or legal entities (Article 870)
- Establishment of the Environmental and Social Fund (Articles 882-885)
- Enabling establishment of Environmental Trust funds (Articles 886-902)
- Enabling establishment of a conservation or mitigation bank (Article 915).

Relevant programs and partnerships supporting sustainable financing in Cambodia

- *Rural Electrification Fund* (2004-2012, see above): provides interest-free loans, grants and loan guarantees for rural electricity projects, including mini/micro hydro, biomass and solar PV.
- *National Biodigester Programme* (NBP): a joint project of Ministry of Agriculture, Forests and Fisheries, and SNV Netherlands Development Organisation; established in 2005 and supporting farmers with installing biodigesters by providing preferential loans and a subsidy for investment costs. Financial support is provided in cooperation with several Cambodian micro-financing institutions.
- *EU SWITCH-Asia Meet-Bis Cambodia project* launched in 2014 aimed to stimulate SME investment in energy efficiency through access to finance. Funding approaches that were used included: product-based financing (leasing), supplier financing (for energy service companies), and end-user financing (target credit lines for SMEs).
- Solar Microfinance Programme, which is managed by AFD (French Development Agency), the EU and SNV, provided loans to purchase solar energy systems and helped to build the capacity of local technicians to install solar panels, and small business entrepreneurs to retail them.
- ACLEDA Bank grant from ADB, and loan from International Finance Corporation (IFC) and the Global Agriculture and Security Programme: earmarked for lending to SMEs and agri-businesses.
- AFD provision of a EUR14.1million credit facility to Foreign Trade Bank, for financing of private water and rural electricity enterprises. Loans under this facility have preferential terms that cater to the needs of SMEs.

- Private equity and venture capital funds, such as the Cambodia-Laos Development Fund, and the Mekong Renewable Resources Fund provide investment funding for environmental services and infrastructure, renewable energy and energy efficiency projects.
- USAID- Green Invest Asia: connects investors with sustainable agriculture and forestry. In Cambodia the project seeks to support companies' readiness to secure finance for the sustainable production of cashews, charcoal (made from coconut waste and recycled wood) and teak.
- Mekong Strategic Partners: Cambodian Institution for Green Financing is designing a sustainable financing mechanism with support from the Green Climate Fund.

Challenges for enabling financing for sustainable production and consumption

Private sector investors in renewable energy and other sustainability projects in Cambodia still face high financing costs (both equity and debt), due to a mix of technical, regulatory, financial and informational barriers, and their associated investment risks (UNDP, 2019a).

Obtaining financing for SMEs in sustainable enterprises is difficult as micro-financing loans are often too small for the capital required, and bank loans are too large for small and lower-range SMEs (Eisinger & Cochu, 2016). The major challenges that keep SMEs from applying for formal financing are high collateral requirements and high interest rates (Eisinger & Cochu, 2016). Many SMEs are not willing to become formalised, as business registration comes with considerable bureaucratic hurdles and financial burdens; and without formal registration, banks are reluctant to lend to SMEs.

Private equity and impact investments are still limited to a small number of enterprises in Cambodia, and green credit is not yet a priority for Cambodian banks (Eisinger & Cochu, 2016). Foreign Direct Investment (FDI) has played an important role in the Cambodian economy, however, strong restrictions on FDI for environmental reasons are not likely to be feasible in Cambodia due to costs (KEI, 2018).

Opportunities for enabling financing for sustainable production and consumption

A range of financing instruments could support the financing of SCP in Cambodia, including:

- Green finance, which comprises financial products and services to promote environmentally responsible investments and stimulate low-carbon technologies, projects, industries and businesses (Eisinger & Cochu, 2016).
- Financial leasing enables a leasing company to lease technology and equipment to SMEs; for the period of the leasing contract the leasing company keeps ownership of the equipment, and the SME pays leasing rates including and interest rate; once all leasing payments have been made the SME becomes the owner of the technology.

- Credit guarantees provide another mechanism for facilitating SME access to finance. For example, risk-sharing facilities can be established between development finance institutions (such as ADB) and Ministry of Economy and Finance, which guarantee a percentage (e.g. 50%) of the loan amount borrowed by SMEs participating in the scheme. The remaining risk is borne by the respective Micro-Finance Institute (MFI) or bank from which the money is borrowed (Eisinger & Cochu, 2016).
- Revolving funds can address access to finance barriers for renewable energy (de Ferranti et al., 2016). A feasibility study has been prepared for a revolving fund to promote energy efficiency with SMEs, by Emerging Markets Consulting with support from GGGI.[63]
- Positive reinforcement or incentives for foreign investors in Cambodia that incorporate environmental sustainability objectives into their business projects (for example through tax incentives or negotiations) will help to improve the sustainability of investments (KEI, 2018)
- Sustainable financing for conservation, which may include REDD+, payment for ecosystem services, eco-tourism, environmental certification and trust funds for conservation outcomes.

Research by Eisinger & Cochu (2016) has shown that banks, micro-finance institutions and development agencies each have a role in enabling sustainable financing for SCP, such as:

- Cambodian banks could work to remove some of the barriers for SMEs to access finance for investments in cleaner production, e.g. by adapting loan volumes to SME needs, and gradually reducing interest rates or collateral requirements.
- Micro-finance institutions (MFIs) could also be encouraged to lend to SMEs for SCP; MFIs could tailor dedicated green financing programmes that are only available for investing in SCP.
- Development agencies can provide technical assistance to SMEs to prepare financial statements, which is a pre-requisite for obtaining external finance in the form of loans or equity.

Furthermore, independent trust brokers can also help to build trust between SMEs and formal financial institutions (banks and MFIs); for example, technology suppliers and research organisations can help financial institutions to demonstrate that investments lead to economic and environmental savings, and also support SMEs in preparing loan requests (Eisinger & Cochu, 2016).

[63] See: Emerging Markets Consulting, 'Fund to support energy efficiency', pre-feasibility study (2016).

Recommendations for SCP roadmap

1. Expand sustainable financing programmes for conservation (e.g. REDD+, payments for ecosystem services, community-based ecotourism, environmental certification and trust funds for conservation outcomes).
2. Establish a revolving fund to address SME access to finance barriers for investments in energy efficiency and other technology improvements for sustainability.
3. Develop new programs that provide preferential loans and subsidies, and expanded financial leasing programs, for SMEs to invest in clean technology and sustainable production practices.
4. Establish the Cambodian Institution for Green Financing with support from the Green Climate Fund to support SCP projects.

6.13 Education – promotion of sustainability in schools and work, and promoting responsible consumption practices

Relevant policies, strategies & laws supporting sustainability education

Cambodia's education system is supported by its *Education Strategic Plan 2019-2023*, which gives a high priority to equitable access for high quality basic education services and focuses on seven key sub-sectors: Early Childhood Education, Primary Education, Secondary and Technical Education, Higher Education, Non-Formal Education, Youth Development and Physical Education and Sport.

