The ASEAN Toolkit On Sustainable Consumption

one vision
one identity
one community

The Association of Southeast Asian Nations (ASEAN) was established on 8 August 1967. The Member States are Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand and Viet Nam.
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Abbreviations & Acronyms

10YFP	10-Year Framework of Programmes for Sustainable Consumption and Production
3Rs	Reduce, Reuse, Recycle
AMS	ASEAN Member States
ASEAN	Association of Southeast Asian Nations
ASCC	ASEAN Socio-Cultural Community
CAA	Consumer Affairs Agency of Japan
CO_2	Carbon dioxide
COVID-19	Coronavirus disease 2019
EPR	Extended Producer Responsibility
EU	European Union
FLW	Food Loss and Waste
GHG	Greenhouse gases
GPP	Green Public Procurement
GVCs	Global Value Chains
HCFC	Hydrochlorofluorocarbons
ICT	Information and Communication Technologies
IPCC	Intergovernmental panel on Climate Change
IRP	International Resource Panel
ISO	International Organization for Standardization
KEITI	Korea's Environmental Industry and Technology Institute
NGO	Non-governmental Organization
SC	Sustainable Consumption
SCP	Sustainable Consumption and Production
SDG	Sustainable Development Goals
UK	United Kingdom
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNEP	United Nations Environment Programme
UNGCP	United Nations Guidelines for Consumer Protection

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Module 1: Concepts and Principles of Sustainable Consumption

This module introduces sustainable consumption in the context of sustainable development, sustainable consumption and production, and consumer protection; and how ASEAN integrates sustainable consumption in its work. Any discussion on sustainable consumption involves global frameworks of action beginning with that of sustainable development in Rio, which recognized the role of unsustainable patterns of consumption and production in environmental deterioration and social equity, leading to the present global 2030 Agenda that advances 17 sustainable development goals. In addressing the dimensions of people, planet and prosperity of sustainability, the Agenda highlights the interlinkage of all the goals and the role of multi-stakeholder partnership in achieving these goals, and recognizes the vast opportunities for cooperation. The UNCTAD, in particular, has put forward sustainable consumption in its guidelines for consumer protection and continually advocates for sustainability elements in consumer protection policies. Discussions on related principles and ideas to sustainable consumption like lifecycle thinking, circular economy and sustainable lifestyles are also included, along with how sustainable consumption is integrated into the regional work by ASEAN.

1.1 Introduction – What is Sustainable Consumption?

1.1.1 Defining Sustainable Consumption

An often quoted definition of sustainable development comes from the United Nations Brundtland Commission Report that states “meeting the needs of the present without compromising the ability of future generations to meet their own needs” (UNEP, 2007). This definition encompasses the temporal (present and future), social (human needs) and environmental (resource use and environmental quality) dimensions of sustainability. Such definition also expresses the intergenerational responsibility and inherent challenges in balancing present socioeconomic development needs today with the capacity of the planet for regeneration (see Ecological Footprint in Section 1.2). Choices present a vital component in sustainable development.

Promoting sustainable consumption and production (SCP) are important aspects of sustainable development, which aims at achieving long-term economic growth that is consistent with economic, social, and environmental needs. Public authorities at the local, national, regional, and global levels can influence the sustainability of consumption and production by providing a framework within which business and consumers can operate, including mandatory obligations for producers and taxes on unsustainable goods and services. This Toolkit focuses on promoting and strengthening the sustainable consumption component of sustainable development through expounding on its meanings and regional significance (Module 1); policy development, and regional and international approaches to sustainable consumption (Module 2); tools and instruments that influence consumer behavior (Module 3); and examples on how ASEAN countries currently address sustainable consumption challenges in four sectors (Module 4).

Global frameworks on sustainable development support the needed shift to sustainable consumption and production (**Figure 1.1**). The 1992 UN Conference on Environment and

Development (Earth Summit) held in Rio de Janeiro, Brazil saw the acknowledgement of SCP as an overarching theme linking environmental and development and challenges. The World Summit on Sustainable Development in 2002 (Rio+10) further recognized the necessity of changing unsustainable patterns of consumption and production. The UN Conference on Sustainable Development in Rio de Janeiro in 2012 (Rio +20) reiterated messages from the two previous Earth Summits, and resulted to the 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns (10YFP) and the Outcome Document The Future we want (UN, 2012). The 10YFP is "a global framework for action to enhance international cooperation and accelerate the shift towards sustainable consumption and production (SCP) patterns in both developed and developing countries" (UNDESA, 2014).

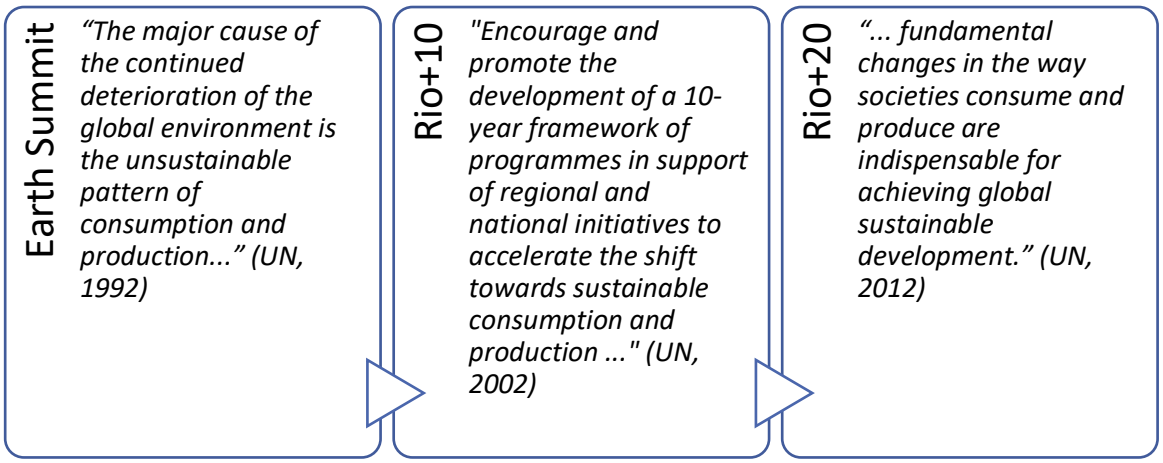


***Figure 1.1**. Global frameworks of action on SCP.*

The current understanding of sustainable consumption stems from two resolutions adopted in 2015 by the General Assembly of the United Nations (UN):

a. The resolution on transforming our world and 2030 Agenda for Sustainable Development (UN, 2015) advancing the 17 Sustainable Development Goals (SDGs) as the plan of action to end poverty, protect the planet's biosphere, and ensure prosperity for all, and
b. The General Assembly resolution on Consumer Protection revising the *United Nations Guidelines for Consumer Protection* (often abbreviated to "UNGCP" or "Guidelines") (UNCTAD, 2016). The United Nations Conference on Trade and Development (UNCTAD) is entrusted with the mandate to serve as focal point on consumer protection issues within the United Nations system and to promote the guidelines by encouraging member States to provide consumer protection in the provision of public and private goods and services.

Two of the general principles of the UNGP are:

> *"6. Unsustainable patterns of production and consumption, particularly in industrialized countries, are the major cause of the continued deterioration of the global environment. All Member States should strive to promote sustainable consumption patterns; developed countries should take the lead in achieving sustainable consumption patterns; developing countries should seek to achieve sustainable consumption*

patterns in their development process, having due regard for the principle of common but differentiated responsibilities. The special situation and needs of developing countries in this regard should be fully taken into account.

7. Policies for promoting sustainable consumption should take into account the goals of eradicating poverty, satisfying the basic human needs of all members of society, and reducing inequality within and between countries."

UNCTAD has exercised its mandate through its various activities, including:

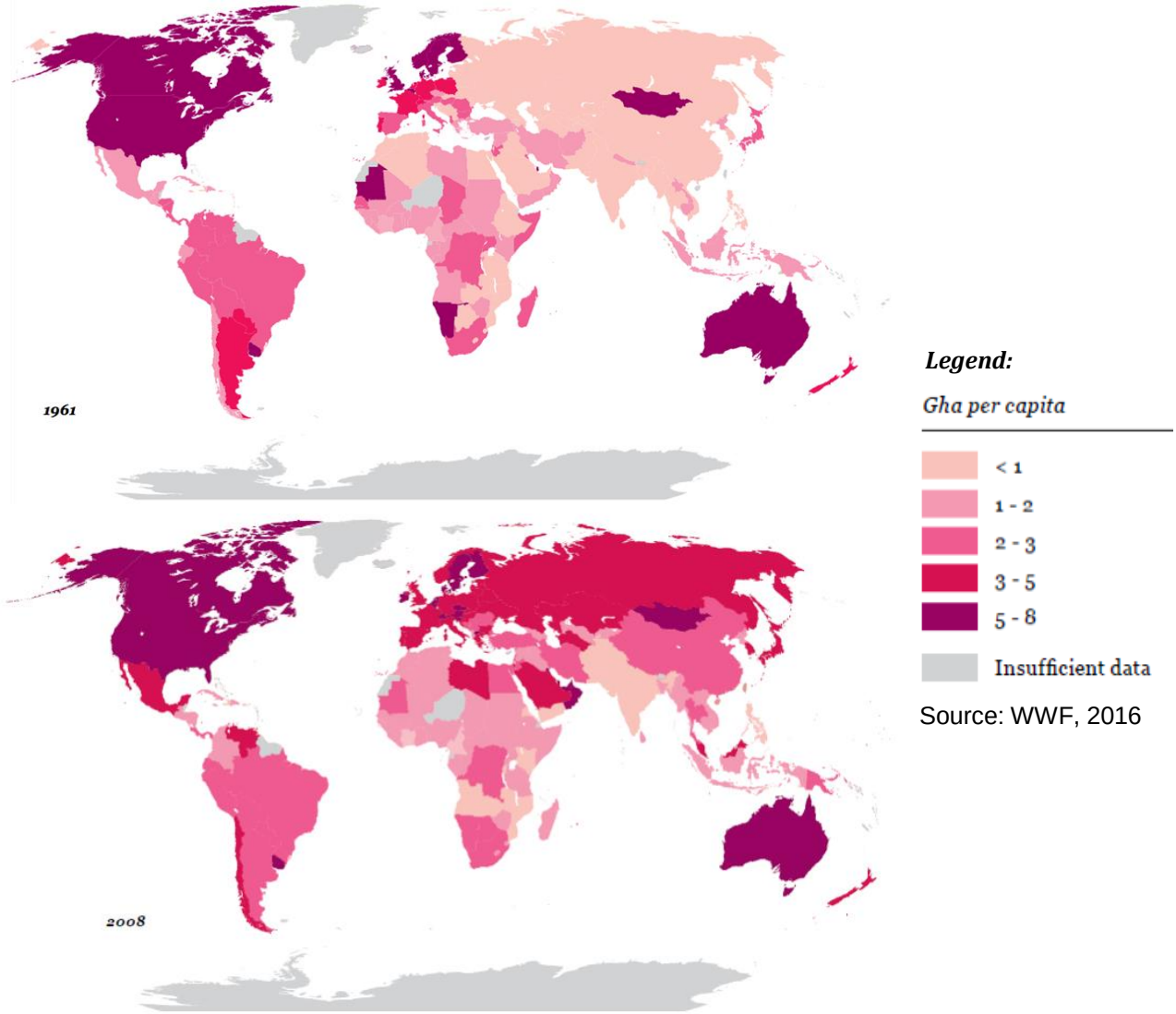
a. Inclusion of a new section on sustainable consumption in the UNGCP revision in 1999, which sought to address the impact of consumption habits on the environment and their negative effects on existing resources.
b. Preparation of an Environment Module prepared under the Project *Strengthening Technical Competency for Consumer Protection in ASEAN.*
c. Publication of *Achieving the Sustainable Development Goals through Consumer Protection (2018)* that underscores the close link between Agenda 2030 and the UNGCP and provides policymakers and enforcers with a basis for reflection on the positive impacts that protecting consumers bears in promoting a more inclusive and sustainable development (UNCTAD, 2017).
d. Preparation of 2019 UNCTAD note on *The contribution of consumer protection to sustainable consumption* that explores the connection between sustainable development, consumer protection and sustainable consumption (UNCTAD, 2019).

1.1.2 Sustainable Consumption under the Sustainable Development Goals

The Sustainable Development Goals (SDGs), were adopted by all United Nations Member States in 2015 as a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity by 2030. In the context of the SDGs, strategies for ending poverty and inequality go together with strategies for improving health and education, reducing inequality, and spurring economic growth, all while addressing climate change-related impacts and working to preserve the oceans and forests. Goal 12 on ensuring sustainable consumption and production patterns details the responsibilities of and actions to be taken by various stakeholders, including Governments, businesses, and consumers (UN, 2015). Targets under this Goal include the implementation of the 10YFP, the sustainable management and efficient use of natural resources, the reduction of various types of waste and the environmentally sound management of chemicals and all wastes.

Achieving SDG 12 would help to decouple economic growth from environmental damage and natural resource exploitation (Chan, Weitz, Persson, & Trimmer, 2018). The United Nations Development Programme states that *"achieving economic growth and sustainable development requires that we urgently reduce our ecological footprint by changing the way we produce and consume goods and resources. Agriculture is the biggest user of water worldwide, and irrigation now claims close to 70 per cent of all freshwater for human use"* (UNDP, n.d.). The challenge for sustainable consumption also involves the production side where raw materials or natural resources are consumed to produce goods and services (intermediate consumption). To achieve SDG 12, there is a need to support developing

countries to move towards more sustainable consumption by 2030, encourage industries, businesses, and consumers to engage in recycling and the reuse of products. In 2012, the biocapacity of the Earth is estimated at 1.7 gha[1] per capita in 2012, but the ecological footprint in the same year is at 2.8 gha per capita (WWF, 2016). A comparison of the ecological footprint of consumption of countries in 1961 and 2008 is presented in **Figure 1.2**. Recent estimates reported that humanity currently needs 1.56 Earths to support how its consumption (Global Footprint Network, 2020 in WWF, 2020).



Source: WWF, 2016

***Figure 1.2**. Ecological footprint of countries show much of the world now requires >1 gha per capita.*

The global ecological footprint implies that the way humanity consumes exceeds the capacity of the Earth for regeneration, and that this situation will require more effort in shifting consumption patterns to sustainability. Sustainable consumption tools include education and information campaigns that encourage citizens and institutions to adopt sustainable

[1] Global hectares is a unit of measure indicating the biological capacity of an ecosystem, or the Earth in this case, to provide natural resources that humans demand and absorb the waste generated. The ecological footprint provides the biological capacity required by an activity or a population.

consumption patterns. Soft law, including best practices, codes of conduct and guidelines for business, and civil society initiatives targeting consumers, are necessary instruments that complement legislation.

Consumer protection policies aim to manage the socioeconomic reality of a country (Best, 2017). Such a definition provides for a spectrum within which consumer protection policies operate, recognizing that "consumers often face imbalances in economic terms, educational levels and bargaining power" (UNCTAD, 2016). Best (2017) further notes that even if the necessary infrastructure is in place, consumer policies do not necessarily target consumption patterns in terms of how and what is consumed. Many developing countries have not yet incorporated sustainable consumption into their consumer protection policies and laws. In the Consumer Protection Act, 2008 of South Africa, there here has been some effort to include aspects of sustainability in terms of a sustainable marketplace. However, there is a need for consumer protection policy to advance beyond individual aspects, and holistically incorporate sustainability. Insufficient policy coordination between government departments dealing with consumer and environmental protection reduces the gains that could accrue if policy coordination in this area was increased. As consumer protection is encouraged and promoted, sustainable consumption is also encouraged and practiced at all levels of society. A collaborative effort can be an effective means of promoting sustainability.

1.1.3 Related principles and ideas

1.1.3.1 Systems and Lifecycle Thinking

Actions towards sustainable development began with measures, such as waste treatment, pollution prevention and cleaner production that aim to reduce emissions and waste from production processes. However, these actions only address one or a few issues in the life cycle of a product, and run the risk of shifting of burdens – solving one problem while creating another (European Commission, 2010). Burden shifting can be illustrated by wind turbines – wind power does not produce greenhouse gas emissions while in use, but associated emissions during the production of the turbine itself or at the maintenance and disposal stages may present a burden – where life cycle thinking can support decision makers in identifying critical stages that contribute to the total impacts of the product in its entire life cycle (European Commission, 2010). Moreover, with the increasingly global supply chains, impacts from resource or raw material extraction may happen in one country, waste and emissions from production of goods in second country, impacts from the use of the product in a third country, and the burden of disposal or end-of-life treatment in a fourth country.

Life cycle thinking[2] provides a broad perspective to improve the social and environmental performance of a product throughout its lifecycle. It is about increasing the sustainable management of resources and achieving resource efficiency along both production and consumption phases of the lifecycle, including resource extraction, the production of intermediate inputs, distribution, marketing, use, waste disposal and re-use of products and

[2] UNEP hosts the Life Cycle Initiative at www.lifecycleinitiative.org to enable the global use of credible life cycle knowledge by private and public stakeholders. It is a public-private, multi-stakeholder partnership that also provides capacity building through free e-courses on life cycle thinking.

services (UNEP, n.d.-c). This can be done in a qualitative manner, for example by discussing what burden shifting could occur from a certain design change or from the introduction of a new public policy. On a global scale, life cycle thinking has been instrumental in the elaboration of the 10YFP through the Marrakech Process, a multi-stakeholder expert process launched in 2003, through a life cycle approach (**Figure 1.3**). The Marrakech Process also aims to accelerate efforts in shifting to sustainable consumption and production patterns.

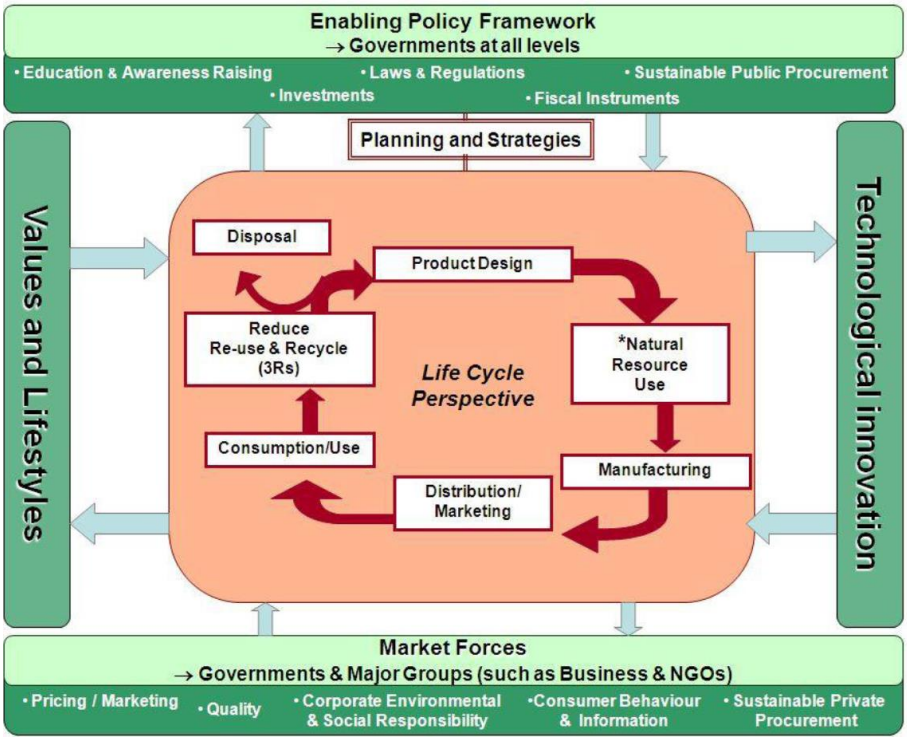


***Figure 1.3**. Life cycle thinking supported the framing of the 10YFP in designing programmes that provide an enabling policy framework and consider market forces*

In contrast, life-cycle assessment (LCA) is a mainly quantitative methodology for compiling, analyzing, and generating life-cycle information (UNEP, 2015). There are generally four main stages in an LCA study: (a) Goal and Scope Definition, where the objective and boundaries of the study are decided; (b) Inventory Analysis, where a model of the life-cycle is made and data on environmental emissions and resource consumption from the different processes across the life-cycle are collected or calculated; (c) Impact Assessment, where the impact on the environment is assessed; (d) Interpretation, where significant issues are identified and conclusions are drawn. LCA studies tend to have a specific goal, and can only quantify health and environmental impacts. For instance, when analyzing for climate change impacts of a product, results can be clustered into a single measure such as global warming potential where other emissions being analyzed are converted into carbon dioxide equivalent. The same approach is carried out, say, when investigating resource depletion, toxicity and eutrophication potential of a product or process in its entire life cycle. While LCA can be an important tool to support decision making, it may also be a tedious process requiring extensive data and expertise to conduct. Many organizations and academic institutions have developed methodologies to extend the application of LCA to include matrices (commodity input-output

tables), software (emission factors) and expert opinion to hasten the process, which may be beneficial in specific cases.