The Department of Environmental Education (DEE) is mandated by the Ministry of Environment (MoE) to promote the understanding of environmental issues and to lead eco-friendly activities on environmental protection, natural resource protection, biodiversity conservation and climate change adaptation for a green environment and sustainable development in Cambodia. DEE prioritizes its environmental education actions for both the national and sub-national levels of government in Cambodia. It focuses on stakeholders' capacity building through formal and non-formal environmental education, enabling knowledge to trickle down to communities and encourage participation in activities such as the conservation and protection of natural resources, biodiversity, and other sustainable development activities.[64]

The *National Guidelines on Eco-School in Cambodia (2016)* have been jointly developed by MoE and Ministry of Education, Youth and Sport (MoEYS). It offers schools a set of criteria to become an eco-school that recognises the value and implements sustainability practices. The criteria encompass: (a) school policies and administration on environment; (b) teaching modules and learning activities about environment in school and surrounding communities, (c) environmental facilities and practices, and (d) partnership and community outreach.[65]

[64] See Global Search for Sustainable Schools (accessed 8 January 2021)
[65] See National Guidelines on Eco-School in Cambodia (accessed 8 January 2021)

Relevant programs and partnerships supporting sustainability education

- National Eco-Schools Program: jointly implemented by MoE and MoEYS (since 2016), aims to raise awareness to students and communities on environmental issues. It supported the development of the *National Guidelines on Eco-School in Cambodia* (2016), and has criteria and awards aligned to the ASEAN Eco-Schools Guidelines and ASEAN Eco-School Awards.[66]
- Sustainable schools project (2020): MoE & UNEP are implementing an eco-schools' program, which aims to mainstream a shared vision of sustainable schools, through disseminating a common framework of sustainable lifestyles, including through integrating sustainable lifestyle principles and practices into school curricula through the development of environmental education materials. The project will also provide capacity building for achieving the greening of the learning process and learning environments; and empower teachers, students and communities to adopt sustainable lifestyles through participation and education.
- Go-Green Cambodia: campaign via social media provides information on sustainable lifestyles and supports Cambodians to review their daily consumption of plastics.
- Global Climate Change Alliance Plus: an initiative that is working to improve knowledge of climate change through integration of a climate change subject into Cambodia's national curriculum.
- US-AID Cambodia Green Future Activity (2019-2024): this project engages a range of audiences and stakeholders in Cambodia to raise awareness of environmental issues and promote greater awareness of environmental protection.

Challenges for sustainability education and promoting sustainable lifestyles

- Most schools in Cambodia have not mainstreamed environmental education into their curriculum.[67]
- Cambodia's education system also faces many challenges delivering a high quality of education, which is often due to a lack of school accessibility, availability of teachers and learning materials.[68]
- The number of schools participating in the national eco-schools' program in Cambodia remains low, and there is a need to encourage participation and build institutional capacity to disseminate the concept broadly.
- Most schools in Cambodia need resources and a clear mechanism to apply to the national eco-school program.

[66] See Global Search for Sustainable Schools (accessed 8 January 2021)
[67] See Global Search for Sustainable Schools (accessed 8 January 2021)
[68] See Global Search for Sustainable Schools (accessed 8 January 2021)

Opportunities for sustainability education and promoting sustainable lifestyles

- Environmental education and awareness raising in schools, including demonstration projects for waste separation and recycling, decentralised wastewater treatment, and organic gardening.
- Engage and influence parents and communities to reduce plastics and encourage organic growing activities.
- Using temples and public green spaces to grow organic fruit and vegetables.[69]
- Promotion of clean fuels and technologies for cooking, heating and lighting that do not create pollution within the home.
- Promotion of sustainable offices and workplaces, through provision of guidance on sustainable consumption of electricity, water and plastics.
- Certification of businesses that follow sustainable business models, for example, by reducing consumption of energy, water and resources.
- Promotion of environmental sustainability practices, such as waste management and plastic reduction through mass media (television, newspapers, radio) and social media.

Recommendations for SCP roadmap

1. Expand the eco-schools' program to all schools in Cambodia.
2. Promote sustainability leadership in businesses and workplaces through certification, awards and recognition.
3. Deliver public awareness raising campaigns on sustainable lifestyles (reducing consumption of energy and water and reducing plastic and food waste).
4. Expand vocational training opportunities in sustainability businesses (e.g. renewable energy, energy efficiency, green buildings).

7. Overall Gaps and Challenges

The challenges for implementing SCP in Cambodia span across multiple themes discussed below.

Policy: While Cambodia's national policy framework from its highest level is supportive of SCP, including the *Rectangular Strategy and National Strategic Development Plan* (NSDP) (2019-2023) as well as the *National Strategic Plan for Green Growth* (2013-2030), there is currently no clear direction and steps for implementing SCP. A range of laws, regulations, strategies and policies have been established supporting SCP, but their implementation is inconsistent, due to insufficient resources, both in terms of human and financial capacity. As discussed in section 6 of this scoping study, a range of sector-specific regulations, strategies and policies have been adopted that to some extent support SCP (see **Table 3**) or are currently being designed in areas such as tourism, energy, manufacturing and building construction.

[69] See for example: Buddhist Monks Farm Organic Produce (accessed 8 January 2021)

However, many of those sector-specific policies, strategies and regulations are not well aligned with each other, which give limited effect on SCP implementation overall. Additionally, for each government policy and strategy, practical guidance and clear milestones need to be defined over the next five, ten or twenty years to enable SCP implementation, such as for the development Eco-labels, Green Building Certification, Eco-Tourism and Green Public Procurement (GPP).

Coordination and responsibility: The roles and responsibilities of many stakeholders in the implementation of SCP is currently unclear, leading to a lack of coordination especially amongst ministries and between the national and sub-national levels of government. For example, the institutional arrangements for monitoring the C-SDGs are currently unclear and coordination among ministries and stakeholders responsible for the various targets that relate to SCP remains ad hoc.

Research: Studies and research on SCP in Cambodia, and the impact of SCP measures, are currently very limited. There are currently few studies that relate to the SCP system in Cambodia, including the production, distribution, consumption, investment and values elements. Policy research is needed to inform the strengthening of Cambodia's tax and regulatory framework for SCP (KEI, 2018).

Human resources and financial resources: Limited resources are available for SCP including human and financial resources, for example, in the introducing new initiatives such as Eco-labelling and GPP. Efforts should be increased to better mainstream the priorities for SCP into the national budget, in line with the work undertaken by NCSD and MEF in recent years for climate responsive budgeting in pilot ministries. The achievement of SCP across all sectors in the economy will require more than the budget of MoE. It will require the commitment and allocation of resources from a range of government institutions at national and sub-national levels (KEI, 2018). Furthermore, measures to mobilise private sector resources and public-private partnerships for sustainable businesses and sustainable consumer practices should be expanded in Cambodia (as discussed in section 6.12).

Incentives for the private sector: Cambodia does not currently have many policy incentives in place that address the negative externalities of the private sectors activities, such as the pollution and environmental degradation resulting from certain private enterprises and private consumption activities (such as manufacturing, building construction, transportation, forestry and agriculture). The absence of incentives to internalise environmental and social externalities causes harmful goods and services to be over produced, whereas socially beneficial ones remain under-supplied (KEI, 2018). It is therefore critically important that efforts at an institutional level, led by the national government, are directed at measures to embed the social and environmental costs into the private function (KEI, 2018). For example, levies, carbon taxes and other tax and regulatory incentives can be put in place.

Environmental awareness of consumers: research is needed to determine the extent to which Cambodian consumers have environmental awareness and knowledge of the impact of their consumer choices. Awareness raising and education are powerful tools to promote more demand for environmentally friendly business and consumer practices and products (KEI, 2018).