Box 1. Private sector opportunities using life cycle thinking (European Commission, 2010)

Producers of laundry detergents were one of the first industries to conduct LCAs to see how their products could be reformulated for lower environmental impacts. It was soon found that a very significant environmental aspect of clothes washing is the energy consumption for water heating. Based on this insight, the manufacturers developed new detergents that would be effective at lower temperatures. This is a good example of a case where the producers saw their product as part of a larger system and explored both how the environmental impact of that larger system could be reduced and what role their product could play. By using life cycle thinking to redesign their product they reduced the life-cycle environmental impact and at the same time managed to save money for their customers.

1.1.3.2 End-consumer: consumer of end-products or services (UNCTAD, 2019)

Consumers' right to information is one of the basic consumer rights as it is instrumental to make informed choices adjusted to their needs and means, in a sustainable and responsible manner. Consumer education and consumer information are closely linked as they provide consumers with the knowledge and the skills to improve competences and enable consumption decision-making (UNCTAD, 2017).

Consumers should be informed about the impact of their choices in the environment, in order to be fully aware of the consequences that their choices have in existing resources and to enable them to protect and preserve their lives and those of future generations. The rights of consumers to safe and effective products and services go together with their right to a healthy environment. Consumers can and should play a relevant part in encouraging sustainable production to promote sustainable consumption, and strongly engage with all relevant stakeholders.

Consumers should be encouraged to look for life cycle information of the products and services they buy – do they entail the use of polluting energy, illegal labor conditions, the production of hazardous waste, the destruction of an endangered ecosystem, or the pollution of air and water? Consumers can enquire if businesses are committed to sustainable production and consumption and have adopted initiatives to address these issues and look for ways to support that work. For some products and services, eco-labels and other types of environmental and social information demonstrate the awareness of the business' consumers buy from. Information on how to use, care for, recycle, or discard products effectively is important to examine and understand as a consumer.

Currently, information is becoming increasingly available and more evident for certain products, and services ranging from foods to washing powder, hotels, cars, paper products and computers, among many others. Sometimes a simple label can tell whether the mobile

telephone we are buying or the car we are using has less environmental impact than other alternatives.

Sustainable consumption still requires continued consumer education and information, combined with business engagement, to raise awareness and understanding and empower consumers to play an active role in the market. The 10YFP encompasses programmes on Consumer Information[3] (focusing on areas such as behavior change, product lifestyle extension – circular economy, and product sustainability information) and Lifestyles and Education, among others, aiming to support consumers to make sustainable choices, working together with businesses, consumers associations and Governments. This type of initiative is extremely important since not all consumers have access to information or to goods and services that are more sustainable, and the protection of vulnerable and disadvantaged consumers is recognized by the UNGCP as a cross-cutting issue (guideline 5-b).

1.1.3.3 Decoupling, green growth, circular economy, low carbon economy

a. Decoupling environmental degradation from economic growth

The International Resource Panel estimates that by 2050, "humanity could devour an estimated 140 billion tons of minerals, ores, fossil fuels and biomass per year – three times its current appetite – unless the economic growth rate is "decoupled" from the rate of natural resource consumption" (UNEP, 2011). Current consumption trends and pollution generation greatly affects the planet, and this will have implications for the future. Sustainable consumption and production is seen as a holistic approach to the global challenges of resource consumption and pollution. Decoupling environmental degradation from economic growth (**Figure 1.4**) means delivering more output (goods and services) with less of the impacts usually associated with it (like resource consumption, waste and emissions). It is about "doing more and better with less, increasing net welfare gains from economic activities by reducing resource use, degradation, and pollution along the whole life cycle, while increasing quality of life" (UNEP, n.d.-a).

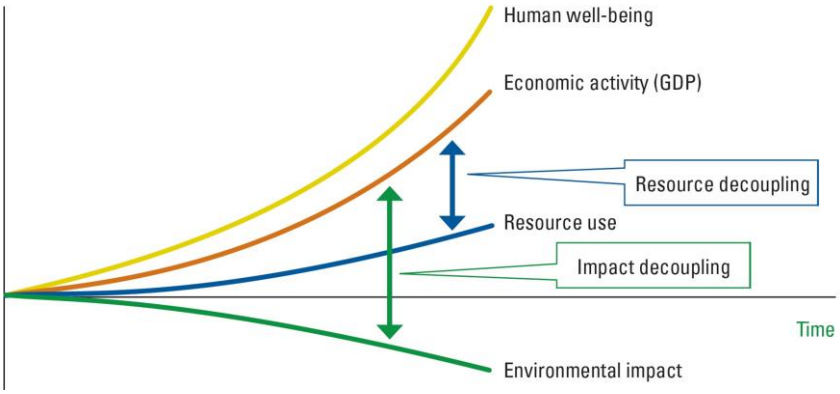


***Figure 1.4**. Decoupling economic growth from environmental impacts*

[3] Being implemented by the One Planet Network, a multi-stakeholder partnership for sustainable development. Further information is available at: https://oneplanetnetwork.org/consumer-information-scp. This programme is led by the Environment Ministries of Germany and Indonesia, and by Consumers International, the world federation of consumer organizations.

b. Green growth

The OECD defines Green Growth as fostering economic growth and development while ensuring that natural assets continue to provide the resources and environmental services on which wellbeing relies (OECD, n.d.). The green growth approach seeks to harmonize economic growth with environmental sustainability, while improving the eco-efficiency of economic growth and enhancing the synergies between environment and economy.

c. Circular economy

A circular economy is a systemic approach to economic development designed to benefit businesses, society, and the environment. It is an economy that is restorative and regenerative by design. In a circular economy, economic activity builds and rebuilds overall system health (**Figure 1.5**). The concept recognises the importance of the economy needing to work effectively at all scales – for big and small businesses, for organisations and individuals, globally and locally (Ellen MacArthur Foundation, n.d.). It is based on three principles, namely, design out waste and pollution, keep products and materials in use, and regenerate natural systems.

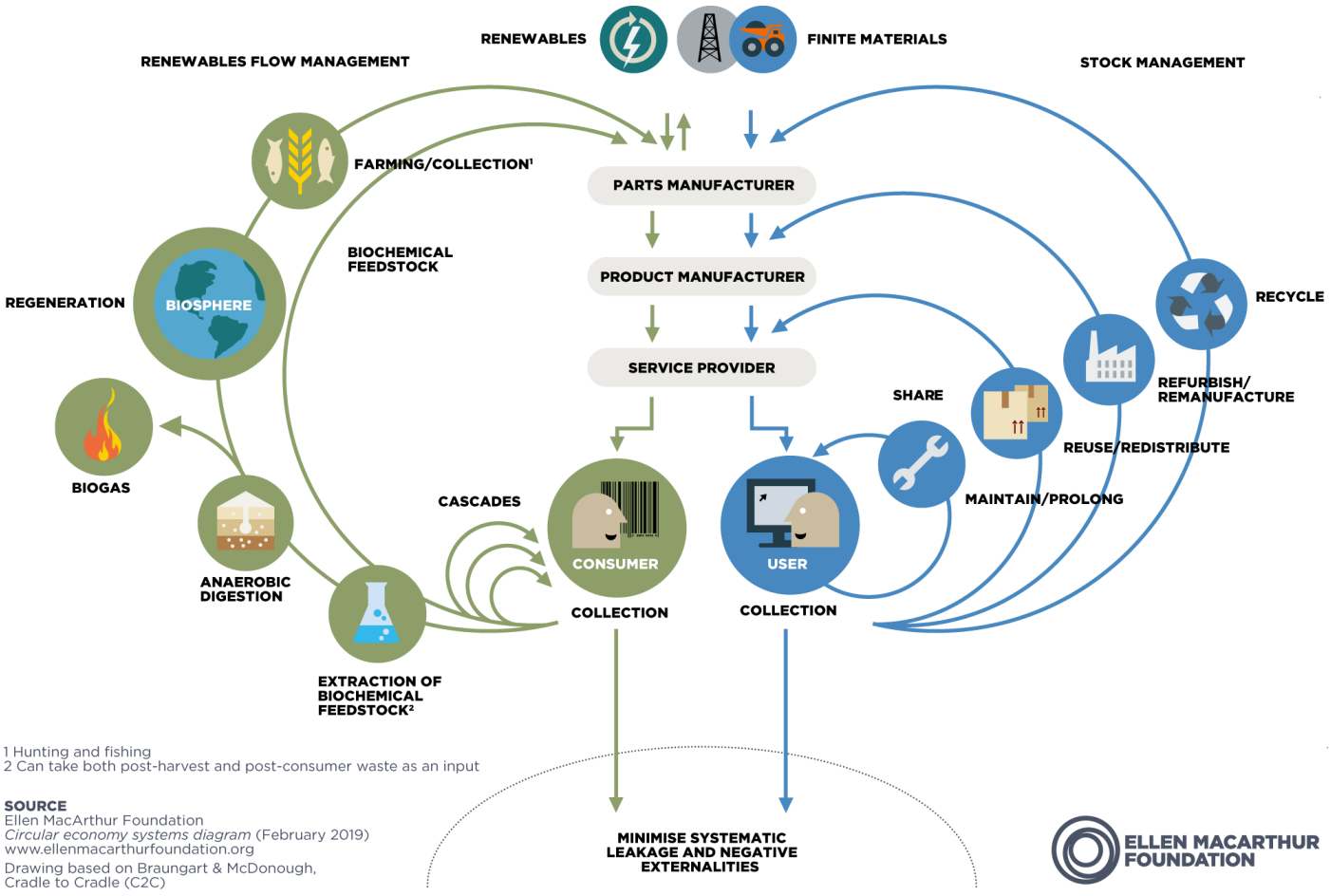


***Figure 1.5**. Butterfly diagram - Circular design illustrating the continuous flow of biological and technical materials through the 'value circle'*

UNCTAD has been working on the circular economy in partnership with other international organizations to promote sustainable production through innovate business models, international rules, and international cooperation, while encouraging further consumer awareness (UNCTAD, n.d.).

d. Low Carbon Economy

Fankhauser (2012) describes the basic elements of a low-carbon economy transition: "First, decarbonisation needs a solid legal basis to give it credibility and overcome time inconsistency problems. Second, putting a price on carbon is essential, but low-carbon policies also must address wider market, investment, and behavioural failures. This in turn raises issues of policy complexity and coordination. Third, the low-carbon economy is likely to be highly electrified. Clean electricity could be a cost-effective way of decarbonising many parts of the economy, including transport, heating, and parts of industry. Decarbonisation therefore starts in the power sector. Fourth, the low-carbon transition is primarily a revolution of production, not consumption. Both supply-side innovation and demand-side adjustments in lifestyle and behaviour are needed, but the former dominate. Fifth, the transition to a low-carbon economy is economically and technologically feasible. Achieving it is a question of policy competence and the political will to drive economic and social change." A number of ASEAN countries have adopted low carbon growth strategies. While many will consider low carbon approach as a low-hanging fruit considering technologies exist such as green technology and renewable energy that have become more affordable, low carbon economy will still need regulatory mechanisms to trigger a demand, as noted in the fourth point by Fankhauser (2012). Carbon trading mechanisms can complement policies targeting emissions reduction in specific sectors that can effectively prompt national governments and private sector to initiate activities towards such target, which can involve carbon trading, green technology upgrade, investing in renewables and reforestation.

The *SMART 2020 Enabling the low-carbon economy in the information age* report outlined the following ways in which new technologies would reduce carbon emissions by 2020 (The Climate Group, 2008).

1. Smart motor systems: Reducing electricity consumption in industry through optimised motors and automation could save almost 1 $GtCO_2e$ in 2020, worth €68 billion ($107.2 billion).
2. Smart logistics: Improving the efficiency of transport and storage could save 1.5 $GtCO_2e$ in 2020, with energy savings worth €280 billion ($441.7 billion).
3. Smart buildings: Making living and working spaces more energy-efficient could save 1.7 $GtCO_2e$ from building energy use in 2020, worth €216 billion ($340.8 billion).
4. Smart grids: Improving the efficiency of electricity grids is the largest opportunity identified in the study – with potential savings of 2 $GtCO_2e$, worth €79 billion ($124.6 billion).
5. Dematerialisation: Dematerialising the way we live and work by replacing physical objects and activities with electronic or "virtual" alternatives could save 500 Mt CO_2e in 2020 – the equivalent of the total global footprint of the ICT industry in 2002.

e. Green/ environmentally friendly consumption, ethical consumption, and sustainable consumption

1. Green/environmentally friendly consumption

This refers to a form of consumption that is compatible with protecting the environment for the current and future generations. It assigns to consumers the responsibility or co-responsibility for addressing environmental problems through adoption of environmentally friendly behaviours, like the use of clean energy, organic products, and the research of goods produced by companies with very low carbon impact (Connoly & Prothero, 2008).

2. Ethical consumption

Ethics, in ethical consumption, refers to "the making of consumer decisions according to social and environmental considerations such as animal, social, and environmental welfare" (Low & Davenport, 2007 in Papaoikonomou, Ryan, & Valverde, 2011). Although literature on ethical consumption is still evolving, Papaoikonomou, Ryan, & Valverde (2011) described four common consumer practices that can help conceptualize ethical consumption:

i. Buycotting: choosing and buying certain products and services over others due to social considerations (e.g., fair trade)
ii. Boycotting and participation in anticonsumption events: avoiding certain actions or by not purchasing a product (company- or product-oriented boycott)
iii. Voluntary simplicity/ Ethical simplifiers: choosing to cut down on overall consumption levels and adopting a simpler lifestyle due to social and environmental considerations
iv. Sustainable consumer habits: individual postpurchase and other behaviors related to how products are used and disposed of (singular behavior like waste recycling, bring your own bag to the supermarket/ store)

Ethical consumption is also linked to Sustainable consumption, which is a practical approach to attaining sustainable development, incorporating the economy, society, and the surrounding environment (Brinzan, Tigan, & Radu, 2012).

3. Sustainable lifestyle, sustainable consumption behavior, sharing economy, product service system (PPS), ecolabel, zero emission

i. Sustainable Lifestyle

The United Nations Environment Programme (UNEP) posits that 'sustainable living means understanding how our lifestyle choices impact the world around us and finding ways for everyone to live better and lighter. (UNEP, n.d.-b)

ii. Sustainable consumption behaviour

When purchasing, people make decisions based on price, accessibility, effectiveness and or well-being. It is up to governments and business to provide more information and support positive behaviour change, and to support and develop new business models to make sustainable living a default option.

iii. Sharing economy

The concept of sharing economy is often nuanced, and interpreted loosely. According to the World Economic Forum (2017), sharing economy "generally refers to organized interactions in which individuals or entities exchange with others the untapped "surplus" or "idle" capacity of their assets, typically for some type of payment or service." Three features distinguish sharing economy from traditional economy or sharing practices, namely, (i) the use of digital technologies to match buyers and sellers, (ii) capitalizing on idle capacity of an asset usually through a time-share model, and (iii) Trust-verification through third party verification or peer review (WEF, 2017). Examples of sharing economy include co-working, carpooling or ridesharing.

iv. Product Service System (PSS)

There is no generally accepted definition of a Product Service System (PSS). A basic description of a PSS is a system that consists of products and services that fulfill user needs. (Goedkoop et al., 1999; Mont, 2002b; Manzini & Vezzoli, 2003; Tukker, 2004).

Product-service systems are business models that provide for cohesive delivery of products and services. PSS models are emerging to enable collaborative consumption of both products and services, with the aim of pro-environmental outcomes (Piscicelli, Cooper, & Fisher, 2014). However, a critique to this model pertains to the target market, which are mostly middle class consumers. There may be potential for this model to develop further for inclusivity to allow more population to shift to sustainability, especially those who would greatly benefit from PSS and enhance social mobility.

v. Ecolabel

Ecolabelling is defined by the International Organization for Standardization (ISO) as a voluntary method of environmental performance certification and labelling (ISO 14024:2018) that specifies environmental and social criteria for specific products and services. ISO has developed the 14020 series to guide ecolabeling schemes (Types I, II and III), which can significantly hasten its development and implementation depending on the preference of the organization or sector. Several types of ecolabels are in use, and many of which are country-specific Type-I ecolabels administered by a third party organization for impartiality. A number of countries are working on mutual recognition of ecolabels, and harmonizing ecolabels at the regional level have been investigated in recent years. Certification schemes, on the other hand, are Type-I like ecolabels that focus on specific impacts or sectors that have gained international following and recognition. Examples of this certification include Forest Stewardship Council for products from responsibly managed forests, UTZ certified for sustainable farming and Fairtrade International for sustainable livelihoods. Each of these labels have a certification process administered by the organization.

vi. Zero Emission

In sustainable consumption, concerns on emissions arise from direct energy consumption and mobility. With technological innovations, zero emission can be a significant sustainable option for consumers. Zero emission can refer to any process, engine, or energy storage that does not produce harmful air emissions and greenhouse gases. This concept continues to be an active research area for transportation modes like vehicles, airplanes and sailboats. As opposed to biofuels and end-of-pipe treatments like catalytic converters that aim to reduce

vehicular emissions, zero emission aims for neutral in use emissions from these energy consuming machines and transport options.

1.1.4 Conclusion

Many efforts have been invested since the United Nations Conference on Environment and Development of 1992 launched the agenda on sustainable development at the international level to achieve a coordinated and coherent approach towards sustainable consumption. Doctrine and practice have developed various conceptual frameworks to inform policymaking in this pursuit. The SDGs and the UNGCP put a renewed focus on the leading role that consumers can and should play in safeguarding the environment while securing citizens' health and wellbeing. The following chapter will place those efforts in the context of the Association of Southeast Asian Nations Organization.

1.2 Sustainable Consumption in ASEAN

1.2.1 ASEAN as a regional platform

The importance of the ASEAN region has increased greatly in recent decades. Currently ASEAN is the 7th largest economy in the world, and it is home of 625 million people, making its population larger than the European Unions' or North America's. Recent data show the steady, rapid, and growing socio-economic development for the region which results in a continuous industrialization and urbanization. In Asia and the Pacific, the urban population grows faster than in any other region. Economic growth in the Asia-Pacific region is led by cities. Urban growth in Asia and the Pacific is not environmentally friendly. Existing infrastructure development and growth patterns may lock cities into unsustainable consumption and production models for years to come. The main environmental issues are related to the poor quality of air, clean water supply and management of waste and sanitation. (ESCAP).

Therefore, national economic policies are required to ensure that goods and services reflect environmental costs to stimulate more sustainable consumption and production patterns. This issue has been stressed as part of the ASEAN socio-cultural community blueprint 2025 in its goal to promote environmentally sustainable cities with integrated approaches in urban planning and management for sustainable urbanization towards a clean and green ASEAN.

Promoting sustainable consumption can be done through appropriate policy settings and frameworks that favor sustainable products and services (UNEP, 2015). Government plays a central role in the process by setting up an enabling environment for all relevant stakeholders to take part meaningfully in adopting sustainable consumption. This part of Module one will cover the ASEAN regional view on sustainable consumption, the national ASEAN Member States' (AMS) view is covered under Module 2.

1.2.2 The importance of Sustainable Consumption

Prior to the ASEAN Community Vision 2025[4], ASEAN had already been active in promoting Sustainable Consumption and Production in the region. Firstly, Sustainable Consumption is mentioned as one of strategic measures of "B.2. Consumer Protection", which is one of the key elements to achieve "a Competitive, Innovative and Dynamic ASEAN" as one of the characteristics of the ASEAN Economic Community Blueprint 2025. In specific, it aims to "Build higher consumer confidence and cross-border commercial transactions by strengthening product safety enforcement, stronger participation of consumer representatives, and promotion of sustainable consumption" (ASEAN, 2015).
The second reference is under the ASEAN Socio-Cultural Community Blueprint 2025, where "C.4 Sustainable Consumption and Production" is considered as one of key elements to achieve "Sustainable" ASEAN. Strategic measures of C.4. Sustainable Consumption and Production are further specified as follows (ASEAN, 2015):

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

The ASEAN+3 Leadership Programme on Sustainable Production and Consumption is one of ASEANs flagship activities under the environmental education stream that has been implemented annually since 2008. This programme contributes towards the implementation of the previous ASEAN Environmental Education Action Plans (AEEAP 2008-2012 and AEEAP 2014 - 2018) and currently to the ASCC Blueprint 2025 (ASEAN Secretariat, n.d.). Following the transition from the ASEAN Environmental Education Action Plan (2014-2018) to the broader scope pursuant to the ASCC Blueprint 2025 and global SCP Framework, the Programme has been redesigned to cater to more sectors and strengthen its impacts in capacity development in the ASEAN region. The 11th ASEAN Plus Three Leadership Programme on SCP held in 2019 was the first one held after the redesign (ASEAN Secretariat, n.d.).

Recognising the need for an ASEAN cooperation mechanism, ASEAN Member States formed an ASEAN Forum on SCP in Indonesia in 2011. In September 2013, ASEAN Ministers issued a "Joint Statement on the Implementation of SCP in ASEAN by the ASEAN Ministers Responsible for Environment". This statement noted the commitment to strengthen cooperation within ASEAN and with ASEAN Dialogue Partners on the implementation of SCP setting the basis for advancing SCP in the region and establishing an annual ASEAN SCP Forum. The first ASEAN Forum on SCP meeting was hosted in April 2014 and served to strengthen ASEAN's growing commitment to SCP in priority areas, such as green public procurement and eco-labelling. Since the establishment of the ASEAN Forum on SCP, there

[4] ASEAN has recognized sustainable consumption as part of its targets as specified in the ASEAN 2025: Forging Ahead Together, where sustainable consumption is mention in two areas (ASEAN 2015).

has been progress on implementing the priority activities and topics outlined by this forum on capacity development for SCP and green public procurement for example (Castro-Hallgren, 2017); UNEP, 2015).

ASEAN recognizes the importance of sustainable economic development as an integral part of the region's growth strategy. Protection of the environment and natural resources supports economic growth and vice versa. Sustainable consumption is a key driver for socio economic development in the ASEAN Policy Agenda (ASEAN Vision 2020) which advocates for "a clean and green ASEAN with fully established mechanisms for sustainable development to ensure the protection of the region's environment, the sustainability of natural resources and the high quality of life of its peoples". As part of the ASEAN Vision 2025, national development plans take a particular focus on green development notably by enhancing sustainable consumption and production combined with a push towards digitalization to promote a digitally enabled economy that is secure, sustainable, and transformative, and to further leverage ICT to enable an innovative, inclusive, and integrated ASEAN.

The ASEAN region has been increasingly intensifying efforts in sustainable consumption, notably through the development of the ASEAN Sustainable Consumption Toolkit and increasing cooperation efforts in sustainable consumption by looking notably into the importance of sustainable utilization of natural resources.

At the 2019 Regional Forum on the Promotion of Sustainable Consumption in ASEAN, relevant governmental bodies, businesses, as well as regional and international experts stressed the importance of changing consumer behavior and consumption patterns in driving sustainable consumption, economic and regulatory tools, as well as possible policy reforms needed as ASEAN intensifies its work on sustainable consumption. The region is falling short in achieving various sustainable development goals by 2030. As it recovers from the effects of COVID-19 building back better allows for opportunities to improve sustainability of companies and supply chains.

1.2.3 Conclusions

Sustainable consumption bears relevance in the ASEAN region because of the fast-paced socio-economic growth and development across the region which puts increasingly pressure on resource use, over burdens waste management systems and calls for a push to promote a sustainability focused culture. Sustainable consumption is not only a driver of radical socio-economic changes but also a driver of opportunities which can trickle down resulting from a cross sectoral push towards sustainable economic growth. This can lead to significant development improvements. By advocating for sustainable consumption through MSME focused policies, this can lead to development goals and promote sustainable consumption for consumers. Sustainable consumption can also play an important role in enhancing consumer protection through achieving SDGs, notably in the tourism industry which is a key driver for ASEAN economies. In short, sustainable consumption is highly relevant to address socio economic challenges faced by the ASEAN region in its fast-paced development and push forward opportunities which bear positive externalities to consumers and society. The main challenge faced in relation to the promotion of sustainable consumption is the shift that resulted from the socio-economic development of a part of the ASEAN population who in turn

adopted a consumerist lifestyle, notably the growing urban elite and upper middle classes (Ünaldi, 2014).

Sustainability is becoming an increasingly relevant theme for policy and industry. Despite many existing laws, policies, and strategies related to environmental protection, there is still a need to have specific policies, strategies, and tools for SCP implementation, partly because SCP concept is still new for the countries. Worldwide consumption and production which are a driving force of the global economy rest on the use of the natural environment. Economic and social progress over the last century has been accompanied by environmental degradation. It has also been characterized by decoupling economic growth from environmental degradation, increasing resource efficiency, and promoting sustainable lifestyles. It has been shown that sustainable consumption and production can also contribute substantially to poverty alleviation and the transition towards low-carbon and green economies (UN, n.d.-b). Indeed the hypothesis concerning the relationship between the amount of energy consumed, the human development index (HDI), and the environment (CO_2 emissions into the atmosphere) has been verified. A study results show that the size and rating of the HDI are influenced by such factors as urbanization growth, gross domestic product (GDP), gross national income (GNI) per capita, the share of "clean" energy consumption by the population and business in total energy consumption, the level of socioeconomic development, and R&D expenses. The results show that the volume of energy consumption not only affects the human development index in a particular country but is also an important factor in determining the level of sustainable development (Yumashev, Slusarczyk, Kondrashev, & Mikhaylov, 2020). Therefore, sustainable consumption can greatly enhance and improve development, and the nexus between these two concepts is even more salient and relevant for a post COVID-19 crisis economic recovery in the ASEAN region, which has been severely impacted.

The integration of SCP measures into consumer protection policies could in turn create a positive feedback effect to the society through enhanced socio-economic development. As noted by UNCTAD (2019), Consumer protection policy can be relied upon as an instrument for achieving the Sustainable Development Goals, including sustainable consumption. The ASEAN Vision 2025 is already pushing for a sustainable community that promotes social development and environmental protection through effective mechanisms to meet the current and future needs of our peoples. It also stresses the need to incorporate as part of its green economic growth agenda the need to “build higher consumer confidence and cross-border commercial transactions by strengthening product safety enforcement, stronger participation of consumer representatives, and promotion of sustainable consumption.”

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Appendix: UN Guidelines for Consumer Protection (2015) – Some recommendations on sustainable consumption

In 1994, the United Nations Oslo Symposium defined *sustainable consumption* as "the use of services and related products, which respond to basic needs and bring a better quality of life while minimizing the use of natural resources and toxic materials as well as emissions of waste and pollutants over the life cycle of the service or product so as not to jeopardize the needs of future generations" (UN, n.d.-a). As highlighted in UNCTAD's note (UNCTAD, 2019), this definition brings forward two dimensions related to sustainability, namely, the social dimension (e.g., distributional considerations) and the environmental dimension (e.g., natural resources, waste and pollutants). In addition, there is a consumer-centered understanding of sustainability, which introduces the economic dimension to a perspective not entirely based on financial profitability, but rather includes taking care of the shared Earth (Emas, 2015). Guideline 49 of the UNGCP states that "sustainable consumption includes meeting the needs of present and future generations for goods and services in ways that are economically, socially and environmentally sustainable".

The UNGCP encourage Member States and all relevant stakeholders to use a wide range of instruments and work together for sustainable development, and provides the following recommendations on sustainable consumption (UNCTAD, 2016):

Member States should develop and implement consumer protection policies, setting their "own priorities for the protection of consumers in accordance with the economic, social and environmental circumstances of the country and the needs of its population, and bearing in mind the costs and benefits of the proposed measures" (guideline 4). The legitimate needs of consumers that the guidelines are intended to meet include the following: the protection of consumers from hazards to their health and safety; access by consumers to adequate information to enable them to make informed choices according to individual wishes and needs; consumer education, including education on the economic, social, and environmental consequences of consumer choice; and the promotion of sustainable consumption patterns (guideline 5). Guidelines 6 and 7 on consumer policies and sustainable consumption may be linked to the 2030 Agenda and the Goals. In addition, consumer education is recognized as an important component of consumer protection.

Following the latest revision, the UNGCP address businesses directly for the first time, establishing benchmarks for businesses to operate in a more responsible manner. The guideline on good business practices is relevant in the context of sustainable consumption, as the private sector is expected to play an active role in consumer protection (guideline 11).

The Guidelines emphasize the use of standards for the safety and quality of consumer goods and services (guidelines 33 to 35). Voluntary and other standards, at the national and international levels, are instrumental for the private sector in pursuing sustainable consumption and production, complementing existing legal and regulatory frameworks. Member States are encouraged to promote programmes related to consumer education and information, including such aspects as environmental protection and the efficient use of materials, energy, and water (guidelines 42 to 48). The need to foster education and

awareness initiatives that inform consumers, citizens, and businesses of the importance of preserving the environment is crucial in both developed and developing countries.

Finally, the Guidelines state that responsibility for the development of sustainable consumption patterns is shared by all members of society, including consumers, businesses, labour organizations, and environmental organizations (guidelines 49 to 62). In this process, consumers have the right to be informed about the impacts of their choices and the products and services they purchase. The Guidelines state that Member States should encourage the design, development and use of products and services that are safe and energy- and resource- efficient; encourage consumers to both recycle wastes and purchase recycled products; promote the development and use of national and international health standards; and promote awareness of the health-related benefits of sustainable consumption and production patterns (guidelines 52, 53 and 56). They also state that policymaking "should be conducted in consultation with business, consumer and environmental organizations and other concerned groups. Business has a responsibility for promoting sustainable consumption through the design, production and distribution of goods and services. Consumer and environmental organizations have a responsibility for promoting public participation and debate on sustainable consumption, for informing consumers and for working with Member States and businesses towards sustainable consumption" (guideline 50).

Module 2: Best regional and international practices and approaches to policies that promote sustainable consumption

This module presents various global policy practices and approaches targeting sustainable consumption that are considered relevant to ASEAN hence can serve as initial reference towards promoting such policies in the region. It focuses more on the "top-down" policies promoted by the government, although few "bottom-up" approaches by non-government actors are mentioned whenever relevant. It highlights the process of policy making and implementation based on theoretical concepts and practices. The terms of "sustainable consumption" and "Sustainable Consumption and Production (SCP)" are used interchangeably in the module, for two reasons. Firstly, sustainable consumption is part of SCP agenda as indeed consumption and production are two sides of the same coin (UNEP, 2001). Secondly, policies on SCP in Asia have so far generally focused on promoting sustainable production technical approaches (e.g., waste management and efficiency approaches) (UNEP, 2018). Only in recent years few countries have started addressing sustainable consumption, therefore limited documentation is available. Despite the above, this module refers to the consumption part of SCP when SCP policy approach is mentioned.

2.1 Introduction – Sustainable Consumption Policy Frameworks in AMS

Promoting sustainable consumption can be done through appropriate policy settings and frameworks that favour sustainable products and services (UNEP, 2017). Government plays a central role in the process by setting up an enabling environment for all relevant stakeholders to take part meaningfully in adopting sustainable consumption.

Sustainable Consumption and Production approach in ASEAN Member States (AMS) is being applied in five different policy avenues, which is the same case globally (UNEP, 2018). These are:

(i) Dedicated SCP strategy and/or action plan;
(ii) As part of a broader national strategy;
(iii) Embedded in other sustainability frameworks (e.g., green growth, low carbon economy, etc.);
(iv) Mainstreamed into sectoral policies; and/or
(v) Embedded in thematic programmes.

Table 2.1 summarises various policy avenues on Sustainable Consumption and Production in each AMS according to the above categories. Whereas Table 2.2 summarises Sustainable Consumption policy priorities in the AMS. Detailed countries' policies frameworks are available in the Annex 1.

Note that despite the effort made, policies in ASEAN listed in this module may not be exhaustive. It was mainly developed based on secondary literature review (online desk research) which was then supplemented by a survey to all AMS and comments received during the validation workshop. Thereby missing information on certain policies may occur due to unavailability of information.

ASEAN MS	Dedicated SCP Strategy	Part of a broader national strategy	Sustainability frameworks	Examples of Sectoral Policies	Examples of Thematic Programmes
Brunei Darussalam				Hazardous Waste (Control of Export, Import and Transit) Order, Minor Offences Act, Environmental Protection and Management Order, Energy Strategic Plan 2020-2025 (Energy Efficiency Standard and Labelling Order 2021, *Energy Management Policy and Renewable Portfolio Standard)*	National programme on reduction of plastics use
Cambodia			Policy and Strategic Plan for Green Growth	Environment Strategy and Action Plan; Policy, Strategy and Action Plan on Energy Efficiency; Energy Sector Development Plan 2005-2024	
Indonesia	National Action Plan on SDG 12: SCP Indonesia Framework 2020-2030	Mid-Term Development Plan 2020-2024		National Energy Plan; Policy on Managing Domestic Waste and Domestic Waste Equivalents, Regulation on Environment Economic Instruments, Decree on Eco-label	Green Industry Standards & Certifications; Sustainable Public Procurement; *Food Loss and Waste*
Lao P.D.R.		9th National Economic and Social Development 2021-2025	National Green Growth Strategy	Lao Industrial Development Strategy 2016-2030; Natural Resources and Environment Strategy 2016-2025; Environment Protection Law	
Malaysia	*National SCP Blueprint*	Shared Prosperity Vision 2030; 12th Malaysia Plan (2021-2025)		Solid Waste and Public Cleansing Management Act; Renewable Energy Policy and Action; Energy Efficiency Action Plan; Roadmap Zero Single-use Plastics, Tourism Policy, Biomass Strategy	Construction Industry Transformation Programme (CITP), Ecolabel, Green Government Procurement, *SCP Module for Education*
Myanmar	*National Action Plan on SCP*	Myanmar Sustainable Development Plan	*Green Economy Policy Framework*	Renewable Energy Policy; Energy Efficiency and Conservation Policy; Waste Management Strategy and Action Plan; Hazardous Waste Management Plan, *National Plastics Action Plan*	Sustainable Public Procurement, *Eco-label Scheme*
Philippines	Philippine Action Plan for SCP	Philippine Development Plan 2017-2022		Renewable Energy Act; Energy Efficiency Roadmap; Toxic Substances and Hazardous and Nuclear Waste Control Act; Ecological Solid Waste Management Act; Provincial Ordinances to regulate plastic bags	Green Public Procurement Plan; National Ecolabel Program; Energy Management Program
Singapore			Singapore Green Plan 2030	Mandatory Energy Labelling Scheme; Minimum Energy Performance Standards; Water Efficiency Labelling Scheme; Zero Waste Masterplan; Resource Sustainability Act	Voluntary schemes for packaging and climate-friendly appliances; Say Yes to Waste Less campaign
Thailand	SCP Roadmap 2017-2037	20-year National Strategy (2018-2037)		Green Industry Policy; Master Plan on Waste Management; Roadmap on Plastics Waste Management; Renewable Energy Roadmap; *Remains of Electrical Products Management Act*	Green Industry Mark (GIM); Green Procurement Plan
Vietnam	National Action Plan on SCP 2021-2030	Sustainable Development Strategy 2011-2020	National Action Plan for Green Growth 2014-2020	Decree on Management of Waste and Discarded Materials; Law on Eco-friendly Production and Consumption; Decision on Management of Plastics Waste, Law on Economical and Efficient use of Energy, Renewable Energy Development Strategy	

Table 2.1 ASEAN Member States National Policy Frameworks on Sustainable Consumption

Sources: (see references of Annex 1)

Note: Policies interventions in *Italic fonts* are under development

AMS	Policy Priority Areas [1][2]	Policy measures
Brunei	Waste (including plastics), Energy Efficiency	Regulatory; Economic; Information
Cambodia	Access to Renewable Energy, Energy Efficiency, Waste	Regulatory; Economic; Information
Indonesia	Green Public Procurement; *Public Facility; Sustainable financing; Innovation;* Access to Renewable Energy, Energy Efficiency, Waste (including plastics, *food*)	Regulatory; Economic; Information
Lao P.D.R.	Access to Renewable energy, Energy Efficiency, Waste	Regulatory; Economic; Information
Malaysia	Government Green Procurement; *Communication, Education;* Access to Renewable Energy, Energy Efficiency, Waste (including plastics, *e-waste, food*)	Regulatory; Economic; Information
Myanmar	Access to Renewable energy, Energy Efficiency, Waste (including plastics)	Regulatory; Information
Philippines	Access to Renewable energy, Energy Efficiency, Waste (including plastics), *Green Procurement*	Regulatory; Economic; Information
Singapore	Energy Efficiency; Water efficiency; Waste (packaging waste, including plastics, *food, e-waste*); Communication/Information	Regulatory; Economic; Information; Voluntary Agreement
Thailand	Green Procurement; *Communication/Information; Data, Knowledge, Science, Innovation*; Access to Renewable energy, Energy Efficiency, Waste (plastics, *e-waste*)	Regulatory; Economic; Information Voluntary Agreement
Vietnam	*Consumer Information; Sustainable Lifestyles;* Access to Renewable Energy; Energy Efficiency; Waste (plastics)	Regulatory; Economic; Information

Table 2.2 ASEAN Member States Sustainable Consumption Policy Priorities

Sources: (see references of Annex 1)

Note: [1] For countries having dedicated SCP strategy, the policy priorities are those mentioned in the strategy, followed by sectoral policies. [2] Policy areas in *Italic fonts* are under development

Two aspects of sustainable consumption, i.e., under-consumption and over-consumption, are discussed since these are considered relevant for AMS (UNEP, 2018)[5]. Access to energy is one of key under-consumption issues, as 7.3% of total ASEAN population or 47 million people do not have access to electricity (Sungkono, 2020).

From the two tables above, the following points can be concluded:

- ASEAN Member States have all developed and implemented various policies related to the sustainable consumption, most of which are closely linked to the SCP policy agenda;
- Each of AMS takes different approaches in their policy responses;
- Most of policy priority areas are still coming from the perspective of sustainable production;
- Common policy priority areas can be entry points for designing future ASEAN cooperation in the field.

2.2 Sustainable Consumption Policy Development – Concepts and approaches

2.2.1 Introduction to Policy Cycle

Public policy making is the process by which governments translate their vision into programmes and actions to deliver 'outcomes'. This process follows a common pattern (Figure 2.1):

[5] There are various definitions of under-consumption and over-consumption from an economic theory perspective. The terms in this module refer to the income level of consumers, hence under-consumption suggests poverty or low-income level consumers whereas over-consumption indicates affluence or higher-income level consumers.

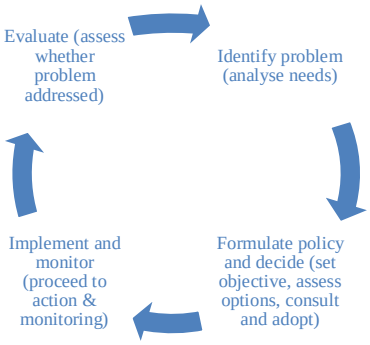


Figure 2.1 Classic Policy Cycle Model

Sources: Adapted from (European Commission, 2017) (UNEP, 2017)

A number of key steps for each stage of Sustainable consumption policy development to be considered are listed in Table 2.3:

Policy Cycle Stages	Key steps	Fundamentals
Stage 1: Problem framing ***A problem is identified, and the underlying causes and needs are analysed to determine whether there is a rationale for public policy intervention***	● Identify stakeholders' perception and build awareness on Sustainable Consumption. ● Identify social goals and public concern. ● Identify environmental, social and economic aspects and the underlying causes. ● Asses existing (environment, social and economic)[6] policies, their interrelations and institutional settings. ● Define framing and scaling of policy problems	● Stakeholder engagement ● Evidence-based information ● Thorough appraisal
Stage 2: Policy framing and adoption ***A policy response is formulated by developing policy principles, statement and measurable policy goals, identi-fying policy options and appraisal, selecting policy instruments and planning of implementation (including resources). During the process, stake-holder consultation(s) are carried out to get inputs and nurture pro-active stakeholder engagement. Finally, the policy is adopted usually at the political or senior management level.***	● Develop guiding policy principles. ● Construct general policy statement. ● Define measurable policy goals (results framework[7]). ● Identify several policy scenarios. ● Perform options appraisal and impact assessment. ● Discuss preferred policy proposal in public consultation(s) with affected stakeholders ● Select policy instruments ● Plan implementation (including resource planning) ● Adopt policy	● Evidence-based information ● Rigorous design ● Thorough appraisals ● Clear goals ● Clear roles and responsibilities ● Stakeholder engagement
Stage 3: Implementation and monitoring: ***The policy is implemented as agreed and subjected to monitoring, as a management tool to track performance and measure progress***	● Plan and execute communication strategy. ● Progress of statutory, institutional (implementing and management agencies) and resourcing requirements. ● Establish enforcement and compliance mechanisms.	● Stakeholder/ external engagement ● Rigorous design ● Clear roles and responsibilities

[6] When analyzing the existing policy impact towards the current situation of unsustainable consumption, it is essential to look for various policy settings- including social and economic policies. These may have contributed in creating the problems, if so then these policies should be part of problem identification and later future policy intervention should be identified as counter measures.

[7] Results framework specifies different levels of results that the policy intervention is expected to achieve. There are various tools available to develop such framework, such as results framework (World Bank, EU), logical framework approach (EU), theory of change (UK DFID; Australia DFAT, World Bank), programme logic (DFAT) and many more (European Commission, 2017; Roberts & Khattri, 2012; Department of Foreign Affairs and Trade Australian Government, 2017; Vogel, 2012)

against the plan, including any deviations or unforeseen outcomes.	● Establish policy monitoring and evaluation mechanisms. ● Ongoing policy monitoring	● Feedback mechanisms
Stage 4: Evaluation phase: ***The policy is evaluated to determine whether or not it has addressed the problem. If so, evaluation seeks to draw out lessons-learned for future interventions. If not, the evaluation pinpoints whether the original objective has been overtaken by subsequent developments or recommends an alternative course of action, these will feed back into future policy design.***	● Evaluate policy to measure outcomes and review evaluation results. ● Draw out positive and negative lessons-learned to feed back into design of future interventions. ● Communicate evaluation results.	● Feedback mechanism ● External engagement

Table 2.3 Stages in Policy Development Process

Sources: (Adapted from (European Commission, 2017; UNEP, 2017)

While some of the key steps are typical for any policy areas, some are specific to sustainable consumption due to the fact it is a new policy domain and its cross-sectoral nature of the underlying causes. Hence additional steps are included during the problem framing stage, i.e., developing stakeholders' awareness in the beginning of policy debate process and exploring and addressing social, economic and environmental policy settings that may have contributed to unsustainable consumption. In many instances, common understanding on **the urgency and the scale of unsustainable consumption problems hence the need for policy responses** should be improved for all relevant stakeholders, including the policy makers.[8]

2.2.2 Qualities of Sustainable Consumption policy-making

2.2.2.1 Multi-level – conventional and innovative policy mix

Unsustainable consumption may attribute to both environmental problems of consumption and social dimension of current consumption patterns. Yet, existing policies still mainly focus on environmental problems of consumption, whereas policies targeting consumer pattern are still limited, most of which have mainly focused on raising awareness of consumers and appealing to them to buy green or eco-labelled products (Rubik, et al., 2009).The existing policy approach has had very limited effect since it fails to address the drivers and influencing factors of why people buy products and services. There are many instances preventing the intended effect, from limited sustainable products in the market or aggressive marketing campaigns outrun the government-led campaign, to efficiency gains are often offset by an increase in the absolute amount of their consumption ("rebound effect") (UNEP, 2015; Rubik, et al., 2009).