Monitoring, reporting, evaluation and learning: While Cambodia has set up a national monitoring and reporting framework for the C-SDGs, there are very few indicators to monitor progress on goals related to SCP. For example, under C-SDG 12, on 'Responsible Production and Consumption' there are only a few indicators which have a limited focus on chemical pollution and waste management/ recycling, whereas other important global targets (focused on sustainable business practices, food waste, sustainable tourism etc.) have not been locally adopted in Cambodia and are not being monitored. An expanded set of targets could be established for SCP monitoring in Cambodia, aligned with the monitoring framework proposed under the *Circular Economy Strategy and Action Plan* (2021). Monitoring and reporting are important for providing transparent information to the community, as well as in supporting evaluation and learning, enabling a better understanding of the effectiveness of SCP measures.

Table 3. Summary of measures to support SCP by sector in Cambodia (source: authors)

Sectors	Policies and Initiatives								
	Public Procure-ment	Labelling and certification	Trade and investment incentives	Subsidy	Levy/tax	Other regulations / guidelines	Awareness and Education	Waste Manage-ment and Recycling	Business and NGO initiatives
Sustainable production									
Manufacturing			X			X		X	X
Fisheries						X			X
Forestry						X			X
Agriculture						X			X
Construction			X			X			X
Mining						X			
Tourism		X				X	X	X	X
Energy				X		X			X
Services	X					X		X	X
Logistics (transport)					X	X	X		X
Public Procurement						X			X
Labelling						X			X
Waste						X	X	X	X

Sectors	Policies and Initiatives								
	Public Procure-ment	Labelling and certification	Trade and investment incentives	Subsidy	Levy/tax	Other regulations / guidelines	Awareness and Education	Waste Manage-ment and Recycling	Business and NGO initiatives
Sustainable consumption									
Energy						X			X
Buildings						X			X
Food									
Water						X		X	
Personal transport					X	X			
Land use									
Household appliances									
Information Communications Technology (ICT)									
Garments			X			X			
Education (School Levels)							X	X	
Other services									

8. Summary of Key Opportunities and Recommendations for SCP

Building on the existing initiatives (such as design of the *Environment and Natural Resources Code*) and newly developed strategies (such as the *Circular Economy Strategy and Action Plan*) the foundation of SCP is now being established in Cambodia. As outlined in Section 6 above, many opportunities for SCP have been identified that should be incorporated into the SCP Roadmap, including the need to raise awareness of sustainability, reform the waste management system (promote recycling/plastic reduction), the need to set up Green Building Guidelines and a certification system, eco-labelling for consumer products and services (particularly in sustainable tourism, appliances and equipment) and the need to incentivise energy efficiency and sustainable energy practices in commercial activities and households. Furthermore, the government agencies can play a leading role through establishing a Green Public Procurement program, which will enable a more sustainable market of infrastructure and services. Moreover, the banking and financial sector has a role providing financial instruments to enable clean technology and upgrading of business practices towards more sustainable production.

This scoping study recommends that Cambodia's Roadmap for SCP is structured around the five components of the SCP system identified by Barber (2014), including measures to support sustainability in (1) Production, (2) Distribution, (3) Consumption, (4) Investment and (5) Values.

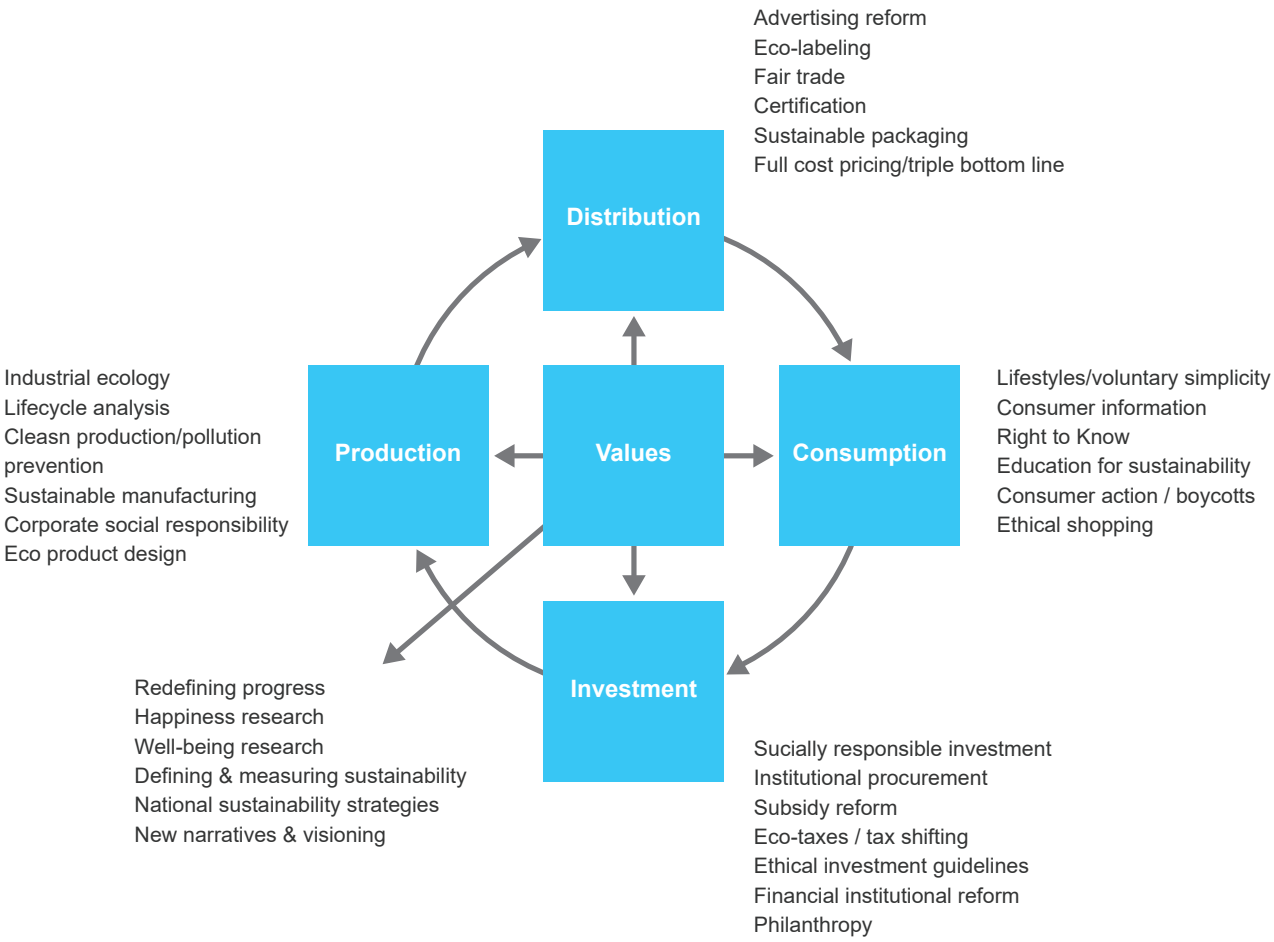


Figure 10. Sustainable Consumption and Production System
(source: Barber (2014))

Each element of the SCP system presents opportunities for reform measures (Barber, 2014):

- production system – industrial ecology, lifecycle analysis, clean production/pollution prevention, sustainable manufacturing, extended producer responsibility, product design
- distribution system – advertising reform, eco-labelling, fair trade, certification, sustainable packaging, full cost pricing
- consumption system – lifestyles/voluntary simplicity, consumer information, right to know, education for sustainability, consumer action, ethical shopping
- investment system – socially responsible investment, institutional procurement, subsidy reform, eco tax/tax shifting, ethical investment guideline, financial institutional reform, philanthropy
- values – redefining progress, happiness research, well-being research, defining and measuring sustainability, national sustainability strategies, new narratives and visioning.