By regarding the multi-facets of sustainable consumption, framing problem and policy options should attempt to identify as many as possible the associated problems and the corresponding solutions. In many cases, policy tools can be especially powerful when employed in

[8] A common question on the linkage between sustainable consumption and production and green economy is whether the shifting to sustainability will affect the economy development, especially those (brown industry or industry that produces goods or service without regards to the environment) that will be phased out when certain sustainability regulation is enacted. To frame the narratives, policy makers can highlight the consumption trends and (social, economic and environmental) implications, the need for all stakeholders to internalize the environmental costs and that Sustainable Consumption policy should allow transitioning (see sub chapter on Forward looking vision). See also (UNEP, 2015) that addresses some common misconceptions on Sustainable Consumption.

combination (“policy mix”), which are well aligned with the overall policy objective (“policy coherence”) (UN Environment, 2019) (UNEP, 2017).

The quality of policy mix draws on a set of concepts, such as (UN Environment, 2019):

- consistency of multiple policy instruments (i.e., instruments’ ability to reinforce rather than undermine each other),
- coherence of multiple policy goals (i.e., goals not contradicting each other) and
- congruence of multiple policy goals and instruments (i.e., their ability to work together in a unidirectional fashion).

Policy tools and instruments relevant for Sustainable Consumption policies include[9]:

Classic/Traditional Instruments	
Regulatory Tools aim to mandate or prohibit specific behaviours / use specific technology, define a level of sustainability performance to be achieved. Examples: Technical standards; Restrictions / bans; Environment quality standards, Green Public Procurement	**Economic / Market-based Tools** are to encourage or discourage certain behaviours or practices through economic incentives/ disincentives. Examples: Taxes/charges; Subsidies / soft loans / tax reductions; Tradable permit schemes[10]; Deposit-refund schemes
Information Tools is to enable informed choices. Examples: Labelling; Awareness raising / campaign; Sustainable reporting; Formal/informal education	
New / Innovative Instruments	
Voluntary Agreements aim to promote voluntary actions[11]. Examples: Public Private partnership	**Behavioural Insights Policy tools** are used to influence specific behaviours Examples: Nudging; Choice editing; Restriction on advertisings

Table 2.4 Sustainable Consumption Policy Instruments
Source: (UNEP, 2017) (UNEP, 2015)

A modern view to promote sustainable consumption is via a hybrid governance where the responsibilities of private actors and public authorities in policy formulation and implementation come together. The ‘classic/traditional’ policy intervention characterized by “bureaucracy, legislation, regulation and force” is complemented with “innovative” policy measures characterized by “voluntary, co-operative, network-based” that activates societal and business powers for green market transformation. In such policy settings, governments should be flexible and adjust their role to the different situations and challenges in an iterative process of policy formulation and implementation (Rubik, et al., 2009). To do this, the government should form broad coalitions of stakeholders – citizens, consumer organisations, businesses, religious institutions, government agencies, schools, etc. - to participate in the problem diagnosis, and be brave and open to having the current system challenged.

Another innovative approach is using behavioural insights as the basis for new measures to complement the existing mix of traditional measures aimed to solve particularly difficult issues.

[9] Module 3 will discuss Policy Tools and Instruments in greater detail. However, since this module touches base policy tools and instruments, a summary of tools and instruments are mentioned here for ease reference.

[10] Some AMS (Philippines, Singapore, Vietnam, Indonesia, Malaysia and Thailand) plan to pilot country ETS/Emission Trading system (see https://asiasociety.org/australia/growth-carbon-markets-asia). Korea is the frontrunner in ETS in Asia, along with China. ASEAN may want to facilitate knowledge sharing sessions with Korea and China and among AMS, and see if an ASEAN harmonized approach can be explored further.

[11] The OECD examines critically on having voluntary approaches as environmental tools. While there are potential benefits for having Voluntary agreements such as less preparation in place than regulatory approaches and more flexible in terms on how a given target is met, there are also potential shortcomings including modest environmental effectiveness and low economic efficiency. See further the policy recommendations at https://www.oecd.org/env/tools-evaluation/voluntaryapproachesforenvironmentalpolicy.htm

Insights from behavioural insights can help policy makers obtain a deeper understanding of the behavioural mechanisms contributing to environmentally harmful choices and develop more effective policies to address environmental problems. Application of behavioural insights have been applied in many policy areas including waste management and resource efficiency, transport, water, and environmental compliance (OECD, 2017).

2.2.2.2 Multi actor cooperation

Sustainable consumption cannot be achieved simply by urging consumers to change their shopping behaviour. What consumers buy, in what amounts, and from whom is not only a reflection of their preferences but also depends to a high degree on what options are available on the market, how easily these options can be accessed, how socially acceptable they are, how they are priced, and how they are promoted (UNEP, 2015).

Addressing these challenges requires all relevant actors to be involved, including businesses, governments, communities, research institutes and households, and ways to work together need to be identified. Table 2.5 below explains the opportunities for multi actor engagement.

Actors	Roles	Examples of Policy Approach Exposure
Individuals	Selecting better products and using resources more sustainably	● Information: Mandatory/Voluntary labels; Public campaigns; Information media
NGOs and citizens groups	Awareness raising, information provision, lobbying and networking	● Information: Campaigns; Public Information media
Business and Industry	Changing their practices including business models, product designs, marketing and after-sales services.	● Sustainable products and services: Cleaner production; Eco-efficiency; Eco-design ● Information: Eco-label; Consumer advice centres & portal; Sustainability reporting ● Other innovative approach: Voluntary agreement; Codes of conduct; Stakeholder dialogues; Investment strategies
Public sector	Introducing appropriate instruments on Sustainable Consumption, initiating stakeholder dialogues and voluntary initiatives, stimulating and creating demand of sustainable products and services through applying changes internally (eg Green Public Procurement, environment control for public buildings)	● Regulatory: Norms and standards; Environment control ● Economic tools: Incentives; Taxes ● Information: Labelling; Formal/informal education ● Internal changes: Green Public Procurement; Eco-efficiency for public buildings
Think tanks, Academia	Creating and communicating policy-relevant knowledge	● Information: Policy research; Knowledge sharing; Stakeholder engagement

Table 2.5 Opportunities for Multi actors' engagement

Source: Adapted from (Rubik, et al., 2009; UNEP, 2015; UNEP, 2017; UNEP, 2001)

Not only does stakeholder participation encourage buy-in, but it also allows the stakeholders to acknowledge the urgency, scope and intensity of the problem, which facilitates implementation of bold policy measures (UNEP, 2015). Ultimately this endeavour will require concerted efforts throughout society, including more conscious decisions by individuals, ambitious commitments by companies and clear and consistent legal intervention by policy makers.

Multi actor cooperation approach becomes more relevant as a result of the outbreak of COVID-19. Some of the observed impacts of the COVID-19 pandemic, for instance, are around the functioning of governance and of Global Value Chains (GVCs). Despite having different responses to the pandemic, AMS' government organized their responses by involving multi stakeholders including government agencies, health providers, private sectors and civil

society organizations (Djalante, et al., 2020). Similar mechanism will most likely be used in the following recovery post-COVID-19 phase, especially taking into account the need to meet global framework commitments including the SDGs (International Recovery Platform, 2020). Global Value Chains (GVCs) are also facing significant transformation following the pandemic. GVCs, including in ASEAN, are anticipated to be more regionalized and to promote diversification, which entails the need for cross-sectoral coordination and cooperation (ASEAN, 2021; UNCTAD, 2020).

2.2.2.3 Forward looking vision

Sustainable consumption is about changing consumption patterns, which is challenging (due to its major social, economic and environmental drivers) and a long-term undertaking (it requires a process of transformation). The need for such a forward-looking approach to policy design can be seen in policy fields that are characterised with such complexity (UN Environment, 2019).

Main reasons for developing long-term visions are two-fold (European Commission, 2017; UNEP, 2017):

- Long term vision provides a sense of forward direction. Successful programmes tend to be those that start with a strong vision, and then work along the logic chain to consider options of creative and cost effective solutions to achieve this vision. Programmes that are mainly activity or resource driven tend to less focus on the final outcome;
- Forward planning implies a break out of existing patterns of development, hence may meet some resistance. Therefore long planning horizons allow investments in R&D, infrastructure and capacity in public administration and businesses to be made in time, and other affected stakeholders to adjust to the new policy.

Key elements in the process of developing a forward looking vision are listed below.

- **Sufficient knowledge (latest data/evidence, future analysis) to understand where we are now, why we want to change and where we want to be;**
- **Participatory and inclusive design process as a period of consultation and reflection, to understand the implications for affected parties and take them on board;**
- **"Out-of-the-box" thinking to challenge assumptions;**
- **The vision is about direction (not budgets and targets), easy to communicate and appeal widely to stakeholders;**
- **An unambiguous policy, based on a clear statement of intent and unwavering commitment from the public administration, which requires leadership from the top;**
- **Sufficient time to adjust.**

Key elements for developing a long-term vision

Source: (European Commission, 2017) (UN Environment, 2019)

Participatory and inclusive design process can inform the policy design process on the circumstances of targeted groups and on obstacles to compliance. By having the opportunity to influence the policy design, companies and others can be expected to feel a higher ownership of the process and thus be more likely to respond positively. Consultation processes also provide "early warning" to the affected groups and make it possible for them to start preparing for expected future policies (UNEP, 2017).

2.2.2.4 Evidence base

Policy-making process has to be based upon the best available evidence from a wide range of sources; requiring involvement of all key stakeholders from the outset and through the policy development and implementation. Evidence-based approach include reviews existing

research, commissions new research, consults relevant experts or uses internal and external consultants.

Scientific evidence has played a prominent role in SCP policy formulation. Such tools are dominantly based on technical and 'hard' data, such as carbon footprints, resources used, etc following Life-cycle Assessment approach and related concepts. However, the thematic scope of evidence required for proper sustainable consumption policy design has changed. Evidence from social sciences which sheds light upon, e.g., the heterogeneity of consumer groups, lifestyles, the barriers to change in everyday life, etc. is needed to be able to design an effective sustainable consumption policy. Hence, public policies to promote sustainable consumption should pay more attention to generation and exchange of "soft" data that helps to come up with policy tools better fitting the everyday lives of consumers (Rubik, et al., 2009).

2.3 Policy Implementation

2.3.1 Four dimensions of effective policy: programmatic, process, legitimation and temporal

Policy effectiveness (success) can be measured in four dimensions (Compton & 't Hart, 2019). These dimensions can be taken into consideration when designing and implementing policy.

- **Programmatic** *is the degree to which a policy achieves its stated goal. Success is essentially about designing smart programmes that have an impact on the issues they are supposed to tackle.*

This part is about looking at if and how the policy has an impact on reaching the stated goal and on the positive change to the target groups. **A results framework** containing indicators of results should be available for assessment and actively used during the policy implementation.

- **Process** *is the extent to which the design process is socially appropriate and perceived as being just.*

One fear constantly discussed in policy discourse is that strong sustainability measures by the government will be met with strong objections. Research shows that citizens feel left out when the extent of the environmental problem is not fully communicated to them, when government policy seems to be circumventing the core of the issue, and when the system is seen to be protecting the rich and politically-connected, rather than catering to the well-being of citizens and future of society. Surveys all across Asia show that people welcome new economic prospects, but are very concerned about the widening inequality in society, the environmental damage, and future prospects for their children and grandchildren. (UNEP, 2015). It is therefore key that the Sustainable Consumption policy process exercises **justified measures** and **fair distribution of responsibilities**.

- **Legitimation** *is the extent to which both the social outcomes of policy interventions and also the manner in which they are achieved are seen as appropriate. This dimension assesses the degree to which policy-makers and agencies involved in driving and delivering the policy are able to build and maintain supportive political coalitions.*

The formulation and effective implementation of SCP policies involves a very complex agenda of reorienting economic systems, consumer preferences and producer behaviours. Despite the opportunities it offers, in the real world, this agenda is likely to encounter resistance that can be expressed openly or covertly by interest groups within the government, in the business

community and beyond. Resistance may also arise from the sheer momentum required to bring change for example in complex production chains, which may have been structured according to unsustainable paradigms for a long time (UNEP, 2017).

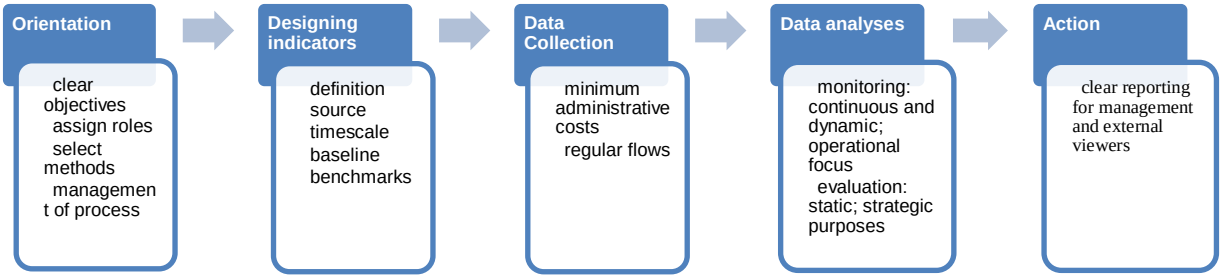
For Sustainable consumption policy to be effective, it is important to have **an effective mechanism** in place to support collaboration between government agencies. Establishing **a coordinating body with sufficient authority and resources** can be an essential step towards more coherent and effective policies.

- ***Temporal*** *is the extent to which policies respond to challenges and being up-to-date. Contexts change, unintended consequences emerge: robustly successful policies are those that adapt to these dynamics through institutional learning and flexible adaptation in programme (re)design and delivery, and through political astuteness in safeguarding supporting coalitions and maintaining public reputation and legitimacy.*

Change in consumption patterns have been caused by many mega trends such as digitalisation, Artificial Intelligence, the Internet of Things, automation – even recently by the global COVID pandemic. One distinct example is the rapid development of e-commerce in the last five years, which poses both challenges and opportunities with regard to environmental impact. We also see how consumers engage more directly with producers and service providers, enabled by new technologies and digitalisation. **Public policy addressing sustainability needs to reflect these developments** (Pantzar, Strube , Gionfra , & Modée, 2018).

2.3.2 Measuring progress

Monitoring and evaluation is particularly important in the context of Sustainable Consumption. Its complexity and cross-cutting nature may create a much greater likelihood for policy failures and will present the policy community with a need to design an **adaptive policy process** that will rely on the results of ongoing monitoring process (UNEP, 2017). Systematic monitoring and evaluation processes are expected to inform management and stakeholders on performance and progress, which requires the following steps:



Five steps of systematic monitoring and evaluation process
Source: Adapted from (European Commission, 2017)

Throughout the process, it is key to have the performance indicators relevant not only in measuring policy effect or uptake in influencing behavioural change but also measuring if sustainable dimensions (environmental, social, economic conditions) are improved or not. Some tips to avoid common mistakes and pitfalls when working with indicators are underlined below.

Tips to Avoid Common Mistakes when Working with Indicators
Source: Adapted from (European Commission, 2017) (UNEP, 2017)

2.3.3 Systemic and integrated policy action – characteristics and approach

Systemic and integrated policy approach has been considered as fitting solution in tackling cross-sectoral issues that involve multiple actors, such as in the implementation of SDGs in general or of SCP and Sustainable Consumption in specific (United Nations, 2018; UNEP, 2017; UN Environment, 2019; Welch & Southerton, 2019; UNEP, 2015). The relevance for such propositions comes from the following background. Firstly, changes in consumption and production patterns are the result of different types of social-cultural, technical and economic developments. With all the complexities, simple policy approaches will not be sufficient; instead a more systemic policy approach is best suited to address the challenges (Diaz Lopez, et al., 2015). Secondly, many policy domains (thus line ministries and government bodies) are related in shaping citizen's life-style choices and patterns of consumption. Addressing sustainable consumption in one sector may have positive or negative impacts in other policy areas; some sectoral issues are interlinked, thus requiring coordination between policies to achieve the same objectives (Koide & Akenji, 2017). Therefore, it is essential that all key government ministries share a coherent and well-coordinated understanding of sustainable consumption and integrate its objectives into their policies and plans (UNEP, 2015)

Policy integration concerns "the management of cross-cutting issues in policy making that transcend the boundaries of established policy fields and do not correspond to the institutional responsibilities of individual departments" (United Nations, 2018), and consists of the following:

- **Horizontal policy integration** works by integrating environmental objectives through comprehensive cross-sectoral strategic frameworks, such as incorporating SCP objectives into Sustainable Development or Green Growth policies, or having a specific policy dedicated to SCP. Coordination through an established cross-sectoral policy framework and institutional setup plays a significant role in ensuring policy integration across different sectors and organisations. Countries promoting SCP with relevant cross-sectoral strategies fit this category, such as France, Indonesia[12], Jordan, and many more.

  Within this type of policy integration, two approaches are typically taken by countries (Koide & Akenji, 2017):

[12] Indonesia started from developing an SCP National Action Plan that has now been mainstreamed into National Development Plan.

(i) Developing and implementing a specific SCP Action Plan in a coordinated way. Participatory and stakeholder processes are typically used to define priority sectors, objectives, and action plans. Several steps to develop national SCP programme include establishing an advisory group, conducting a scoping exercise, selecting priority areas, defining objectives and targets, and selecting policies and initiatives[13].

(ii) Mainstreaming SCP into a broader national strategic planning framework. The guideline for national SCP programmes also proposes to integrate SCP within existing national strategies on sustainable development, national development, or poverty reduction, so that SCP should not be "a one-off initiative" to elaborate a document, but should be integrated and mainstreamed into other policy areas.

- **Vertical policy integration** aims to create synergies and enhanced consistency across levels of government through mutually reinforcing and supportive actions. Vertical integration has many potential benefits, but also entails costs and presents multiple challenges (United Nations, 2018). In this approach, the environmental objective will be embedded/mainstreamed in each sectoral policy (Koide & Akenji, 2017). Countries promoting this approach include South Korea, Japan and Germany[14].

No single approach in addressing Sustainable Consumption fits all countries. Suitable approaches would depend on the country and its policy environment contexts. However, ensuring policy integration and coherence of Sustainable consumption objectives in various sectors is key in having the policy effective and reaching tangible impacts.

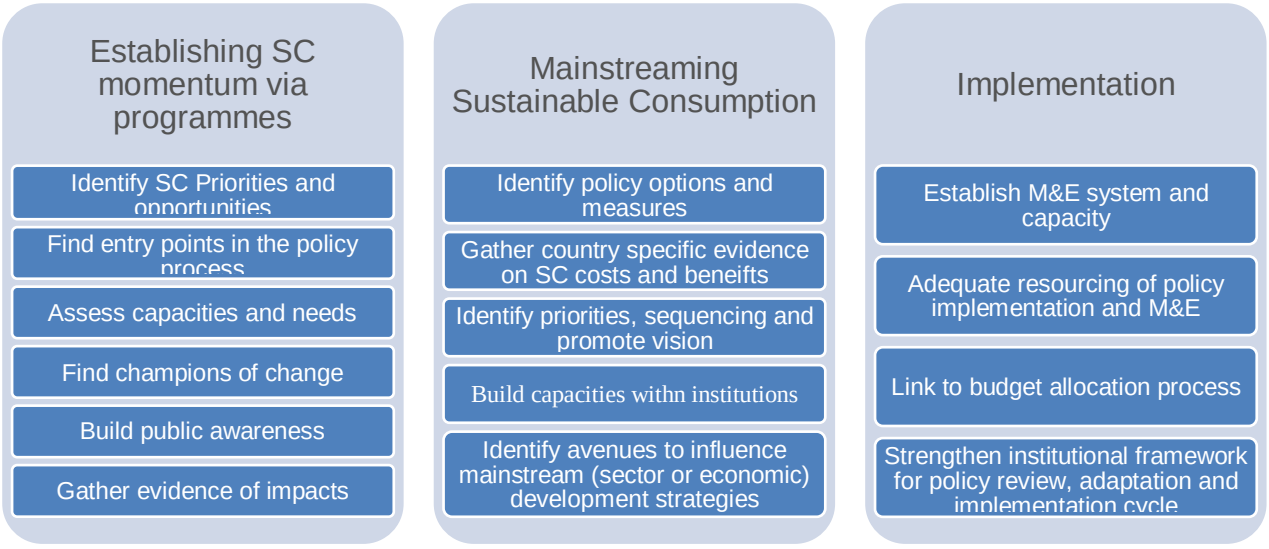
2.4 Best practices and Approaches

In the end, there is no single pathway towards mainstreaming Sustainable Consumption into economic development. As a possible conceptual model – depending on the level of Sustainable Consumption policy development in the country, the reform agenda needs three broad pillars to unfold:

1. A process of action-learning (which can be facilitated by SCP programmes) which can help establish momentum, identify and pursue opportunities, test new systems and develop strategies;
2. A process to support policy formulation, implementation and gradual mainstreaming;
3. A process of mobilising resources and building capacities to support implementation which fits the national context and needs, and further enables monitoring and policy review and adaptation.

[13] Further reading on how to develop SCP National Action Plan can be found here (UNEP, 2017)

[14] Initially there was no cross-sectoral integration in developing and implementing Sustainable Consumption and Production policy measures in Germany, but now a cross-sectoral approach has been introduced in the contexts of implementation of the National Programme on Sustainable Consumption. Thus, Germany is now considered using both vertical and horizontal integration approaches.



Programme, mainstreaming and implementation of Sustainable Consumption
Source: Adapted from (UNEP, 2017)

The following examples do not comprise an exhaustive list of representative Sustainable Consumption policies; rather, they demonstrate some of the approaches – with some showing how SC policy frameworks take shape in the local context.

2.4.1 Examples of practices in AMS

2.4.1.1 Choice editing, Mandatory labelling for energy appliances in Singapore

Overview:

Households account for about 14.9% of electricity consumed in Singapore or third largest after industrial-related and Commerce and service-related consumption and thus is a key sector for energy efficiency policies (Energy Market Authority, 2019).

In January 2008, the National Environment Agency introduced the Mandatory **Energy Labelling Scheme (MELS)**, starting from household air-conditioners and refrigerators to help consumers compare their energy efficiency and make more informed purchasing decisions. The scheme was extended to clothes dryers in 2009. The design of the energy label and energy rating system were revised in 2014. More products were included, such as televisions in 2014 and incandescent lamps and their direct replacements in 2015 (Ministry of Foreign Affairs Singapore, 2018).

Minimum Energy Performance Standards (MEPS) were introduced in 2011 to raise the average energy efficiency of products in the market. Currently, only household refrigerators, air-conditioners, clothes dryers and lamps that meet the minimum energy efficiency standards can be sold in Singapore. These performance standards are constantly reviewed to raise the bar on efficiency.

Since the introduction of MELS and MEPS, the average energy efficiency of air-conditioners and refrigerators have improved by about 23% and 39% respectively (Ministry of Foreign Affairs Singapore, 2018).Today, about 7 in 10 Singaporeans would choose to purchase energy-efficient appliances. The introduction of minimum standards has protected consumers from the high cost of using inefficient appliances. (Singapore Green Plan, 2021)

Improved Mandatory Energy Labelling Scheme per 2014
Source: (Singapore Green Plan, 2021)

Lessons learned:

Singapore applies **policy coherence and policy mix** by introducing Minimum Energy Performance standards as a regulatory tool to curb the production and sale of less efficient products and Mandatory Energy Labelling Scheme as information tool to encourage the provision of more sustainable options. By editing the consumption options available, the consumption patterns of consumers who are less aware and motivated are by default directed to the more sustainable options.

Policy consistency is also essential as changes take time. It started from rolling out information tools (through labelling and awareness raising actions to different target groups) before starting to introduce the standards as default option. Initially these were for few products only and less stringent measures for both labelling and standards before these instruments could be strengthened overtime. For this **continuous monitoring and evaluation** is key to understand the progress and the target.

2.4.1.2 Green Government consumption through Green Procurement in Thailand

Overview:

Launched in 2008, the implementation of Green Public Procurement in Thailand follows through 4-year Green Public Procurement Plans (GPP Plans) that have progressively expanded the type of institutions and the number of product categories. Initially the 1st GPP Plan 2008-2011 targeted only 170 Governmental departments within Ministries and 17 product categories. The 2nd GPP Plan 2013-2016 covered 1,809 institutions from central and local agencies, state enterprises and universities and 22 product categories. The 3rd GPP Plan 2017-2021 has been expanded to include private companies registered in the stock market and a total of 28 product categories (SWITCH-Asia, 2020).

The key stakeholders include:

- Ministry of Finance, sets out the rules and regulations for procuring products and services, distributes the allocated budget to public agencies, and monitors spending and budgets;
- Ministry of Natural Resources and Environment selects products, establishes products and services' criteria and promotes GPP among the general public, municipalities and SMEs;
- Ministry of Industry promotes sustainable production in the industrial sector and accelerates the number of manufacturers with green production facilities.

- Other key stakeholders have also been involved in the steering of GPP implementation including other sectoral ministries, industry and business associations, consumer protection board, NGOs and think tanks (KEITI).

The following are the results of the GPP:

- Per June 2017, 61% or 1,099 institutions of the total 1,809 target institutions participated in GPP (SWITCH-Asia, 2020).
- For fiscal year 2016, 64% or almost THB 523 million of the total procurement value (which accounted for THB 812 million) were green purchases that contributed to the CO2 emission reduction amounting to 52,400 tCO2e[15] (SWITCH-Asia, 2020).
- Potential environmental benefits of the 2nd GPP plan were estimated to be a reduction of 11,130,000 tCO2e and THB 79,063 million of externality cost savings[16] (KEITI).
- The 1st GPP plan had resulted to significant market transformation as many manufacturers and service providers became interested in certifying and producing environmentally-friendly products and services, as shown by the figure below:

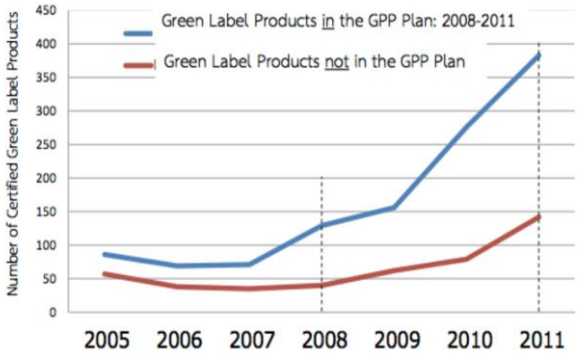


Figure 2.2 Number of Thai Eco-labelled products during the 1st GPP Plan 2008-2011
Source: (UNEP, 2016)

Lessons learned:

Implementation of Green procurement policy in Thailand – together with China, Korea and Japan - is considered as one of the most advanced ones in Asia as the country has made substantial efforts to institutionalize green public procurement through legislation, roll out eco-labelling programme, set priority products for green public procurement, and deliver green public procurement promotion and incentive programs (UNEP, 2017). In summary, key contributing factors to the policy effectiveness are:

- The presence of **consistent and coherent policy framework** that has prioritised the implementation of GPP in the country;
- **Functioning institutional set-up** for steering and operational management;
- **Accumulative experience** in GPP since 2005 has contributed to continuous improvement;
- A wide-range of capacity-building and awareness raising programmes have developed capacities and improved; and

[15] Greenhouse gases emission is usually measured by the level of Carbon dioxide (CO_2) emissions, often expressed as a value per tonne CO_2 equivalent (tCO_2e).

[16] Externality cost savings are savings from external environmental-related costs (i.e., reduced energy consumption, reduced amount of hazardous waste, decreased amount of Carbon dioxide, reduced amount of Nitrogen oxide, reduced amount of Sulphur dioxide, reduced water pollution, and reduced materials used).

- The presence of Thai Green Label that has provided a good basis for implementation of GPP in the country[17].

2.4.2 Vertical policy integration in Japan, Republic of Korea and Germany

2.4.2.1 Japan, the use of local contexts and governments

Overview:

The SCP policy framework in Japan has been mainstreamed into environment policies, the current one is the 5th Basic Environmental Plan that was approved in 2018 (UNEP, 2012). This plan considers interconnections between issues in the environment, economy and society and aims to bring about the shift towards a circular society through a system approach. This has been done through forming partnerships with multi stakeholders in order to stimulate innovation and solve socio-economic issues through environmental protection (IGES, 2019).

The government has used a traditional value called *Mottainai* to promote its environmental policies, especially on the 3Rs (reduce, reuse, recycle) and has achieved notable progress. *Mottainai* translates, roughly, as “waste not” – a very traditional value showing a respect for the environment. Local governments launched effective campaigns using *Mottainai*. For instance, Aomori prefecture introduced the Aomori residents’ movement of *Mottainai* in 2009, targeting: reduction of amount of waste per capita and increase of the total recycling ratio. Reduction of plastic shopping bags was one of the effective measures to attain the targets, as residents can easily contribute by just saying “no, thank you” to the seller (UNEP, 2015).

Mottanai has also been used to tackle the Food Loss and Waste (FLW) problem. In 2017 FLW amount in Japan reached 6.12 million tons. This led to the enforcement of the Promotion of FLW Reduction Act in 2019 and Basic Policy on Promotion of FLW Reduction in 2020, both aim to increase consumers’ awareness and efforts to reduce the FLW to 80%. To that end, many institutions introduced initiatives using the principle of *Mottanai*. For example, in dealing with waste from stockpile food for disasters[18], Tokyo Metropolitan Government has donated emergency stockpile foods like crackers and instant rice to social welfare corporations and other groups and distributes them to citizens at events when they are about to expire. The Consumer Affairs Agency (CAA) has also introduced the concept of a “rolling stock method”, i.e., consumers using their stockpile food nearing their expiration dates as part of their regular meals to reduce food loss and waste (Osamu, 2020).

The Consumer Affairs Agency (CAA) has also used local culture as the entry point to introduce the concept of ethical consumption, an initiative as part of the Basic Plan on Consumer Policy that is related to SDG 12 or SCP. CAA has translated the concept and actions of ethical consumption into ethical *Rakugo* (Japanese traditional comic storytelling) and ethical *Manzai* (Japanese comedy act) as part of the "Ethical Lab” events. These approaches have been considered effective because by incorporating popular performing arts familiar to the

[17] GPP also supports the uptake of eco-labelled products in the country. As the demand for the eco-labelled products increases (from the GPP), the costs of production can be reduced (economy of scale). This also needs to be complemented with strategic consumer information measures to communicate about eco-label and sustainable consumption to general public and other key target groups (e.g., retailers, consumer groups, and so forth).

[18] Japan suffers from a lot of natural disasters, including typhoons and earthquakes, so the Japanese government recommends each household stockpile a week’s worth of food to prepare for such disasters. However, if large amounts of ready-made meals and cans are stored only for the case of emergency, then they might be disposed of because they cannot be consumed before their expiration dates.

Japanese, they conveyed the idea of ethical consumption in an easy-to-understand manner through humor (Consumer Affairs Agency of Japan, 2021).

As indicated above, local government has been key in implementing the policies. Their roles are expected to be larger, through the introduction of a new concept of “Circular and Ecological Economy” to integrate improvement of environment, economy and society at regional level. The concept foresees the shifting to sustainable society needs to start from the local level. Hence each region is expected to be self-reliant and decentralized regional development with sustainable circulation of the resources according to regional characteristics (Ministry of Environment - Japan, 2020). One demonstration project in Ikoma city, Nara Prefecture shows the model of “community station” as collection points for 3Rs (Reduce, Reuse, Recycle) initiative that can also be used as various community projects such as shopping assistance for senior citizens, health promotion and preventive care. By using the every-day activity of taking out the garbage as an entry point, this resource-recycling initiative has become an opportunity to change local residents’ way of thinking and encourage concrete actions (Ministry of Environment - Japan, 2020).

Concept of Circular and Ecological Economy in Ikoma city, Japan
Source: (Ministry of Environment - Japan, 2020)

Lessons learned:

The Japanese government promotes Sustainable Consumption by using a systemic approach of balancing social, economic and environmental aspects in the policy framework. **The role of local governments** has been key in implementing the national policy as seen from many success stories initiated by the local governments. Local governments will also be expected to drive the change of consumption patterns through the future implementation of the Circular and Ecological Economy concept. **The local contexts** have been used consistently in developing and implementing Sustainable consumption policies in Japan. Applying local culture and value has proven to be effective in interpreting such technical concept as sustainable consumption to the general public. Whereas Circular and Ecological Economy concept acknowledges the importance of local contexts due to different features of regions.

2.4.2.2 Republic of Korea, collaboration of consumer, business and government

Overview:

Many factors have pushed for the introduction of SCP policies in Korea. First is the escalating environmental-related problems as a result of unsustainable consumption and production. Second, related to the environmental problems is the emergence of green-conscious consumers due to consumer movements and activities since the 1990s and the media coverage on various environmental issues. Lastly, SCP became an incentive for enterprises to increase their competitiveness in the international market (due to introduction of many environmental regulations and standards by industrialised countries (Korea Environmental Industry and Technology Institute, 2014).

Sustainable consumption policy in Korea has been guided by 5 major nation plans that are implemented by various agencies, i.e., Green Growth 5-year plan (Green Growth Committee, Ministry of Environment), Sustainable Development Plan (Substantiality Committee, Ministry of Environment), Green Products Purchase Promotion Plan (Ministry of Environment, Environmental Industry & Technology Institute), Resource Recycling Basic Plan (Ministry of Environment) and Consumer Action Plan (Fair Trade Commission, Korea Consumer Agency) (Korea Environment Institute, 2014). Four priority areas were then developed and implemented, generating the following results:

Developing citizenship on sustainable lifestyle	**Promoting Awareness on and participation in Sustainable lifestyle**
50,000 Green lifestyle leaders were generated; Greenhouse gases diagnostic consulting for homes were provided **20 Green university campus selected and funded KRW 130 million for 3 years** **Green lifestyle action campaign held, involving 40 national and 260 local organizations** **2.61 million Households participated in voluntary carbon point systems**	Green lifestyle action (offline and online) campaign developed and executed Summer cooling dress code introduced Green working campaign introduced Green ambassador selected by sector and age to raise awareness
Promoting sustainable consumption by economic agents	**Supplying more green products**
Green Public procurement, participated by 920 public institutions and 28,752 companies **Voluntary procurement by industrial sector, participated by 30 companies in 2005 which then increased to 150 companies in 2012** **Purchase of green products, energy saving and recycle products increased** **18.48 million Green card accounts (as of 2018)**	Incentives for green products made available, resulting to increase of green products from KRW 168 billion in 2006 to KRW 386 billion in 2011 1,022 carbon labelling products (Carbon Labelling Certification) made available A total of 200 nation-wide green stores introduced

Results achieve in four areas of Sustainable Consumption policy in Korea
Source: (Korea Environment Institute, 2014; KEITI, n.d.)

The policy in Korea has been developed by understanding the relations of consumer, government and business as the key drivers in leading the actions in sustainable consumption.

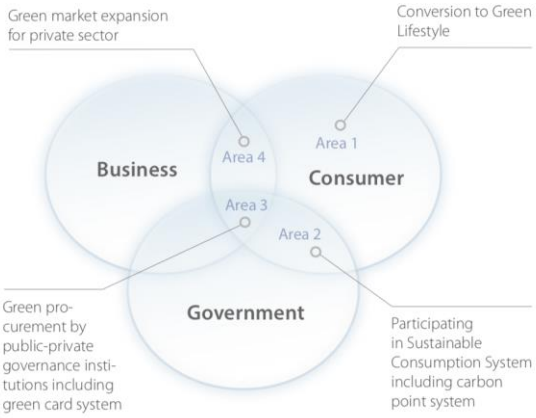


Figure 2.3 Consumer-Government-Business relations
Source: (KEITI)

In the implementation of the policies, the national government has relied on the support of the local government. In the case of Green Card that has successfully been rolled out nationwide, the Ministry of Environment sets up the system and coordinates the implementing partner organizations (i.e., local governments, Korea Environmental Industry and Technology institute and credit card companies) whereas the local government are in charge of operating the scheme with financial support from the Ministry of Environment (UNESCAP, 2012).

Lessons learned:

Despite the absence of a dedicated SCP policy framework, the development and implementation of Sustainable Consumption have been nested in several major policy documents, which are predominantly under the authority of the Ministry of Environment. Understanding the need for **multi-actor cooperation**, the policies have focused on the key drivers of sustainable consumption (i.e. consumer, government, business) and developed clear targets for each actor while allowing collaboration between the actors whenever relevant. Another key factor of successful implementation has been the **efficient institutional set-up**, bringing a clear division of work between the management agency (national agency) and implementing agencies (local governments, academia and business).

2.4.2.3 Germany, from sectoral to systemic approach

Overview:

A number of policy areas – such as policies on consumer and health, agricultural, construction and housing, infrastructure and transport, the environment, labour law and social and economic policy – contribute to the setting of the legal framework for consumption in Germany. Initiatives to support sustainable products and sustainable consumption patterns already exist in all these policy areas and at all political levels. The 2002 National Sustainable Development Strategy explicitly mentions the need to change behaviour and consumption patterns, and the progress report on the National Sustainable Development Strategy, published in 2012, stresses the importance of a discussion in society on lifestyles and responsible consumption.

Since then, several measures have been introduced by the government. The national waste prevention, adopted in 2013, contains important drivers for sustainable consumption. In 2014 the Federal Environment Ministry launched a new broad-based dialogue process on sustainable consumption and biodiversity. The programme of measures on sustainability adopted in 2015 contains specific instructions on procurement at federal level and sustainability criteria for federal ministries and the agencies that report to them. In terms of

resource conservation, the German Resource Efficiency Programme set out parameters, referring, for example, to create public awareness of resource efficiency and to promote sales of resource-efficient products and services. A wide range of policy tools have also been implemented, as listed in the table below.

Regulatory	**Economic / Market-based**
Product Eco-design **Energy Conservation Regulations** **Warranty Law for electrical and electronic appliances, batteries and vehicles**	Sustainable Public Procurement Mandatory deposits for non-recyclable containers Mandatory Extended Producers Responsibility for Packaging
Information	**Voluntary Agreement**
Labelling (ie Blue Angel, origin and organic labels) **Information portals (eg Sustainable Shopping Basket, Green Living and "siegelklarheit.de")**	Corporate Social Responsibility (CSR) award for environmentally, socially and economically companies
Others	
Funding of inter-disciplinary and trans-disciplinary research projects on sustainable consumption	

Sustainable Consumption policy tools and instruments in Germany

Source: (German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety, 2018)

In 2015, Germany's State Secretaries Committee for Sustainable Development decided to incorporate the National Programme on Sustainable Consumption. The programme is designed to improve successful sectoral instruments and approaches such as strengthening eco and social labelling, education and consumer information, supporting further research and innovation as well as improving the monitoring framework. In addition, the programme also embarks on a new direction of working on key sustainable lifestyle themes such as mobility, food, clothing, home, workplace and office, etc. The programme explicitly addresses not only consumers, but also all relevant stakeholders including the business and trade sectors, civil society, the media, the scientific community, local authorities, religious bodies, etc. It also addresses the public sector, which must lead the way as a role model. To implement this programme, an institutional set-up has been designed which includes:

- Inter-ministerial working groups led by Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety, Federal Ministry of Justice and Consumer Protection and Federal Ministry of Food and Agriculture;
- A competence center at the Federal Environment Agency;
- A national Sustainable Consumption Network (German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety, 2018).

Lessons learned:

Germany has been one of the front runners in the EU in promoting Sustainable Consumption and Production by consistently integrating Sustainable Consumption Production in the sectoral policies (vertical integration). The move to establish a National Programme on Sustainable Consumption has been driven to step up the current efforts but has also shifted on how Sustainable Consumption will be handled, i.e., **from previously sectoral approach to a more systemic integrated cross-cutting approach** that also covers sustainable lifestyles domain. It also shows that vertical policy integration can also be complemented by the element of horizontal policy integration, via the anticipated cross-sectoral coordinating mechanism. Prior to the establishment of the Programme on Sustainable Consumption, the

German government has utilised a mix of “classical” policies which are quite similar with those adopted in many developed countries. They are now advancing further by closing gaps of action that would **require cross-sectoral approaches, strengthening innovative approaches, engaging further other stakeholders and developing a coordination mechanism.**

2.4.3 Horizontal policy integration, case study of EU Sustainable Europe 2030

Overview:

Typical of the global picture, the European Union (EU) started its SCP policy framework development by addressing the improvements on the supply side. The EU began the long journey by establishing a policy framework for Integrated Product Policy. Since the subject of IPP was brought up into the political agenda in 1995, the EU finally adopted Sustainable Consumption and Production Industrial Policy (SCP/SIP) Action Plan in 2008 (Rubik, et al., 2009). The SCP/SIP Action Plan is the major overarching SCP policy document at the EU level. It aimed to foster SCP by improving the environmental performance of products throughout their life cycles and stimulating demand for more sustainable goods and production technologies through:

- A revised Eco-Design Directive for Energy-Using Products;
- Stronger and more far-reaching ecolabelling and energy labelling, under the EU Ecolabel regulation completed in 2009 and the Energy Label Directive in 2010;
- Communication on Public Procurement for a Better Environment to raise the average level of EU green public procurement (GPP) to the standard achieved by the best performing EU member states in 2006 by 2010;
- The EU Retail Forum is a multi-stakeholder platform that identifies opportunities and barriers to SCP and exchanges best practices on sustainability (UNEP, 2012).