Furthermore, the SCP Roadmap should be underpinned by an effective strategy for its implementation, including clear roles and responsibilities for each ministry involved, clear milestones for the next five, ten and fifteen years, a monitoring and evaluation framework to support institutional learning, and a resourcing framework. It should be accompanied by a proposed communications strategy, including environmental, health, development, and political oriented communication strategies.

Summary of Recommendations

The following recommendations are made to the Cambodian government and the private sector in relation to promoting SCP across all sectors of the economy in Cambodia, based on the analysis above. The roles and responsibilities for implementation of each of the recommendations, as well as the funding requirements, will be determined in the preparation of the SCP Roadmap for Cambodia.

Industry

1. Design new mandatory Environment Quality and Effluent Standards for factories in Cambodia, and strengthen monitoring, reporting and enforcement of these mandatory standards in factories.
2. Establish Resource Efficiency Assessment guidelines and auditing processes for certification of factories and incentives towards sustainability, including for energy and water use efficiency.
3. Improve manufacturing processes and the design of products to promote the use of sustainable materials and make products more easily recyclable.
4. Establish and enforce spatial land-use plans in all urban and peri-urban areas to direct industries away from flood prone areas, agriculture and residential areas.

Buildings

5. Design and pilot Guidelines and a Certification system for construction and retrofitting of Green Buildings in Cambodia.
6. Propose options for institutional arrangements, such as establishing a Green Building Council or Institute, led by Government or a public-private partnership with support from NCSD and MLMUPC.
7. Update building codes and construction regulations with minimum green building requirements.
8. Deliver capacity building and awareness raising and partnership amongst architecture and planning professionals and the community on green buildings.

Tourism

9. Prepare rural tourism and ecotourism destination planning and management.
10. Set up funding mechanisms to strengthen rural tourism and eco-tourism, especially community-based eco-tourism.
11. Establish a public-private partnership to deliver a Cambodian rural tourism and eco-tourism certification program, which is aligned to international eco-tourism certification programs.
12. Expand rural tourism and eco-tourism projects with community benefit sharing and payments for ecosystem services.

Public Procurement

13. Set up a sustainable procurement standard, under the National Council for Sustainable Development and Ministry of Economy and Finance (note: NCSD is starting to prepare the green public procurement roadmap and MEF will be involved in this process).
14. Design environmental criteria and performance requirements for priority products and services to be procured by the government.
15. Integrate sustainable procurement standards into the public procurement system under the Ministry of Economy and Finance (including the amendment of public procurement law).
16. Provide technical guidance to Ministries and agencies in implementing the sustainable procurement standards, and monitoring and reporting on the standards.

Eco-labelling

17. Design an eco-labelling program for export products manufactured in Cambodia (such as garments and textiles, footwear, food and beverages).
18. Design an eco-labelling program for sustainable cookstoves, household appliances, electronics and other domestic household items.
19. Promote international eco-labelling programs for the tourism and services sectors in Cambodia (e.g. Green Globe Certification).
20. Provide support to SMEs seeking to obtain certification through the eco-labelling program and promote the program amongst SMEs.

Waste

21. Establish incentives (levy or subsidies) and regulations to control the production, importing and sales to minimize the use of single-use plastic, and promote production of single-use plastic alternatives.
22. Develop Extended Producer Responsibility schemes and plastic production standards.
23. Strengthen the enforcement of existing laws on illegal waste disposal and enforce waste separation and effective collection for treatments of recyclable materials (e.g. organics, plastic, paper, metals etc.).
24. Strengthen support to subnational (communes, municipalities, district and provincial) authorities in implementation of the four Rs policy (Refuse, Reduce, Reuse, and Recycle).
25. Provide financial and technical support to improve landfill sites (including decommissioned landfills) that are causing environmental harm.
26. Increase the consistency of the fee collection for waste management services to enable financial sustainability of waste collection services.

Agriculture, fisheries, forestry and protected areas

27. Establish policy framework for Non-Timber Forest Products (NTFPs) that promotes enterprise development, value addition, product quality, production systems and investment and financing, delivering benefits to communities.
28. Establish a traceability system and certification standards for aquaculture, fish and fish products, to provide consumer information on the sustainability of fish products and help finance community fisheries.
29. Expand agricultural extension services and regulatory incentives for climate-smart agriculture, supporting climate-resilient crops, resilient agricultural infrastructure and enable importing of resilient seed varieties.
30. Develop incentives (levy or subsidies) and a certification system to promote sustainable forest products and forest management, including charcoal and firewood, to provide consumer information on the sustainability of forest products and help finance community-based natural resources management (e.g. community forestry and community protected areas).

Transport

31. Establish vehicle emissions standards for pollutants (Nox, CO, SOx, & PM) and fuel quality standards.
32. Enable pedestrian and bicycle mobility through sidewalks and cycling infrastructure, and enforcement of parking regulations.
33. Provide fiscal and regulatory incentives and infrastructure to shift to low-emissions vehicles, including electric motorbikes and cars, and study options for phasing out old vehicles.
34. Increase public and private investment in urban public transport improvement programs (railway, rapid bus transit, ferries).

Water

35. Develop national regulations on wastewater tariff settings to support the sustainable financing of sanitation infrastructure.
36. Improve drainage in flood prone areas through green infrastructure that uses natural hydrological systems.
37. Promote public-private investment in decentralised wastewater treatment infrastructure in new urban developments and schools.
38. Strengthen monitoring, reporting and enforcement of water pollution control regulations, including effluent standards in both industrial and residential areas.

Energy

39. Establish regulations to promote energy efficiency and renewable energy development.
40. Develop standards and labelling program for electrical appliances and equipment, including testing and certification procedures.[70]
41. Conduct energy efficiency audits across all government services and properties and establish energy management plans for each Ministry.
42. Promote energy efficiency through education and awareness raising for the public, residential and commercial sectors.

Mining

43. Exclude mining and extractive projects from protected areas (wildlife sanctuaries and protected forests).
44. Establish a legal instrument on artisanal and small-scale mining to ensure safe, efficient and environmentally sustainable practices.
45. Prepare a sector-based Strategic Environmental Assessment (SEA) for each extractive industry (including oil, gas, minerals, metals etc).
46. Encourage public-private partnerships that enable responsible mining practices, including jobs and education opportunities for local communities, including Indigenous peoples.

Financing

47. Expand sustainable financing programmes for conservation (e.g. REDD+, payments for ecosystem services, community-based ecotourism, environmental certification and trust funds for conservation outcomes).
48. Establish a revolving fund to address SME access to finance barriers for investments in energy efficiency and other technology improvements for sustainability.

[70] As per recommendation 18.

49. Develop new programs that provide preferential loans and subsidies, and expanded financial leasing programs, for SMEs to invest in clean technology and sustainable production practices.
50. Establish the Cambodian Institution for Green Financing with support from the Green Climate Fund to support SCP projects.

Education

51. Expand the eco-schools' program to all schools in Cambodia.
52. Promote sustainability leadership in businesses and workplaces through certification, awards and recognition.
53. Deliver public awareness raising campaigns on sustainable lifestyles (reducing consumption of energy and water and reducing plastic and food waste).
54. Expand vocational training opportunities in sustainability businesses (e.g. renewable energy, energy efficiency, green buildings).

Cross-cutting

55. Increase research on the SCP system in Cambodia to inform policy/regulatory design.
56. Mainstream the priorities of SCP into the national budget.
57. Strengthen human resources capacity across the public and private sectors to promote SCP, for example through professional development and vocational training, particularly on pollution control and waste management for SMEs and MSMEs.
58. Develop and implement a national communications strategy for promotion of SCP.
59. Expand the targets under C-SDG 12 to include a more comprehensive set of indicators related to SCP and address data gaps by ensuring the monitoring of C-SDGs is adequately funded.
60. Ensure all SCP policy measures and programs are socially inclusive and gender responsive.
61. Provide opportunities for knowledge sharing on SCP both within Cambodia (across sectors and provinces) and between Cambodia and other countries, particularly in Southeast Asia.
62. Design the Cambodian SCP Roadmap structure around the SCP system conceptualised by Barber (2014), which includes measures to support sustainability in (1) Production, (2) Distribution, (3) Consumption, (4) Investment and (5) Values (see Annex Three).

[70] As per recommendation 18.

Appendix One: Agenda and Questions for stakeholder meetings

Priority Ministries for consultation

1. Ministry of Industry, Science, Technology and Innovation
2. Ministry of Environment
3. Ministry of Agriculture, Forestry and Fisheries
4. Ministry of Mines and Energy
5. Ministry of Commerce
6. Ministry of Education, Youth and Sports
7. Ministry of Land Management, Urban Planning and Construction
8. Ministry of Public Works and Transport
9. Ministry of Tourism
10. Ministry of Economy and Finance
11. Ministry of Planning
12. Council for Development of Cambodia

Agenda and information requests

Ministry of Industry, Science, Technology and Innovation

Agenda

1. Sustainable business practices and industries
2. Raising information and awareness
3. Scientific and technology capacity
4. Priorities for the SCP roadmap

Questions

1. How is MISTI working with companies to adopt sustainable practices and integrate sustainability information into their reporting cycle?
2. How is MISTI providing information and raising awareness amongst companies, especially SMEs, about sustainable business practices?
3. How is MISTI supporting the strengthening of scientific and technology capacity to move towards more sustainable patterns of consumption and production?
4. What does MISTI suggest are the main priorities for the SCP roadmap to support the strengthening of the sustainability of Cambodia's industries?
   - How important is capacity building for SMEs on energy efficiency?
   - How important is capacity building for SMEs on pollution & waste management?
   - How important is technology transfer and upgrading for factories?
   - How important is it to work with investors and financing institutions to promote more sustainable production in Cambodia's industrial sector?

Ministry of Environment

Agenda

1. Managing hazardous waste and persistent organic pollutants (PoPs)
2. Environmental Quality and Effluent Standards
3. Air pollution
4. Marine pollution
5. Resource efficiency assessments
6. Priorities for SCP roadmap

Questions

1. The voluntary review of the C-SDGs noted that two targets for C-SDG12 *(Responsible Consumption and Production)* are not being achieved (the targets on the effective management of *hazardous waste* (target 12.4.3) and the target on the reduction of *Persistent Organic Pollutants* (target 12.4.1)). How is the MoE working to ensure the targets will be met by 2030? What more could be done through the SCP roadmap?
2. Under the draft Environmental Code, the Ministry will design new *Environmental Quality and Effluent Standards*. Is the Ministry developing these standards?
3. How is MoE supporting management of air pollution?
4. How is MoE supporting management of marine pollution?
5. Under the draft Environmental Code, the Ministry will design a legal instrument for *Resource Efficiency Assessments*, and an environmental auditing process for these these Resource Efficiency Assessments. Has the MoE commenced development of the legal instrument for Resource Efficiency Assessment?
6. What does MoE suggest are the main priorities for the SCP roadmap to support the strengthening of the environmental sustainability of consumption and production?
   - How important is capacity building on waste separation and recycling?
   - How important is technology transfer and upgrading of waste management and recycling infrastructure?
   - How important is monitoring and enforcement of existing pollution control standards, especially for industry and building construction?
   - How important is capacity strengthening for protected areas management and biodiversity conservation?

Ministry of Agriculture, Forestry and Fisheries

Agenda

1. Sustainable food production and reducing food waste
2. Sustainable agriculture

3. Eco-labelling and certification of agricultural, forestry and fisheries products
4. Waste-to-energy from agriculture
5. Sustainable forestry
6. Sustainable fisheries
7. Priorities for SCP roadmap

Questions

1. How is MAFF supporting the reduction of food waste through reducing food losses along production and supply chains, including post-harvest losses?
2. How is MAFF helping to ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production?
3. Does MAFF provide any support or capacity building for environmental labels in Cambodia's agriculture, fisheries or forestry sectors (for example, certification for forest management timber and non-timber forest products)?
4. How is MAFF supporting the sustainable use of waste biomass for bioenergy in agriculture?
5. How is MAFF promoting the implementation of sustainable management of forests, halting deforestation, and increasing afforestation and reforestation in Cambodia?
6. How is MAFF supporting the sustainable management of fisheries in Cambodia?
7. How is MAFF supporting the strengthening of scientific and technology capacity to move towards more sustainable patterns of consumption and production in agriculture, forestry and fisheries sectors?
8. What does MAFF suggest are the main priorities for the SCP roadmap to support the strengthening of the environmental sustainability of consumption and production?
   - How important is capacity building on reducing food waste and sustainable agricultural practices?
   - How important is capacity building on waste-to-energy projects in agriculture?
   - How important is capacity building in sustainable forest management?
   - How important is capacity building for certification of environmental labels?
   - How important is capacity building for sustainable fisheries management?

Ministry of Mines and Energy

Agenda

1. Energy efficiency in buildings
2. Energy efficiency in industry
3. Rooftop solar in buildings and industry
4. Renewable energy policy and capacity
5. Priorities for SCP roadmap

Questions

1. What is the status of the National Energy Efficiency Policy, Strategy and Action Plan? Is it officially adopted or still in draft? Are the actions identified being implemented?
2. Is MME designing energy and electricity management system standards based on the International Electro-Technical Commission standards and ISO50001 standards?
3. Is MME monitoring energy efficiency in buildings and industry?
4. Is MME providing support and capacity building to the building construction sector (residential and commercial buildings) for energy efficient building design?
5. Is MME providing capacity building to the industrial sector, particularly SMEs to promote energy efficiency in factories and reduce consumption of wood-fuels?
6. How is MME supporting solar rooftop for power generation in buildings and industry?
7. Has the MME developed its Renewable Energy Policy?
8. What does MME suggest are the main priorities for the SCP roadmap to support the strengthening of sustainability of consumption and production in the energy sector?
   - How important is the design and implementation of incentives for businesses to increase energy efficiency (e.g. tax breaks, grant schemes)?
   - How important is the design and implementation of incentives for increasing the uptake of renewable energy (e.g. rooftop solar, wind power)?
   - How important is increasing the uptake of energy efficiency and renewable energy in government buildings (municipal offices, national ministries etc.)?