In 2019 EU set forth its vision of Towards Sustainable Europe by 2030 (European Commission, 2019) that has four pillars, i.e. from linear to circular economy; sustainability from farm to fork; future-proof energy, buildings and mobility; and ensuring a socially fair transition. The EU Green Deal has been proposed as priorities to be done from 2019 to 2024 to accomplish Sustainable Europe. A Circular Economy Action Plan has been developed in March 2020 for European Parliament approval. Sustainable consumption relevant policies have been proposed as part of the Circular Economy Action Plan such as improving Eco label and empowering consumers by further strengthening consumer protection against greenwashing and premature obsolescence, setting minimum requirements for sustainability labels/logos and for information tools (European Commission, 2020).

Lessons learned:

The European Union has taken substantial efforts in **guiding the Sustainable consumption and production policy development for its 27 Member states**. Given the diverse background of its Member states and complexities it entails, it took more than a decade before the first policy framework to be adopted. However, these efforts have made the EU member states progressing in developing and implementing their national policy agenda. As the latest policy framework in place has just been updated, no significant progress can be observed now. Nevertheless, by looking at the elements of the Circular Economy Action Plan that still cover sustainable consumption, and the forthcoming action plans related to the EU Green Deal package, it is safe to say that **sustainable consumption remains a priority in the EU policy agenda**.

2.4.4 System innovation approach – transition management approach in UK, the case of Zero Carbon Hub

Overview:

In 2006, the UK government announced a requirement for zero-carbon new homes to start in 2016. To that end the Building Regulations that control the construction of new homes were gradually strengthened towards meeting the Zero Carbon Home standards. Initially there were concerns from many stakeholders. Homebuilders worried about the implications of the policy on their businesses. There were also concerns related to consumer acceptance and if this policy would instead make consumers avoid buying new homes, feasibility of the plan concerning availability of technology and so on (Institute for Public Policy Research, 2013).

To address all these issues, in partnership with industry, the government provided 50% funding for a 'Zero Carbon Hub' to operate in the run-up to 2016. The Hub had been established with a small secretariat, and ran a series of research programmes, meetings, committees, multi-stakeholder working groups to discuss and identify solutions to the challenges of the 2016 policy. Further, these working groups coordinated research programmes funded from a variety of sources. Recommendations from the Hub working groups have largely been accepted and endorsed by the government (Institute for Public Policy Research, 2013).

With the direction set by the Zero Carbon Homes policy, the UK government had been able to apply much higher energy standards for new-build homes. The Hub had been the key mechanism by which the government ensured acceptance and support from the (politically powerful) housebuilding industry for the policy. The ambition of zero-carbon homes in 2016 has been maintained across a change of government. The public funding for the Zero Carbon Hub was completely cut in 2010 due to change of government and shifting of public funding priority. Since then, the Zero Carbon Hub was funded by the industry, while the government remained to continue endorsing the work of the Hub. In 2016, Zero Carbon Hub ceased its operation following the decision by the UK Government to discontinue the zero-carbon target (Zero Carbon Hub, n.d.; Institute for Public Policy Research, 2013).

Lessons learned:

This initiative showcases the transition management approach. To achieve a bold and fixed policy target, the UK Government established a non-government set-up to translate the policy target into practicable regulation and along the way to remove the barrier to its implementation. The Hub engaged with **relevant stakeholders, provided data and evidence through research, and proposed valuable recommendations** for improving the policy implementation. Not only the Hub had helped the government to gain support from the industry, it had also supported the industry in the delivery of the policy programme. The industry found this Hub so effective and relevant that they agreed to take over the funding of the Hub in 2010 provided the government remained consistent in endorsing their work. Although the Zero Carbon Hub ceased its operation due to shifting of government priority, its operations had proven to be a success and it was considered as a model of collaboration between industry and government, by **translating a policy vision into reality**.

2.4.5 Actor coalition & Distributed responsibilities, case studies of UK Food waste reduction programme and UK Marks & Spencer Plan A

2.4.5.1 UK Food Waste Reduction programme – Actor coalition

Overview:

The UK throws away at least 10 million tonnes of food annually, of which 6 million tonnes is avoidable and has a retail value of £17 billion (Government Office for Science UK, 2017). Realizing the escalating food waste problem, Waste & Resources Action Programme – a government-funded action was launched in 2000 to address the problems through coalitions with multiple actors (WRAP, n.d.).

In 2004 WRAP launched the "Recycle now" campaign that was supported by 60% of Local Authorities in the first year. In 2005 WRAP published "PA100" which enabled benchmarking of the composting industry and launched "Courtauld Commitment 1", a voluntary agreement designed to reduce waste across the UK grocery sector that was signed by major UK supermarkets. As a result, household food waste has been reduced significantly. Between 2007 and 2012, the amount of edible food waste by households reduced by 21% (or 1.1 million tonnes), with a likely driver being WRAP's Love Food Hate Waste campaign (WRAP, n.d.; Government Office for Science UK, 2017). Initiatives of this coalition recognized that responsibility for food-waste reduction is distributed throughout the food production-consumption system (Welch & Southerton, 2019).

Figure 1.2.3-3 Results of WRAP's initiated Courtauld Commitment 2025
Source: (WRAP, n.d.)

In 2014, WRAP became a registered charity and since then has expanded the food-waste programme to the hospitality sector and primary production (WRAP, n.d.).

Lessons learned:

One of WRAP's strengths has been the research to build evidence on a number of waste related issues. Their research works have provided a strong **evidence base** for other stakeholders (e.g., government, private sectors, charities, individuals) to take actions on their part. Their report on Barriers to recycling at home had helped local authorities to build strategies to get communities engaged and committed to recycling. Their success in consumer campaigns is attributed to their **targeted communication strategy**, i.e., aims at empowering consumers to take action through inspiring messages and practical advice, developing partnership with relevant organisations including groceries and local authorities. Their **credibility -from their strong research background and successful public campaigns** –

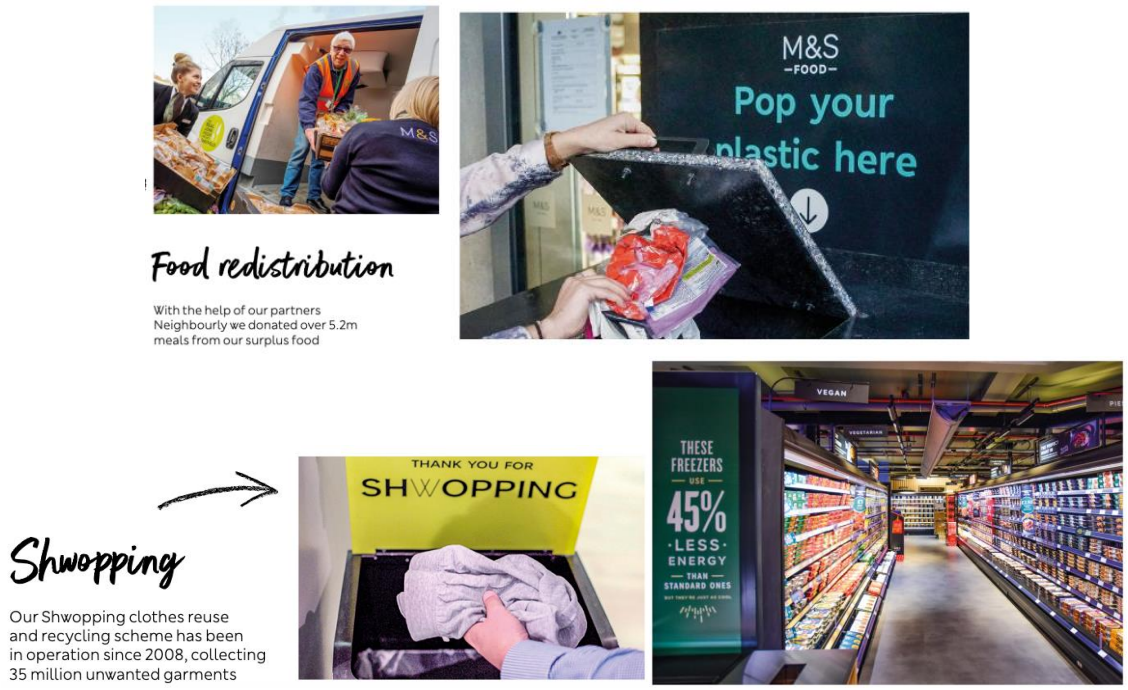
has also supported the promotion of voluntary agreements that bring together organisations that would not normally work together to work towards common goals (WRAP, n.d.). All in all, WRAP's works showcase that sustainable consumption effort (waste sector in particular) requires **a multi-stakeholder coalition** involving retailers, trade associations, civil society organisations, policy makers, specialist consultancies, and academics.

2.4.5.2 UK Marks & Spencer Plan A – global retailer assuming responsibility for sustainable consumption

Overview:

Marks & Spencer (M&S) is a UK major multi-national retailer that employs 78,000 people and has more than 1,500 stores worldwide (M&S, 2020). In 2006, M&S launched a campaign 'Look Behind the Label' to increase customer awareness of M&S values and the sourcing of their products. Building on the success of improved brand trust, Plan A was introduced as a cross-organisational programme to transform the way M&S conduct its business (Institute for Public Policy Research, 2013).

Launched in January 2007, Plan A was subsequently extended to reflect the evolution of the business and the risks and opportunities concerning social and environmental issues. The latest reporting in May 2020 showed an evolving framework of 3 categories: people, product, and planet. This framework showed a conscious attempt to sync Plan A with the global agenda and international framework such as Sustainable Development Goals and Global Reporting Initiative's Sustainability Reporting Standards (M&S, 2020).



Some of the Plan A's actions related to Sustainable Consumption
Source: (M&S, 2020)

Lessons learned:

At the beginning, Plan A was considered as a corporate sustainability programme with a set of activities to be accomplished while the corporation business model remained the same ("business as usual"). Along the time Plan A has evolved and embedded into the operating

model, and the originally Plan A's set of activities has now become the M&S default operational activities. **Private sector, especially** the ones at such size as M&S can make a big difference in **influencing sustainable consumption at the society and industry level**. Through their massive and continuous advertising and marketing campaigns, **key messages on sustainability can effectively reach their consumers and beyond**, thus educating their customers along the way while helping them to make changes and keeping them involved as part of the programme. In addition, by greening their operations, they are also **pushing their supply chains to be green as well**.

2.4.6 Behavioural change – informed practice, case of Japan Cool Biz

Overview:

The Japanese Ministry of Environment initiated the Cool Biz campaign in 2005 to reduce electricity consumption and carbon emission by limiting the use of air conditioning in office buildings. Interventions to informalize dress codes changed the social norms surrounding workplace attire, which in turn enabled regulations that banned air conditioning below 28ºC.

In order to achieve this goal, the government led by example: it raised office temperatures and introduced a simpler, more casual summer dress code for its employees. To ensure the code is appropriate for a business setting, it was precisely defined by the Ministry. For example, government employees are *not* allowed to wear exercise shorts, t-shirts or jeans, but are allowed to wear polo shirts or a pair of sneakers. The dress code also extends to public facilities such as schools, community centres and libraries, which are also required to set the thermostat above 28ºC. And private sector employers tend to follow the government's example, so that practically all employees in Japan adhere to the same dress code (Takagi, 2015)

Met with scepticism—and some resistance—at first, 'Cool Biz' has become one of Japan's most successful environmental initiatives. In its first year alone, the Ministry estimated that the campaign reduced carbon emissions by 460,000 tons. The Narita International Airport Corporation alone reported that, in 2005, they cut carbon emissions by 28 tons and saved 5,700,000 yen (about $47,300) just from setting the office temperature to 28°C. In 2012, the latest year for which figures are available, more than 2.2 million tons of carbon emissions were avoided (Takagi, 2015)

Lessons learned:

Cool Biz is one example of **behavioural change – informed practices** that successfully address environment-problematic practice (of setting air conditioning thermostat too low hence using more energy and emitting Carbon emissions) by introducing new arrangement and cultural convention. New socio-technical arrangement refers to the use of a simpler dress code (social) and setting thermostat above 28°C (technical). The shifts in cultural conventions concern revisiting the definition of what is considered as normal and appropriate workplace attire. This intervention is considered on point in **identifying underlying causes** and **proposing a mix of traditional and innovative approach** (e.g., traditional approach refers to the limitation of thermostat setting through mandatory regulation, whereas innovative approach refers to the use of practice-based approach in wearing simpler casual outfits[19]). Another feature of Cool Biz is how the **government led by example**, which gave a strong positive signal to others to follow suit, starting from public facilities and private sectors. The

[19] Further reading on theories of practice as part of behavior change polices promoting sustainable consumption can be found at (McMeekin, Evans, & Southerton, 2012)

gradual shifting (from government to other stakeholders) also allows the industry to adjust and respond to the policy positively.

2.4.7 Behavioural insights as part of system innovation – BEST Japan

Overview:

Japan's Ministry of the Environment has demonstrated behavioural-insights projects for decades, starting from Cool Biz campaign in 2005, Cool Choice campaign in 2015 and establishment of Ministry of the Environment's based Nudge Project Team or "Platinum". In April 2017, the Ministry took the lead in setting up what it calls a nationwide "nudge unit" or Behavioural Sciences Team (BEST), involving collaboration from industry, academia and the public sector (national and local governments). BEST considers applying Behavioural Insights to policies through the all-Japan system with collaboration among the industry, academia, politics, government, and other relevant citizens (Behavioural Sciences Team - BEST, 2019).

BEST' institutional setting comprises of:

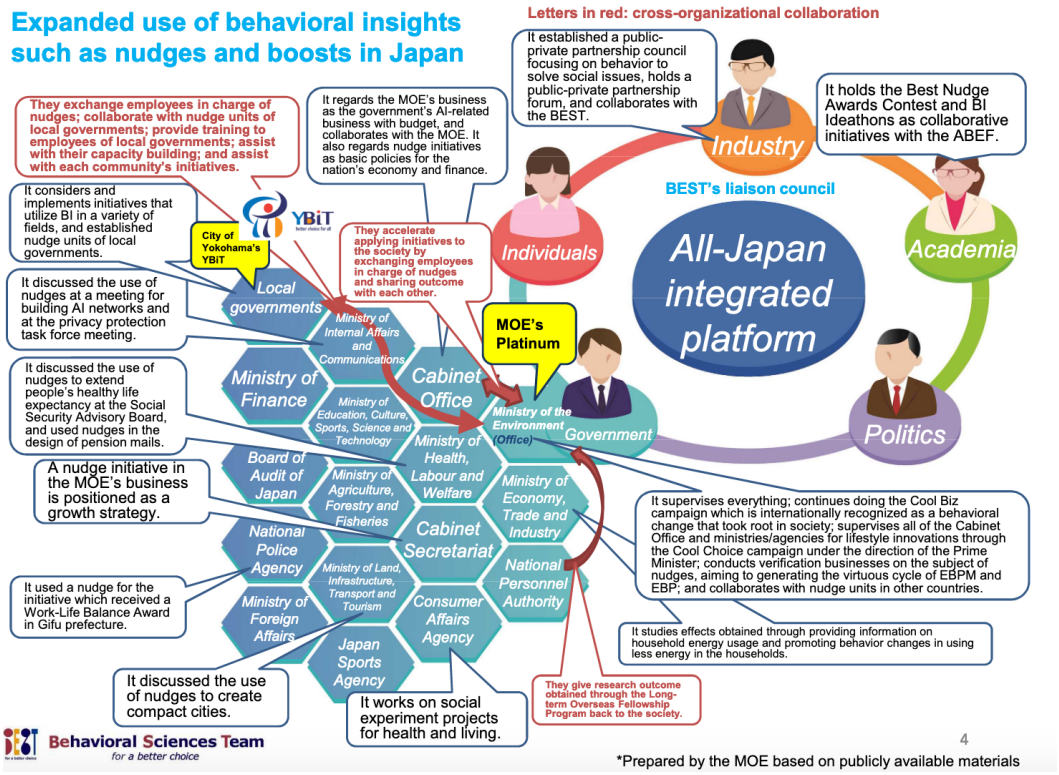
- Liaison council, a multi-stakeholder forum (consisting of industry, academia, national and local governments, and other relevant citizens) to discuss the use of behavioural sciences in solving various issues and share methodologies, issues, and measures to solve these issues.
- BITE, the evidence institution (consisting of intellectuals from each academic discipline) to support providing scientific evidence and assisting in applying initiatives to the society.

The "nudge" approach is all about gently pushing people to act. An example of using this approach to reduce CO_2 emissions from the households is by including neighbourhood electricity consumption data in electricity bills so that consumers can compare their own electricity consumption with that of others and be motivated to reduce their own consumption. To do that, a consortium of four companies was selected for this program in 2017. In the first year of the project, the consortium sent out customized home energy reports four times to about 300,000 households, in cooperation with five energy companies, and has been measuring the impacts on awareness, motivation, and actual reductions in CO_2 emissions. The consortium will continue the project until FY2021 and establish nudge-based models reflecting actual Japanese lifestyles (Japan For Sustainability, 2018).

The use of behavioural science is attracting attention for its high cost-effectiveness and freedom of response by targeted audiences. The Ministry of the Environment will continue to look at its applicability for ongoing medium- and long-term efforts to move Japan towards being a low carbon society (BEST - Japan's Ministry of Environment, 2019).

Lessons learned:

The use of Behavioural Insights as part of **Evidence-based policy making** shows promises in influencing consumer behaviour towards sustainable consumption. As it can be seen from Japan's case study, the approach can be applied by many government agencies (national and local) but all requires active engagement with a variety of stakeholders including industry, academia and citizens for various reasons such as capacity, transparency and service delivery. Despite the potential benefits, this approach is still novel and not many countries apply this yet hence further capacity development in this area is a must. As some of the demonstrated projects use mobile apps/web-based platforms which require **big data**, **a satisfactory IT infrastructure** becomes another consideration related to this approach.



BEST' coverage in Japan in promoting use of behavioural insights in policy making
Source: (BEST - Japan's Ministry of Environment, 2019)

2.5 Discussion

The below table summarises how the above-mentioned practices and approaches can be leveraged (or not) in ASEAN. Note that this synthesis presents broad indicative analyses only given the diverse economic, cultural and development backgrounds of each individual AMS.

Practices and Approaches	Opportunities for implementation in ASEAN	Anticipated constraints concerning implementation in ASEAN

Household appliances – energy efficiency labelling and standards	Significant environmental potential impact in terms of Green House Gases emission reduction as residential is the second-largest sector for electricity demand with a 30% share in the region, contributed mainly by the use of household electrical appliances such as air conditioners (Putra, Gurning, & Muna, 2020).	This approach requires sequencing of policies (policy mix) at different stages for transition, thus a long-term policy horizon is foreseen. As it needs consistent and coherent policy over time it may be challenging due to possible succession of political leaders through elections.
Green Public Pro	The size of public expenditures in the region are considerably substantial in garnering sufficient traction in creating supply and demand of sustainable goods and services[20] Many AMS have already implemented GPP programmes at different stages, such as Indonesia, Malaysia, Philippines and Thailand, while some (i.e., CMLV countries) are starting to scope out which makes GPP a great potential for ASEAN level cooperation.	Lack of government staff technical capacity especially if there are high turnover rates among procurement and other relevant units (e.g., audit). Higher costs of sustainable products and services and possibly limited supply available.

[20] Public expenditures in Southeast Asian countries reached 20% of the GDP in 2016 (OECD/ADB, 2019)

curement		
Using local contexts and governments	Respecting local contexts (norms, traditions, beliefs) are part of ASEAN values, also emphasised in the ASEAN Socio-Cultural Community (ASCC) Blueprint. The key policy messages that adopt local contexts resonate better with the target group. The rate of urbanization in ASEAN continues to grow (World Economic Forum, 2020). Local (sub-national) governments in most of AMS play a key role in the local sustainable development process.	Interpreting traditional values to current contexts is necessary: ● To understand the essences of "sustainability" that can be applied to modern lives; ● To understand the barriers for people today to live with these "values/practices"; ● To come up with arrangements to re-activate the values Lack of local government technical and managerial capacities
Multi-actor cooperation (private sector, ci	Sustainable consumption policy practices will always involve multi-actor cooperation. One example in ASEAN is the regulation of single plastic-use bans in several countries. More examples of actions led by the private sector and civil society (including academia) should continue, as the case in Korea. The role of the government is to proactively initiate and support these actors to be in the driver seat.	Role of government needs to change to be a facilitator and enabler.

vil society and government)		
From Sectoral to Systemic approach	This approach applies to countries that have already done substantial efforts in sectoral policies. Having a systemic approach can close gaps of cross-sectoral actions, strengthen innovative approaches, engage other stakeholders and develop a coordination mechanism.	Coordination mechanisms of cross-sectoral agencies should take place at a high government level that can oversee and coordinate across ministries.
Horizontal policy inte	ASEAN can take up the role of ensuring a certain level of sustainable consumption policy integration across its MS.	The key challenge is on how to come up with agreeable baseline and target considering the different countries' contexts

gration		
System Innovation	Technology is central in facilitating transitions. Internet penetration in ASEAN is above global average[21]. COVID-19 pandemic has accelerated the adoption of digital technology in many ASEAN countries.	System innovation takes time hence policy consistency is a must which in most cases can be challenging due to succession of political leaders. Countries with low technology (IT) access will find it difficult to apply this approach.
Actor coalition	This approach provides an alternative to government-led programmes by allowing civil society and businesses to address sustainable consumption issues in new ways. Government can facilitate, initiate or support through different measures. Global examples of CSO-led initiatives include RSPO, Fairtrade International and many more. Social enterprises that are starting to grow in AMS[22] can also play a role.	This approach can work if meeting 3 conditions: economically viable, supported by an enabling policy environment, and efficient institutional set-up. These three refers to availability of markets to absorb innovative sustainable products and services, stable and supportive policy environment and dynamics and functioning civil society elements. Any weak element will undermine the effort.
Distributed responsibility - corpo	This approach implies corporate social responsibility in its full sense, i.e., integrating social and environmental aspects in companies' business models. The accelerating trend for sustainable beverages packaging in Southeast Asia-driven by corporations- shows potential replications by various sectors in the region (Neubronner, 2020). Government can combine push and pull factors (a policy mix) to create an enabling policy environment for corporations, at the same time engaging society to push this into the business agenda.	To push such a sustainable business agenda, consumers need not only to be aware of the sustainability goals but also to be willing to pay more for sustainable products. This can prove to be challenging as consumers in this region are largely considered price-conscious (Neubronner, 2020).

[21] Individuals' access to the internet in ASEAN, at 58.6%, is higher than the global rate of 50%, but disparity across its member countries is stark (Park, 2020)

[22] Social enterprises exist in AMS although the development takes place at different speed, with Malaysia, Thailand and Singapore are those having specific action plans and budgeting for promoting social entrepreneurship (OECD/ERIA, 2018).

rate		
Behavioural change – informed practice	As one of the evidence-based policy approaches, this policy practice requires research and experimentation. Despite the high investment in research, the proposed interventions are somehow considered low-cost. This might actually work when countries have limited budgets to work on new policy domains such as sustainable consumption, which in any case will require studies and research after all.	It is unclear if AMS have the resources to kick off behavioural-change policy making process. Nevertheless, they may still be able to work with developing partners and countries that have already started the approach.
Behavioural insights as part of system inno	This approach of having a behavioural insights / nudge unit might need to be considered once several ad-hoc / project-based behavioural insights take place in the country, so that it can allow cross-fertilisation among projects, establish network and coordinate for future interventions.	Having a nudge unit without the opportunity to demonstrate the information into policy intervention will be a waste. There should be a willingness from the high-level policy maker to try out these on the field.

v at io n		

Opportunities and anticipated challenges concerning implementation of the policy practices and approaches in ASEAN

As can be seen above, there are many entry points for promoting sustainable consumption in ASEAN. Effective policy implementation can take many forms, in which the government plays a significant role in taking the leadership and enabling policy environment.

No single approach fits one country, these all depend on local contexts and policy environments. Successful implementation of policies on sustainable consumption can be seen in either sectoral policies or programmes, mainstreamed in national strategies or dedicated sustainable consumption strategies.

Some common elements found in these approaches are:

- Having reliable data depicting the consumption pattern in local contexts is a must. Combination of using "hard" (environmental, economic) and "soft" (social/behavioural) data, as well as intelligence gathered from social media can improve the identification of policy problems and underlying causes, that later will be important as part of monitoring and evaluation phases. For that, academic and research institutions, think tanks and NGOs are key in gathering the evidence needed;
- Policy integration and coherence, developed into a set of policy instruments (policy mix), is needed to address multi-problems associated with sustainable consumption and to avoid "rebound effect" and "free rider". In many cases, public policy instruments need to be accompanied by other stakeholders'-led approaches such as campaigns by NGOs, studies/research by academia, or business process transformation by corporations;
- Long-term (and consistent) policy vision and transitional phasing (incremental steps) because changing consumption patterns require time. Adaptive governance is another important feature to cope with social, technological, economic and environmental changes.
- Sharing and lessons learned from other countries and regions are important to understand opportunities, pitfalls, processes and so on. Nevertheless, it is important to do further local contextual analyses before adopting the policy, to ensure it suits local conditions.

At a formal level of policy formulation, countries need to review what policies, plans and strategies they already have in place and to explore how Sustainable Consumption can be integrated into these existing mechanisms rather than launching it as a new free-standing initiative. Some areas that may offer particular potential for integrating the Sustainable consumption perspective include: climate change mitigation, energy security, food security, health, water and consumer safety/consumer rights. It is of key importance to integrate Sustainable Consumption into such strategic economic planning, not only in dealing with environmental protection issues as such but also in relation to economic development vision.

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ANNEX 1 – Sustainable Consumption Policy Frameworks in ASEAN Member States

Brunei Darussalam

National Policy Framework development: Although there is no national policy framework specific to SCP in the country, SCP-relevant sectoral policies and programmes are available while some are under development. Existing policy and programme are in the areas of waste management, including **Hazardous Waste (Control of Export, Import and Transit) Order 2013**, **Minor Offences Act**, **Environmental Protection and Management Order 2016**, and a specific action plan in regard to the use of single use plastic under the **national program on reducing the use of plastic bags** (Ministry of Finance and Economy Brunei Darussalam, 2020). Some of the implemented actions on the national plastic reduction are "No Plastic Bag Weekend" and "No Plastic Bag" Initiatives, Plastic Bottle Free' initiative and increase in excise tax on plastic products (Government of Brunei Darussalam, 2021).

As part of its **Energy Strategic Plan 2020-2025**, Brunei just recently launched the **Energy Efficiency (Standard and Labelling) Order 2021** that has the objective to ensure and promote the use of energy-efficient electrical appliances and products in the country (Ministry of Energy Brunei Darussalam, 2021). In addition, Brunei is also developing "Energy Management Policy" that will aim for energy use reduction. Other policies under consideration are "Fuel Economy Regulation" to regulate minimum performance standard for imported cars and "Renewable Portfolio Standard" for certain industry and power generation utilities (Government of Brunei Darussalam, 2021).

Lead agency: Ministry of Development (waste management), Ministry of Energy (energy)

Cambodia

National Policy Framework development: Elements of SCP have been integrated into the **National policy and Strategic Plan for Green Growth 2013 – 2030**. SCP-relevant priority areas of the policy include green investment and green jobs creation, green/blue economy, natural resources management, green technology management (SWITCH-Asia; Castro-Hallgren S. , 2017; de Jong, 2017).

In addition sustainable consumption-relevant policies are **National Environment Strategy and Action Plan (NESAP)** for waste management (including plastics); **National Policy, Strategy and Action Plan on Energy Efficiency** for access to energy and energy efficiency; **Energy Sector Development Plan 2005-2024** for renewable energy development; and **Environment and Natural Resources Code** that regulates environmental management for sectoral applications (Royal Government of Cambodia, 2019; ASEAN-German Energy Programme, 2018)

Lead agency: Ministry of Environment (NESAP, Environment and Natural Resources code); Ministry of Mines and Energy (National Policy, Strategy and Action Plan on Energy Efficiency; Energy Sector Development Plan 2005-2024)

Indonesia

National Policy Framework development: Indonesia has been one of AMS countries that has continuously developed its national SCP policy framework. Since the adoption of the national 10YFP on SCP 2013-2023, the uptake of SCP in the national development policy has advanced further. Following the formal adoption of SCP in the **National Mid-term**

Development Plan 2015-2019, SCP continues to be part of government priorities as mentioned in the **National Mid-term Development Plan 2020-2024** (Castro-Hallgren S. , 2017; Government of Indonesia, 2021). In 2020, the 10YFP SCP document was updated by the publication of the **SCP Indonesia Framework 2020-2030** document and the SCP Action Guideline (Ministry of National Development Planning Indonesia, 2021).

The focus of SCP in the current development plan is to push for resource efficiency, low carbon development, green economy and circular economy. Four strategies highlighted are "Demand" catalyst through Green Public Procurement and Environmental-friendly Public facility improvement; "Supply" catalyst through portfolios of environmental-friendly new products, services and investments, innovation, green technology and sustainable financing; "Resource pool" through development of information on SCP actions; and "New job creation" (Ministry of Environment and Forestry Indonesia, 2020).

In addition, sectoral SCP related policies are available, including, **National Energy Plan** (access to energy, renewable energy and energy efficiency), **National Strategy Policy on Managing Domestic Waste and Domestic Waste Equivalents** (waste, plastics), and **Government Regulation on Environmental Economic Instrument** and **Ministerial Decree on Eco label** (eco-label). Moreover, SCP-relevant thematic programmes include **Green Industry Standards and Certifications, Sustainable Public Procurement** and many others. Indonesia is also exploring to develop policies related to **Food Loss and Waste** (Ministry of National Development Planning Indonesia, 2021)

Lead agency: Ministry of Environment and Forestry (SCP focal point, Solid Waste Management Law); National Development Planning Agency (Development Plan); Ministry of Energy and Mineral Resources (National Energy Plan); Ministry of Industry (Industry Standards and Certifications).

Lao P.D.R

National Policy Framework development: Even though there is no specific SCP policy in the country, several SCP related policies exist. These include development strategies such as the **National Growth and Poverty Eradication Strategy** and **Strategic Framework for National Sustainable Development Strategy for Lao PDR (2008)** and the **9th National Economic and Social Development 2021-2025** (Government of Lao PDR, 2021; Government of Lao PDR, 2021). The **National Growth Strategy 2018** in specific emphasises on the importance of efficient use of natural resources, pollution, greenhouse gas and waste reduction (Castro-Hallgren S. , 2017).

Sustainable consumption-relevant sectoral policies include **Renewable Energy Development Strategy** that aims to achieve 30% renewable energy use by 2025, **Industrial Development Strategy 2016-2030**, among other, efficiency in food processing sector, the **Natural Resources and Environment Strategy 2016-2025** that highlights contribution to the green growth economy for sustainable development and climate change mitigation as one of its objectives and **Renewable Energy** (SWITCH-Asia, 2019; Government of Lao PDR, 2021).

Lead agencies: Ministry of Planning and Investment (Green Growth), Ministry of Industry and Commerce (Industrial Development), Ministry of Natural Resources and Environment (Natural Resources and Environment strategy).

Malaysia

National Policy Framework development: Malaysia in the midst of completing its national SCP strategy – **National SCP Blueprint** - as part of efforts in strengthening the policy

framework to implement the SCP concept. The National SCP Blueprint will provide the strategic direction and plan of action to coordinate the goals of economic growth, environmental protection and social inclusiveness into an integrated development concept. The blueprint aims to enhance policy coherence and coordination, sectoral strategies and lifestyles changes towards a pattern of sustainable consumption and production (Government of Malaysia, 2021).

The process of defining the SCP policy framework in the country has developed over time. In 2011 the 10th Malaysia Plan introduced life cycle thinking as part of strategies to ensure sustainability of resources. The 11th Malaysia Plan adopted the SCP approach in sectors such as industry, power generation, infrastructure and transportation, aiming specifically in creating a green market, encouraging low carbon mobility and managing waste holistically (Economic Planning Unit of Prime Minister's Department Malaysia, 2016). The **12th Malaysia Plan** (2021-2025) specifies Sustainable Consumption and Production as part of Environmental Sustainability Dimension (Economic Planning Unit of Prime Minister's Department Malaysia, 2019). In addition, SCP is also embedded in the Shared Prosperity Vision 2030, which is a commitment to make Malaysia a nation that achieves sustainable growth along with fair and equitable distribution, across income groups, ethnicities, regions and supply chains (Shared Prosperity Vision 2030, n.d.)

In addition, some of the sectoral policies contributing to sustainable consumption include the **Environmental Quality Schedule** and the **Solid Waste and Public Cleansing Management Act** (waste management) and the **Roadmap Towards Zero Single Use Plastic 2018-2030**, the **National Renewable Energy Policy and Action** (access to energy, renewable energy), and the **National Energy Efficiency Action Plan** (energy efficiency), the **National Agrofood Policy 2021-2030**, and the **National Tourism Policy 2020-2030**. Moreover, there are also thematic programmes such as **Government Green Procurement** and the **Construction Industry Transformation Programme (CITP 2016-2020)** (Government of Malaysia, 2021; Economic Planning Unit of Prime Minister's Department Malaysia, 2021)

Lead agency: Department of Environment and Ministry of Housing and Local Government (waste management), Ministry of Environment and Water (plastics), Energy Commission (energy efficiency), Sustainable Energy Development Authority (renewable energy)

Myanmar

National Policy Framework development: National Action Plan on Sustainable Consumption and Production is now being developed. Currently there are existing policies that embody the key SCP principles including **Myanmar Sustainable Development Plan** (access to energy), **National Renewable Policy and Planning** (renewable energy) and **National Waste Management Strategy and Action Plan 2018 – 2030** (Ministry of Natural Resources and Environment Conservation, 2019; Ministry of Natural Resources and Environment Conservation Myanmar; Government of Myanmar, 2021).

Myanmar is also developing several key policies, including National Hazardous Waste Management Master Plan, National Plastics Action Plan, Energy Efficiency and Conservation Law. The country starts to embark on issues on Sustainable Public Procurement and Eco-label scheme (Government of Myanmar, 2021).

Lead agency: Ministry of Electric Power no. 1 and Ministry of Science and Technology (Renewable Energy), Ministry of Planning, Finance and Industry, Energy Efficiency and Conservation Department (Energy Efficiency and Conservation), Ministry of Natural Resources and Environmental Conservation (Waste Management)

Philippines

National Policy Framework development: Philippines has developed the **Philippine Action Plan for SCP / PAP4SCP** (Government of the Philippine, 2021). The goal of the Action plan is to influence behavioural change at the national, community, and individual levels, especially in consuming and producing more green goods and services, and practicing more sustainable and climate-smart lifestyles. Actions foreseen in the Action plan are categorized into the following: (a) policy and regulation; (b) research and development, innovation, and technology; (c) infrastructure; and (d) promotion and education. Prioritized programmes include institutionalizing Natural Capital Accounting, strengthening ecolabeling programme, improving waste reduction and management (including for plastics, food and e-waste) and introducing Extended Producer Responsibility and Green Public Procurement. The PAP4SCP has been mainstreamed in the Updated **Philippine Development Plan 2017-2022** (National Economic Development Authority of the Philippine, 2021; National Economic Development Authority of the Philippine, 2020).

The Philippines has adopted several SCP- relevant sectoral policies and thematic programmes. These include **Renewable Energy Act 2008** (renewable energy) and **Energy Efficiency Roadmap**, **Toxic Substances and Hazardous and Nuclear Waste Control Act 1990** and **Ecological Solid Waste Management Act 2000** (waste management, food waste) and various local ordinances to regulate the use of plastics bags (plastics) (National Economic Development Authority of the Philippine, 2020). In addition, thematic programmes exist such as the National **Ecolabeling programme** and **Government Energy Management Programme** (Government of the Philippine, 2021).

Lead agency: National Economic and Development Authority (PAP4SCP, PDP); Department of Energy (Renewable energy, energy efficiency), Department of Environment and Natural Resources (Waste), Local governments (plastics), Government Procurement Policy Board (Green Public Procurement Plan).

Singapore

National Policy Framework development: Even though Singapore does not have a dedicated SCP strategy, reference to SCP can be found in two key policy documents. Firstly, **Singapore Green Plan 2030** is a whole-of-nation movement to advance Singapore's national agenda on sustainable development and comprises five key targets, including City in Nature, Energy Reset, Sustainable Living, Green Economy and Resilient Future (Singapore Green Plan, 2021). Secondly, **the Zero Waste Masterplan**- adopted in 2019- outlines the circular economy approach to be taken across the entire value chain, from Sustainable Production and Consumption to Sustainable Waste & Resource Management (Government of Singapore, 2021).

Several SCP relevant instruments have been established. Since 2008, Singapore introduced the Mandatory **Energy Labelling Scheme** that has now covered a variety of household electronics appliances. **Minimum Energy Performance Standards** were introduced in 2011 to raise the average energy efficiency of products in the market. **Water Efficiency Labelling Scheme** was also applied for water fittings and appliances together with **Minimum water efficiency standards** aimed to phase out the least water-efficient products. The mandatory requirements are periodically reviewed and updated (Ministry of Foreign Affairs Singapore, 2018). In addition to the above mandatory schemes, there are also government-administered

voluntary schemes, such as **Voluntary Logo for Products with Reduced Packaging**[23], **Voluntary Climate-friendly label for household air-conditioners and refrigerators**[24](Government of Singapore, 2021). There is also voluntary scheme launched by non-government organization such as **Voluntary certification and labelling for household and building products**[25].

Furthermore, the government also launched education and awareness raising programmes such as "Say Yes to Waste Less campaign"**[26]** that aims to build public awareness on excessive disposables and several online guides for consumers to reduce food waste and energy consumption at home (e.g., "Love your Food Guide" and "Resource Efficiency Guide for New Home Owners"[27]). Moreover, businesses-targeted measures will also be introduced. The **Resource Sustainability Act** – adopted in 2019, becomes the legal basis for three instruments, i.e., Extended Producer Responsibility for e-waste by 2021, Mandatory packaging reporting by 2021 and Mandatory food waste segregation for treatment progressively from 2024 onwards[28] (Government of Singapore, 2021).

Lead agency: National Environment Agency (Mandatory Energy Labelling Scheme, Minimum Energy Performance Standards, voluntary schemes for reduced packaging and climate-friendly household air conditioners and refrigerators, food consumer guide, mandatory and EPR schemes for e-waste, food waste and packaging); National Water Agency (Water Efficiency Labelling Scheme); Ministry of Education, Ministry of National Development, Ministry of Sustainability and the Environment, Ministry of Trade and Industry and Ministry of Transport (Singapore Green Plan 2030).

Thailand

National Policy Framework development: Thailand has adopted **SCP Roadmap 2017-2037** as its main policy reference on SCP[29] in order to reinforce and develop the mechanisms for sustainable consumption and production and to promote cooperation with the private sector (Government of Thailand, 2021). The Roadmap has a clear distinction between sustainable consumption and sustainable production pathways. The strategy for sustainable consumption focuses on a number of priority areas, including green procurement for public and non-public institutions, awareness raising, human resources and educational system. The supported factors are energy management, buildings and construction, infrastructure and city planning, economic instruments, human capital-society-culture, and data, knowledge, science and innovation. This Roadmap is mainstreamed into the 20-year National Strategy (2018-2037) (Government of Thailand, 2021).

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[23] See https://www.nea.gov.sg/programmes-grants/schemes/singapore-packaging-agreement for more information

[24] See https://www.nea.gov.sg/our-services/climate-change-energy-efficiency/climate-change/reducing-ghg-emissions-from-the-use-of-refrigerants-in-rac-sector for more information

[25] See https://sgls.sec.org.sg for more information

[26] See https://www.cgs.gov.sg/what-we-do/towardszerowaste/sayyes/home for more information

[27] See https://www.nea.gov.sg/docs/default-source/envision/food-waste/love-your-food-handy-guide.pdf and https://www.e2singapore.gov.sg/docs/default-source/default-document-library/Resources/Households/Guide.pdf

[28] See https://www.mse.gov.sg/resource-room/category/2020-07-30-resource-sustainability-act/ and https://www.nea.gov.sg/media/news/news/index/food-waste-segregation-for-treatment-by-large-commercial-industrial-food-waste-generators-to-be-mandatory-from-2024 for more information

[29] See https://www.oneplanetnetwork.org/resource/sustainable-consumption-and-production-roadmap-2017-2036-thailand for more information

There are also sectoral policies and thematic programmes that are relevant to SCP, which includes the **Green Industry Policy and the Green Industry Mark**, the **National Master Plan on Waste Management 2016-2021**, **2018-2030 Roadmap on Plastics Waste Management**, the **Green Procurement Plan 2017-2022**, the **Environmental Quality Management Plan** and **Renewable Energy Roadmap 2036**. Thailand is also developing the Remains of Electrical and Electronic Products Management Act that will regulate the management of e-waste (SWITCH-Asia, 2020; Government of Thailand, 2021).

Lead agency: Ministry of Industry (Green Industry Policy, Green Industry Mark); Ministry of Natural Resources and Environment (waste, plastics), Ministry of Energy (Renewable Energy)

Vietnam

National Policy Framework development: Vietnam's Sustainable Development (SD) Strategy 2011-2020 has reference on SCP agenda. It aims "to develop a civilized, harmonious, and environmentally-friendly consumption culture; gradually implement eco-label and green shopping; develop an eco-product market and community-based initiatives for sustainable production and consumption; and apply policies to correct unreasonable consumption behaviour." In addition, the **National Action Plan for Green Growth 2014–2020** specifically mentions sustainable consumption and cleaner production (Castro-Hallgren S., 2017). The **National Action Plan on SCP 2021-2030** was recently approved in June 2020. In addition to sustainable production policies, the same document also targets sustainable consumption relevant policies, such as eco-labelling, consumer information, sustainable lifestyles and communication (Ministry of Industry and Trade Vietnam, 2020; Government of Vietnam, 2021).