Ministry of Commerce and Council for Development of Cambodia

Agenda

1. SCP and Cambodia's trade policies
2. Incentives in SEZs for sustainable production
3. Import and export duties
4. Foreign direct investment
5. Priorities for SCP roadmap

Questions

1. How are Cambodia's trade policies promoting sustainable business practices and sustainable consumption?
2. What incentives is Cambodia providing for SEZs to be more environmentally sustainable (e.g. control pollution, resource efficiency)?
3. Does Cambodia provide exemption and reduction of export duties for environmentally friendly products?
4. How is Cambodia promoting environmental sustainability in foreign direct investment, particularly in special economic zones and in building construction?

5. What does MoC suggest are the main priorities for the SCP roadmap to support the strengthening of sustainability of consumption and production in trade, commerce and foreign direct investment?
   - How important is capacity building for integrating SCP into investment?
   - What new policy measures and incentives are required for SCP?
   - How can Cambodia take advantage of the FDI opportunities for SCP?

Ministry of Education, Youth and Sports

Agenda

1. Promotion of SCP in education
2. Youth engagement in SCP
3. Priorities for SCP roadmap

Questions

1. How is MoEYS promoting sustainable lifestyles and sustainable consumption in schools, for example on reducing waste, recycling and energy efficiency?
2. How is MoEYS supporting the development of scientific and technological capacity through education to support environmental sustainability?
3. What does MoEYS suggest are the main priorities for SCP to support the sustainability of production and consumption practices through education?
   - How important is capacity building for schools on environmental education?
   - How important are pilot projects in schools that demonstrate sustainable consumption practices (e.g. eco-gardens, energy efficiency, sanitation systems, waste reduction and recycling, green building design)?
   - How important is curriculum development on SCP in Cambodia?

Ministry of Land Management, Urban Planning and Construction

Agenda

1. Construction and real estate
2. Urban land use planning and zoning
3. Education and awareness raising
4. Priorities for SCP roadmap

Questions

1. Has the MLMUPC been developing an energy efficiency building code for new buildings, including requirements for large developments and luxury hotels?

2. In the new *Construction Law*, are there any requirements for meeting green building standards? If not, could this be integrated into the law/regulations?
3. Has MLMUPC developed any guidelines for flood-proofing of building designs?
4. Has MLMUPC developed any guidelines for flood management on properties, for example, through maintaining tree canopies and rainwater capture and retention?
5. How is MLMUPC promoting sustainability in land use planning and zoning (e.g. through providing green corridors, sustainable transport networks)?
6. How is MLMUPC working with architects and the construction sector to promote sustainable construction of new projects (e.g. condominiums and satellite cities)?
7. What does MLMUPC suggest are the main priorities for SCP to support the sustainability of production and consumption practices through land use and construction?
   - What is needed to promote sustainable/green building design?
   - How important is certification and training programs on green building design?
   - How important is capacity building for municipalities on land-use planning, particularly to promote sustainable land use (e.g. providing green spaces)?
   - What capacity is needed to support the enforcement of land-use planning and zoning laws for sustainable cities and land management?

Ministry of Public Works and Transport

Agenda

1. Sustainable transport
2. Green infrastructure
3. Priorities for SCP roadmap

Questions

1. How is MPWT improving access to public transport options for Cambodians (e.g. railway, bus, light rail, water ferries)?
2. How is MPWT promoting walking and cycling as a sustainable transport mode?
3. How is MPWT improving transport logistics to enable sustainable production in Cambodia, including for the transport of industrial and agricultural products?
4. Has MPWT established vehicle emissions standards in Cambodia?
5. How is MPWT supporting sustainable sanitation infrastructure, for example, through providing regulations on decentralised wastewater treatment systems?
6. How is MPWT supporting green infrastructure for wastewater treatment and flood mitigation in Cambodia?
7. What does MPWT suggest are the main priorities for SCP to support the sustainability of production and consumption practices in public works and transport?

- How important is technology transfer and capacity building for sustainable transport?
- How important is capacity building for green infrastructure design?
- How important is financing for green infrastructure and sustainable transport?

Ministry of Tourism

Agenda

1. Eco-tourism
2. Coastal marine management
3. Priorities for SCP roadmap

Questions

1. How is the Ministry of Tourism supporting nature-based eco-tourism promotion?
2. How is the Ministry of Tourism promoting environmental protection of the coastal zone and marine environment, supporting sustainable tourism?
3. What are the MoT suggest are the main priorities for SCP to support the sustainability of production and consumption practices in tourism?
   - How important is training and capacity development for tourism professionals on SCP?
   - How important are incentive schemes, such as green certification standards, for promotion of sustainable tourism in Cambodia?
   - How can the tourism sector contribute to environmental protection, including in coastal and marine environments?

Ministry of Economy and Finance

Agenda

1. Green public procurement
2. Priorities for SCP Roadmap

Questions

1. How is MEF promoting sustainable/green procurement of goods and services by the government of Cambodia?
2. Does the MEF support the integration of SCP into Cambodia's public procurement processes (led by the General Department of Public Procurement)?
3. What does the MEF see as the main priorities for SCP in Cambodia?
   - How important is capacity building and technology transfer for SCP in energy, agriculture, transport, building construction, industry or other sectors?
   - How important is environmental protection and sustainability promotion in tourism?
   - How important is green public procurement for Cambodia?

Ministry of Planning

Agenda

1. SCP and the C-SDGs
2. Priorities for SCP roadmap

Questions

1. SCP is integrated into the C-SDGs, particularly CSDG-12 (responsible production and consumption). How is the MoP working to increase the monitoring and reporting of the C-SDG targets, particularly where there is currently limited data?
2. What are the main challenges in data collection and monitoring of the C-SDGs? How can these challenges be overcome?
3. How can SCP be mainstreamed into Cambodia's national planning approach? For example, through the National Strategic Development Plan in its next phase?
4. What does MoP see as the main priorities for the C-SDG roadmap?
   - For example, should strengthening capacity for monitoring the C-SDGs be a priority, particularly where there are data gaps?

Appendix Two: Relevant Laws, Policies, Strategies and Action Plans

The following non-exhaustive list of laws, policies, strategies and action plans in Cambodia are relevant to the effective implementation of SCP in Cambodia:

1. Rectangular Strategy Phase IV of Cambodia
2. Cambodia Vision 2050
3. National Strategic Development Plan (2019-2023)
4. Cambodia Sustainable Development Goals Framework (2016-2030)
5. Cambodia's Voluntary National Review 2019 on the Implementation of the 2030 Agenda for Sustainable Development
6. Cambodia's National Environmental Strategy and Action Plan (2016-2023)
7. Cambodia's Climate Change Strategic Plan (2014-2023)
8. Cambodia's First (2002) and Second (2015) National Communication to the UNFCCC
9. Cambodia's First Nationally Determined Contribution (NDC) and Second NDC (2020) to the UNFCCC
10. Cambodia's National Green Growth Roadmap (2009)
11. Cambodia's National Policy and Strategic Plan on Green Growth (2013-2030)
12. Law on Environmental Protection and Natural Resources Management (1996)
13. Natural Resources and Environmental Code (draft)
14. Cambodia's National REDD+ Strategy (2017-2026)
15. National Protected Area Strategic Management Plan (2017-2031)
16. National Forest Programme (2009-2029)
17. National Biodiversity Strategy and Action Plan (2016)
18. Cambodia Industrial Development Policy (2015 – 2025)
19. Cambodia Trade Integration Strategy (2019-2023)
20. Cambodia's Law on Public Procurement (2012)
21. Law on Construction (2019) No. NS/RKM/1119/019
22. Law on Standards of Cambodia (2007)
23. Cambodia's Basic Energy Plan (2019)
24. Climate Change Action Plan for Energy Sector (2021-2023)
25. Agricultural Sector Strategic Development Plan (2014-2018)
26. Phnom Penh Sustainable City Plan (2018-2030)
27. Phnom Penh Waste Management Strategy and Action Plan (2018-2035)
28. Cambodia's Green Infrastructure Guide (2019)
29. National Guidelines on Eco-School in Cambodia (2016)
30. National Ecotourism Policy (2019-2030)
31. National Policy for Water Supply and Sanitation (2003)
32. Cambodia's Financial Sector Development Strategy (2011-2020)
33. The National Waste Management Strategy and Action Plan (2018-2030)
34. Municipal Solid Waste Management Policy (2020-2030)

35. National Energy Efficiency Policy (2021-2030) (draft).
36. The Intermodal Transport Master Plan (2021-2030) (draft)
37. Production forest Strategic Plan (2018-2032) (draft)
38. Sustainable City Strategic Plan for Seven Secondary Cities (2020-2030)
39. Circular Economy Strategy and Action Plan (2021)
40. Guideline for Green Building and Certification System (draft)
41. Plastic Action Plan and Roadmap (draft)
42. Guideline for Green Office and Green Event and Evaluation Mechanism (draft)
43. Zero Plastic Communication Strategy (draft)
44. Cambodia Plastic Policy Stakeholder Engagement Plan (draft)

Appendix Three: Proposed outline of the SCP Roadmap (2021-2035)

The following table of contents has been prepared as the basis for the preparation of the draft roadmap. The intention is to incorporate the recommendations provides in sections 6.1 to 6.13 of this paper as actions, structured around the SCP system as conceptualised by Barber (2014). Stakeholder feedback will be sought on this proposed structure through the SCP Roadmap consultation workshop(s).

Contents

4. **Sustainable Investment**
    a. Incentives for socially responsible investment
    b. Ethical investment guidelines
    c. Sustainable banking and financing
    d. Sustainable philanthropy and development partnerships
    e. Eco-tax incentives for sustainable products and services
5. **Values for Sustainability**
    a. Education for sustainability
    b. Defining and measuring sustainability
    c. Gender and socially inclusive sustainability
    d. Communications and awareness raising

Milestones and Results

Institutional arrangements

1. Stakeholder Mapping
2. Roles and responsibilities

Private Sector Engagement

Budget and financial mechanisms

- External funds
- National/domestic funds

Monitoring, Evaluation and Learning

Action Matrix (Priority actions in short, medium and long terms)

Appendix – Relevant supporting Laws, Policies, Strategies and Action Plans

Bibliography

Asia-Pacific Roundtable on Sustainable Consumption and Production (APRSCP), 2014. Report on Ecolabelling and Sustainable Public Procurement in the ASEAN+3 Region: Development of a Feasibility Study for Regional Ecolabelling Cooperation.

Asian Development Bank. 2019. *Cambodia Transport Sector Assessment, Strategy and Road Map.*

Association of Banks of Cambodia, 2019. Cambodian Sustainable Finance Principles Implementation Guidelines.

ASTI, 2020. ASTI Country Brief: Cambodia. https://www.asti.cgiar.org/sites/default/files/pdf/Cambodia-CountryBrief-2020.pdf

Barber, J. (2014). *Communicating Sustainable Production and Consumption Challenges and Strategies* AGRF Shanghai Conference 2014.

BDLINK (Cambodia) Co. Ltd. (2016). *Agriculture and Agro-Processing Sector in Cambodia: Taking Stock: A detailed review of current challenges and investment opportunities in Cambodia*. http://www.ukabc.org.uk/wp-content/uploads/2017/04/AgriProject_Reporting_FINAL-VERSION-copy.pdf

Carter, R., Thok, S., O'Rourke, V., Pearce, T. 2015. Sustainable tourism and its use as a development strategy in Cambodia: a systematic literature review. *Journal of Sustainable Tourism*, 23, 797-818. https://doi.org/10.1080/09669582.2014.978787

Clean Air Asia. 2019. *Regulatory and Fiscal Policies for Road Transport Vehicles in Cambodia; output 3: Final Assessment Report and Policy Recommendations*.

Climate Technology Centre and Network. 2019). Technical Assistance Response Plan – Cambodia (2019).

Daudey, L., Matsumoto, T. 2017. Integrating urban resilience and resource efficiency into local green growth strategies: the case of fast-growing cities in Southeast Asia. *International Journal of Urban Sustainable Development*, 9 (2), 226-241. https://doi.org/10.1080/19463138.2017.1339278

de Ferranti, R., Fulbrook, D., McGinley, J., Higgins, S. 2016. *Switching On: Cambodia's Path to Sustainable Energy Security*. www.mekongstrategic.com

de Jong, R. 2017. Sustainable Energy through SCP in Cambodia. In *Sustainable Asia: Supporting the Transition to Sustainable Consumption and Production in Asian Developing Countries* (pp. 163-182). World Scientific Publishing Co. Pte. Ltd. https://doi.org/10.1142/9789814730914_0015

Durdyev, S., Thurnell, D., Banaitis, A., Ihtiyar, A. 2018. Sustainable Construction Industry in Cambodia: Awareness, Drivers and Barriers. *Sustainability*, 10 (2), 392. https://doi.org/10.3390/su10020392

Durdyev, S., Zavadskas, E. K., Thurnell, D., Banaitis, A., Ihtiyar, A. 2018. Sustainable construction industry in Cambodia: Awareness, drivers and barriers [Article]. *Sustainability (Switzerland)*, 10 (2), Article 392. https://doi.org/10.3390/su10020392

Eisinger, F., Cochu, A. 2016. *Enabling SME access to finance for sustainable consumption and production in Asia: An overview of finance trends and barriers in Cambodia*. www.switch-asia.eu

Emerging Markets Consulting. 2016. 'Fund to support energy efficiency', pre-feasibility study.

Etkins, P., Lemaire, X. 2012. *Sustainable Consumption and Production for Poverty Eradication*. https://www.oneplanetnetwork.org/sites/default/files/scp_for_poverty_full.pdf

GERES, 2013. *Nationwide Domestic Use of Cooking Fuels and Devises. Nation-wide baseline Survey*.

GERES. 2018. *Feasibility Study of a Credit-Line Program for Energy Efficient Products in Cambodia, Phnom Penh*.

GGGI. 2018. *Green Growth Potential Assessment: Cambodia Country Report*.

GIZ. 2020. P*artnership Ready Cambodia: Solar PV potential in the commercial and industrial sector* Global Business Network Programme. https://www.giz.de/en/downloads/GBN_Sector%20Brief_Cambodia_Energie-Solar-PV_E_WEB.pdf

KEI. 2018. E*nvironmental Sustainability in Asia: Progress, Challenges and Opportunities for the Implementation of the Sustainable Development Goals, Series 2 - Cambodia*.

ISF - UTS, 2011. Cambodia Water, Sanitation and Hygiene Sector Brief, prepared for AusAID by the Institute for Sustainable Futures, University of Technology Sydney, October 2011.

Lao Poliveth, Deputy Director, Macroeconomic and Fiscal Policy Department, General Department of Policy, Ministry of Economy and Finance, 2021. *Presentation on Contribution to Sustainable Consumption and Production* (Workshop on SCP Planning, hosted by GIZ and NCSD, Feb 2021).

Lieng, S., Yagi, N., Mori, A., Hastings, J. 2018. Savings-Group Improvements Contribute to Sustainable Community-Fisheries Management: A Case Study in Cambodia. *Sustainability (Basel, Switzerland)*, 10 (8), 2905. https://doi.org/10.3390/su10082905

Maguigad, E. 2020. *Assessment of Policies on Non-Timber Forest Products - Country Study: Cambodia.*

Maxwell, D., Owen, P., McAndrew, L., Mudgal, S., Cachia, F., Muehmel, K., Neubauer, A., Troltzsch, J. 2011. *Addressing the rebound effect, a report for the European Commission DG Environment*.

Ministry of Environment (MoE), RGC. 2017. *Draft Natural Resources and Environmental Code*, version 9.1, 25 July

Ministry of Environment (MoE) and United Nations Environment Programme (UNEP). 2016. National Assessment Report on Mercury in Cambodia, Prepared by the department of Hazardous Substance Management, General Directorate of Environmental Protection, and supported by UNEP's International Environmental Technology Centre.

Ministry of Mines and Energy (MME), RGC. 2019. *Cambodia Basic Energy Plan*, supported by Economic Research Institute for ASEAN and East Asia (ERIA).

Ministry of Mines and Energy (MME), RGC. 2020. *Climate Change Action Plan for Energy Sector 2021 - 2023*.

Müller, S., Markova, J., Ponnapureddy, S. 2020. Community-based ecotourism development and destination governance in Cambodia. In (pp. 182-196). https://doi.org/10.4324/9780429264191-12

Murphy, T., Guo, J., Leppard, G., Norwood, W. 2008. *Mercury Contamination in Prey Meas Goldmine, Cambodia 2007 Sampling.* https://doi.org/10.13140/2.1.1230.7527

Nop, S. 2018. Environmental Labelling *Capacity Building Training Program for Cambodia, Report and PowerPoint Presentation*, 18-19 October, 2018, Beijing, China.

Philippines, Republic of the. 2017. *The Philippine Green Public Procurement Roadmap: advancing GPP until 2022 and beyond*. www.gppb.gov.ph

Phnom Penh Capital Administration (PPCA), Institute for Global Environmental Strategies (IGES), Nexus, UN Environment, Cambodia Climate Change Alliance (CCCA). 2018. *Phnom Penh Waste Management Strategy and Action Plan* 2018-2035. Phnom Penh, Cambodia.

Pode, R., Diouf, B., Pode, G. 2015. Sustainable rural electrification using rice husk biomass energy: A case study of Cambodia. *Renewable & sustainable energy reviews*, 44, 530-542. https://doi.org/10.1016/j.rser.2015.01.018

Price Waterhouse Coopers (PWC), 2021. Draft report for United Nations Industrial Development Organisation (UNIDO), "Assessment of Current Policy and Institutional Framework Targeting Industrial Development and Recommendations to Include Resource Efficiency within the existing Legal Framework".

Rawlins, M., Kornexl, W., Baral, S., Baromey, N., Martin, N., Ray, N. 2020. *Enabling Ecotourism Development in Cambodia*. https://openknowledge.worldbank.org/handle/10986/34321

Ricardo, 2018. Report for UNDP on Solid Waste Management in Cambodia – National Context, and Cambodia's State of the Environment Report 2020 (draft).

Royal Government of Cambodia (RGC). 2019a. *Cambodia's Voluntary National Review 2019 on the implementation of the 2030 Agenda for Sustainable Development*.

Royal Government of Cambodia (RGC), 2019b. *Cambodia's National Strategic Development Plan 2019-2023: For Growth, Employment, Equity and Efficiency to reach the status of upper-middle income country by 2030*.

Royal Government of Cambodia (RGC), 2017. *Cambodia's National REDD+ Strategy (2017-2026)*.

Schroeder, P., Anantharaman, M. 2017. "Lifestyle Leapfrogging" in Emerging Economies: Enabling Systemic Shifts to Sustainable Consumption. *Journal of Consumer Policy*, 40 (1), 3-23. https://doi.org/10.1007/s10603-016-9339-3

Sethy, S. 2017. *Country Chapter: State of the 3Rs in Asia and the Pacific - the Kingdom of Cambodia.*

Sevea. 2019. *Linking Agriculture to Energy in Cambodia*. http://www.seveaconsulting.com/wp-content/uploads/2019/04/Case-study-vegetable-farmer-1.pdf

Siphannara, P., Ros, B. 2019. *Briefing Note: Overview of Community-Based Ecotourism for Sustainable Development in Cambodia*. Parliamentary Institute of Cambodia.

Thailand, Government. 2017. *The Sustainable Consumption and Production Roadmap 2017-2036*.

Thailand Environment Institute (TEI). 2020. *Analysis Study on National Green Public Procurement and Environmental labels in Cambodia* (Draft Report) Proliferation Sustainable Consumption and Production (SCP) in Asia - the Next 5 Countries (SCP Outreach), Issue. GIZ.

UNDP. 2019a. *Cambodia: Derisking Renewable Energy Investment*.

UNDP. 2019b. *Harnessing the solar energy potential in Cambodia*. https://www.kh.undp.org/content/cambodia/en/home/library/2019/cambodia--de-risking-renewable-energy-investment1.html

UNDP, 2020. Energy Efficiency in Buildings – Accelerating low-carbon development in Cambodia: policy brief and in-country case studies.

UNEP. 2011. *Paving the way for Sustainable Consumption and Production: the Marrakech Process Progress Report*. http://www.unep.fr/scp/marrakech/pdf/Marrakech%20Process%20Progress%20Report%20FINAL.pdf

UNEP. 2012. Sustainable Consumption and Production: A Handbook for Policy Makers with cases from Asia and the Pacific. https://www.iges.or.jp/en/publication_documents/pub/bookchapter/en/3121/SCP+Handbook+for+Policy+Makers_Asia+Ed_%281pageView%29.pdf

UNEP. 2017. Global Review of Sustainable Public Procurement.

Vietnam, Government. 2020. *Vietnam National Action Plan on Sustainable Consumption and Production (2021-2030)*.

World Bank, 2020. 'Enabling ecotourism development in Cambodia', accessed 17 December 2020.

World Bank, 2018. *Cambodia beyond connections: Energy Access Diagnostic Report Based on the Multi-Tier Framework*. http://documents1.worldbank.org/curated/en/141011521693254478/pdf/Cambodia-Beyond-connections-energy-access-diagnostic-report-based-on-the-multi-tier-framework.pdf

World Bank, 2015. *Cambodian Agriculture in Transition: Opportunities and Risks*. https://documents1.worldbank.org/curated/en/805091467993504209/pdf/96308-ESW-KH-White-cover-P145838-PUBLIC-Cambodian-Agriculture-in-Transition.pdf

Zanzanaini, C. 2015. *Plastic is Too Easy: Insights to Reduce Plastic Bag Consumption in Cambodia*. Union, S.-A. E.

Disclaimer: This publication was produced with the financial support of the European Union. Its contents are the sole responsibility of the SWITCH-Asia Regional Policy Advocacy Component and do not necessarily reflect the views of the European Union