Sectoral Sustainable Consumption policies include on **Decree on Management of waste and discarded materials** (waste), **Law on Eco-friendly production and consumption** (eco-label), **Decision on Management of recycling, treatment and reduction of Plastic waste** (plastics), **Law on Economical and Efficient Use of Energy and measures for its implementation** (energy efficiency) and **Renewable energy development strategy to 2030, with a vision to 2050** (renewable energy) (Government of Vietnam, 2021).

Lead agency: Ministry of Industry and Trade (Action Plan on SCP, plastics, energy efficiency, renewable energy), Ministry of Resources and Environment (waste, plastics, eco-label)

Module 3: Tools and instruments used in influencing consumer behaviour

This module discusses tools and instruments used in influencing consumer behaviour to guide consumers to make sustainable choices about products, including their use and end of life phase. Tools include consumer information, consumer protection policies and economic instruments that can shift consumer behaviour to be more sustainable in their decisions or choice to purchase, use and discard products responsibly. This module is based on desktop research and inputs from AMS on current status to consumer information instruments and practices in 10 ASEAN Member States (AMS) on sustainable consumption.

3.1 Snapshot of ASEAN: Key drivers of consumption, demography and sustainability trends

According to the UNEP Global Environment Outlook-5 report, the drivers of environmental impacts and resource use are population growth and economic development. ASEAN as a regional bloc is slated to be the fourth largest economy by 2050. According to Euromonitor's economic data of 2019, the ASEAN region is expected to reach 9% of the global growth by 2024. As of 2019, the ASEAN region accounts for 8% of the world's population which is the third most populous economy globally. ASEAN's middle class is expected to double from 135 million (about 24% of ASEAN population) to 334 million by 2030 which is about 51% of ASEAN's population.

By 2030, one in six households entering the world's consuming class will come from ASEAN with five million people moving into cities every year (WEF 2020) fortifying a high rate of rural-urban migration, leading to greater resource demands such as larger houses with new appliances, new modes of transportation and increased use of private cars, increased air travel, new diets which include more convenient food, meat and dairy and more energy.

ASEAN has progressed under the Sustainable Development Goal 1 of addressing extreme poverty in the region as less than 6.9% of ASEAN population are currently living below international poverty line of $1.90 per day in 2016 PPP dollars. ASEAN is slated to contribute 70-80% of the new consumer population and increased working middle class which will boost productivity, spending as well as the increased use of technology. In the next decade, ASEAN will usher in 140 million new consumers who will represent 16% of the world population that are digital native users more inclined towards online transactions and purchases. By 2030, there will be about 723 million people in ASEAN, out of which 575 million are expected to be internet users in the region. This indicates young people who value ethical, environmental and social concerns will play a key role in promoting sustainable consumption in the region.

In a 2017 survey conducted amongst 1406 middle class consumers in five ASEAN countries covering 7 cities, namely Bangkok, Kuala Lumpur, Manila, Jakarta, Surabaya, Ho Chi Minh and Hanoi, the findings indicated that:

- ASEAN middle class consumers are sensible spenders with a portion for savings
- ASEAN middle class consumers are looking for quality where 95% of the survey respondents agreed that they were willing to spend more on products with better quality

- 62% of the survey respondents purchasing decisions were influenced by user reviews via social media such as Facebook, Twitter, Instagram as opposed to bloggers, key opinion leaders and celebrity endorsements.

With rising disposable incomes and populations, consumption based on large-scale use of natural resources to propel growth and meet the demands of human consumption will eventually over time deplete earth's resources, contribute to rapid increase in global temperatures due to emission of greenhouse gases. Globally, consumer products and their value chains are responsible for over 30% of material extraction and 30% of greenhouse gas emissions due to production and waste.

ASEAN produces about 8.9 million metric tonnes of plastic waste annually which accounts for 60% of marine debris (Ismail, 2018). ASEAN has been identified by 2014 IPCC Fifth Assessment Report to be the most susceptible coastal region to the risk of climate change which ultimately impact impoverished fisherfolks, farmers and urban poor households. Rising temperatures also threaten food security, energy and economic developments as well. Documented studies indicate that all the 12 rivers in ASEAN are polluted with trash.

A primary driver for climate change is carbon emissions and the Global Carbon Project 2017 highlighted that AMS such as Indonesia (12th in the world), Thailand (20th in the world), Malaysia (25th in the world) and Vietnam (230th in the world) have higher total carbon emissions compared to the rest of the region. Brunei, Malaysia and Singapore have higher total carbon emissions per capita compared to the rest of the region. Carbon emissions will continue to increase for most AMS as countries such as Cambodia, Laos, Myanmar, Vietnam are still developing and growing with most of AMS still relying on fossil fuel for its energy source. There is urgent need for AMS and ASEAN to prioritize on energy management through fuel substitution and technological upgrades to decrease emission intensity and sustain a higher level of economic growth.

With each of the 10 AMS having heterogenous economy and cultural backgrounds, the AMS are taking their own distinct path to growth. Countries such as Singapore, Malaysia and Thailand are the most developed economies with the populations almost totally urbanized, banked and online, whilst on the other end of the spectrum countries such as Cambodia, Myanmar, Laos with smaller economies and Brunei have immense potential for growth. In Myanmar, currently 31% of the population live in urban areas, about 38% are internet users and around 26% have bank account whilst 76% of Cambodians use the internet, roughly double of Laos. Although Brunei's economy is fueled by the oil and gas industry, it is an emerging market socio-economically. In the three emerging economies of Vietnam, Indonesia, and Philippines, 70% of the ASEAN population resides in these three countries and contributing more than 50% of the region's GDP collectively.

As for businesses, with ASEAN being home to 227 of the world's largest companies, there is a growing opportunity for recognition by multinational corporations of the benefits of adopting sustainable business models and embedding sustainability into the DNA of their brands. A sustainable business focus has advantages such as identifying new products and markets, leveraging, and spurring innovative technologies, driving efficiency, and retaining employees.

However, the 2020 UN ESCAP Report on Asia and the Pacific SDG progress highlighted that ASEAN is not on track to achieve the SDG targets by 2030. The recent 2021 IPCC Report which states that current efforts on reducing temperatures are not sufficient, will propel Asia

to soon face stronger monsoons and flooding as global temperatures continue to rise. Thus, we need to change the way we consume. Advocates are calling for the abolition of economic growth as a primary social objective. Instead, alternative social practices of sharing, simplicity, care, communing that are consistent with equitable downscaling of production and consumption of energy and raw materials through collaborative consumption and eco village communities.

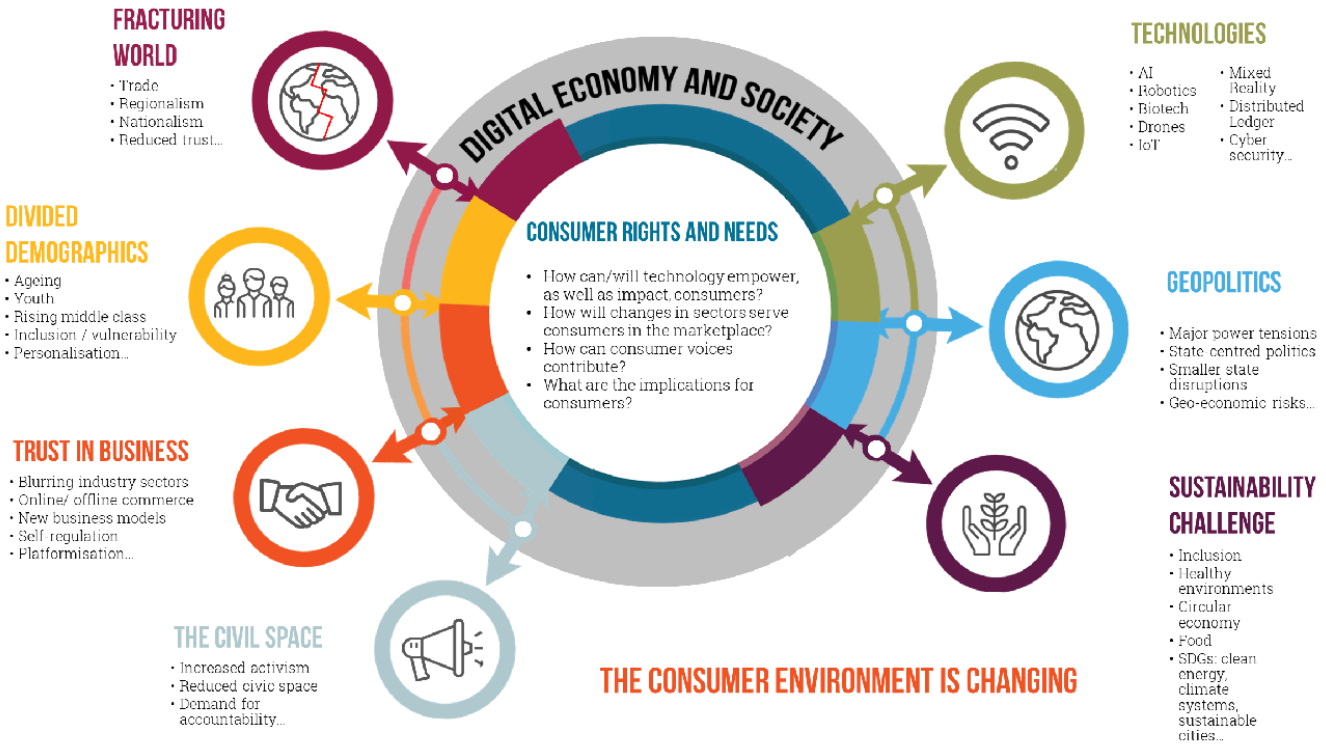
3.2 Understanding sustainable consumption, consumer protection and consumer behaviour

The consumer environment is changing as well with consumer rights and needs being highly influenced by the digital economy and society in addition to other factors such as the civil space for activism, trust in business, divided demographics, fracturing world due to trade and regionalism, technologies, geopolitics and the sustainability challenge.

Sustainable consumption is an effective comprehensive solution in addressing over consumption patterns and environmental degradation, focussing on consumers' choices of purchasing goods and services to fulfil their basic needs and improve their well-being whilst considering the environmental impact of their choices.

Our behaviour as consumers impacts on the environment. Consumer purchasing decisions are a major driver of carbon emissions in an economy. Industries which are directly linked to consumer behaviour such as fashion (10%), food (37%) and tourism (8%) make up more than half of global greenhouse gases (Fu, Shu & Liu, 2008; Lenzen et al., 2019; McFall-Johnsen, Woodward & US, 2019). Consumption emissions which include discharges resulting from domestic final consumption and production of imports will continue to increase as AMS are still developing and growing. (Ritchie, 2018)

In ASEAN, the highly urbanized upper middle class are predominantly practising resource intensive consumption leading to pollution and lack of clean water and sanitation. The good news is that globally, consumer demand for sustainable products is on the rise, for example 66% of consumers (73% of them being millennials) worldwide report being willing to pay extra for such products (Nielson 2015). The young generation are more inclined towards choosing sustainable products with social and environmental claims as today's consumers want to buy a lifestyle and not just the product. The sustainability scenario in ASEAN has massive potential amongst its young consumers of millennials and *Generation Z* with over 380 million of its population who are currently under 35 years (58% of total ASEAN population) although in Singapore, its population is aging.



Environmental sustainability has been a more recent addition to consumer issues, but it is now well established as an integral concern in most international guidance. For example, in 1999 amendments were made to the United Nations Guidelines for Consumer Protection to address growing awareness of the need for more sustainable production and consumption. Goal 12 of the SDGs also makes a valuable contribution to this issue, in supporting *"responsible consumption and production"* through, amongst others, *"promoting resource and energy efficiency … and a better quality of life".* The Goal can be seen to imply consideration of product safety as encompassed within the notion of sustainability. Consumers and producers are encouraged to develop an *"understanding of environmental and social impacts of products and services…, both of product life cycles and how these are affected by use within lifestyles"*. Consumers are further urged to be more thoughtful about what to buy, to make informed purchases and to choose a sustainable option whenever possible.

This point towards a broader understanding of sustainability embodied in the SDGs and is used within the consumer movement. It implies a convergence such that the definition of a safe and sustainable product inherently and explicitly means that products should not be regarded as sustainable if they harm either the immediate requirements of consumers and the earth, or the long-term interests and needs of future generations.

However, despite the inclusion of sustainable consumption in the United Nations Guidelines for Consumer Protection, the issues of consumer protection and sustainability have continued to be dealt with separately under different sectors and departments in or addressed in a very narrow scope in AMS as highlighted in **Table 2.1 of Module 2.** This is despite endorsements by AMS in 2017 for the ASEAN High level principles on Consumer Protection which serves as

guidelines for ASEAN's consumer protection work promoting a common base level of cooperation in addition to the ASEAN Socio-Cultural Community Blueprint 2025 and the ASEAN Vision 2025. These guidelines adequately cover all significant areas of sustainability and consumer protection. More importantly is how these High-level principles are translated into local measures amongst AMS, more importantly on Principle 7 which is cooperation and joint collaboration amongst different sectoral Ministries and jurisdictions as well as the multi actor engagement with businesses, schools, academia, NGOs and consumer associations.

Table: ASEAN High -Level Principles on Consumer Protection

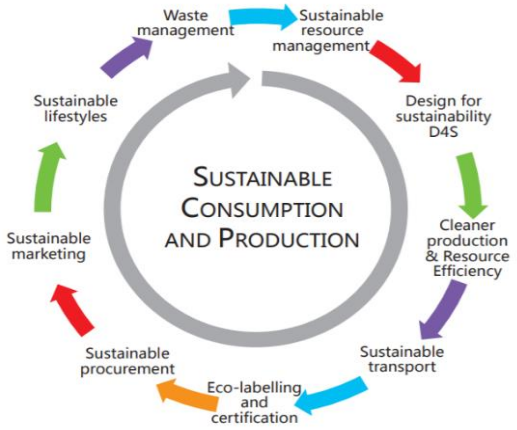
Principle Number	
Principle 1	Enforcement of consumer protection laws is fair, consistent, effective, and proportionate.
Principle 2	Consumers are equipped with the skills, knowledge, information, and confidence to exercise their rights.
Principle 3	Consumers are protected from harmful goods and services
Principle 4	Consumers have access to appropriate and convenient sources of advice and redress including alternative dispute resolution
Principle 5	Consumers understand the impact of consumption decisions on the shared environment
Principle 6	Strong consumer advocacy is promoted
Principle 7	High Levels of cooperation between different levels of government and with business and other stakeholders
Principle 8	Consumers in e-commerce are protected

Sustainable consumption without development is not sustainable and vice versa. All stakeholders including policy makers, businesses especially micro, small and medium enterprises (MSME) and consumers should be aware of mutual benefits that sustainable consumption can bring towards achieving sustainable development.

However, sustainable consumption does not automatically translate into" less consumption" but more efficient, better informed and less resource intensive consumption. If a sustainable product extracts more resources and use of energy, it is not a solution as alternative as the whole life cycle needs to be considered using a systems approach of transforming the 'linear' material flows from extraction to use and disposal- to become "circular" through intelligent design of products that incorporates standardization, reuse, recycling, remanufacturing, development of efficient and inclusive infrastructure and a new focus on delivery of services rather than sale of material products.

Consumers through their behaviour of choosing, using, re-use, recycle and dispose a product they purchase can influence each point of a product life cycle as it is a major driver of carbon emissions in an economy. Sustainable consumption not only reduces the flow of materials in

the consumption chain but can also track the whole product life cycle. From enhancing the production model and process to reduce environmental impact such as pollution control as well as increase efficiency of resources used to prevent waste, consumers too need to transition towards sustainable lifestyles that improves quality of life, thereby reducing the consumption of resources from the demand side. To fully address the sustainability of a product it is thus important to understand its complete lifecycle.



Life cycle of product under SCP

Consumer behaviour has 3 elements which are motivation, ability to perform and prompt to perform the behaviour (BJ Fogg). All three elements must occur simultaneously or else the behaviour would not occur.

1. **Motivation:** is a state that energizes, directs and sustains a behaviour. It involves goals and requires actions to sustain an activity for a long time. There are 3 core motivator pairs to boost motivation:
   - **Pleasure/Pain** *(immediate result, little thinking involved, respond to the given moment)*
   - **Hope/Fear** *(anticipation of an outcome, hope- something good; fear-something bad, loss or failure)*
   - **Social acceptance /Rejection** *(perform to be socially accepted and avoid being rejected by others)* – This dimension controls much of our social behaviour
2. **Ability to perform:** Consumers need to have the ability to perform, particularly in new behaviours where consumers can either accept or reject the opportunity to act. Teaching or training consumers to behave differently demands effort and consumers tend to be resistant, since it requires time, energy and funds to change their behaviour.

Policy interventions or tools should be designed to increase the ability of consumers by making the task easy to accomplish. Even if a sustainable product is simplified, besides being price competitive and available, it still depends on 6 elements, of which, if one is negatively affected, there is a high chance of failure that consumers' behaviour will not be positively influenced towards sustainability:

- **Time** *(if behaviour requires time)*
- **Funds** *(if behaviour costs money to low-income consumer)*

- **Physical effort/ convenience** *(if behaviour requires physical effort)*
- **Brain cycle** *(if behaviour requires consumer to think hard)*
- **Social deviance** *(if behaviour goes against the norm and breaks society's rules)*
- **Non routine** *(if behaviour needs effort due to non-routine)*

3. **Prompted to perform:** Consumers can be prompted to perform at a given moment through triggers or calls to action. Successful prompts have 3 characteristics. The prompt is perceived, associated with a behaviour and both these happen when the consumer is motivated and able to perform. Prompts can be clustered into 3 types related to degree of motivation and ability:

   - **Spark** *(if consumer has the ability but lacks the motivation to perform)*
   - **Facilitator** *(if consumer is highly motivated but lack the ability, make it easy to follow)*
   - **Signal** *(if consumer has both motivation and ability and merely needs a reminder)*

Additionally, there are other parallel factors that influence consumer behaviour across motivation, ability and prompts. According to Stern, there are four types of causal variables that affect environmentally significant behaviour**:**

- **Attitudinal factors** *(values, belief, norms, perception, benefits of action)*
- **External or contextual forces** *(institutional, economic cost and rewards, technological systems such as laws, regulations, advertising)*
- **Personal capabilities** *(literacy, social status, financial resources, knowledge and skills, adaptability, motivation, analytical)*
- **Habitual behaviour**

One of the key elements of consumers being influenced by their behaviour is when they have access to information, fully empowered enforcement, and certification entities. Sustainability efforts however are facing challenges such as consumer price sensitivity, coupled with lack of awareness and regulatory support which are key barriers in mainstreaming sustainable consumption.

More recently, the Covid-19 pandemic has seen a back track of sustainability initiatives in efforts to be more hygienic with the increased use and consumption of single-use plastics (including masks, disposable food containers for takeaway food, gloves, personal protective equipment, face shields and bubble wrap for online shopping). Since most of these plastics cannot be recycled, the waste as increased exponentially as well and is cause for concern.

Changing behaviour is often challenging. Behaviourally informed policy tools can help consumers better evaluate costs and benefits and act on their preferences, enhancing effectiveness of government intervention.

3.3 Current Challenges of promoting sustainable consumption in ASEAN

When policy makers are attempting to shift consumer behaviour to responsible and green consumption, first there is a need to understand the challenges or barriers that consumers need to overcome at decision points of what to buy, how to use and how to discard in AMS.

Consumer Challenges in Asia: Decision Making Issues (Switch Asia):

1. Consumers are faced with two common challenges at the**" what to buy"** phase which is:

- Limited access to sustainable products in terms of availability and price
- Lack of transparency and lack of trust in credibility of product information and performance

Price

Price is the most important factor or barrier in driving purchasing decisions of sustainable products even if these products lasted longer and in the long term the cost would be lower. Studies indicate that amongst consumers with lower income, the important factor for purchase would be price, followed by safety as compared to a very low percentage who would pick 'good for the environment' as the main reason to purchase products. Most of the sustainable products have a higher premium price. Consumers are only willing to pay more if it is for the health and safety of their family. In many developing economies, consumers in rural areas may have little or no access to financial options to avail funds to purchase sustainable products.

Availability

Although sustainable products may be produced within the country but not available on the shelves for the ordinary consumers due to lack of distribution channels, especially in rural and geographically challenged areas. Sometimes, there are simply no sustainable alternatives.

In ASEAN markets, as Indonesian and Filipino populations are geographically spread across 17,500 and about 7,100 islands respectively, distribution of sustainable products, communication and information activities and access to financial services are major obstacles towards promoting sustainable consumption.

The COVID-19 pandemic has led to a surge in e-commerce where businesses and consumers have gone 'digital' in providing and purchasing goods and services online. In a recent report, COVID-19 and E-Commerce: A Global Review by UNCTAD 2021 indicate strong uptake of e-commerce by consumers due to lockdowns. Although the trend to purchase online is likely to

continue throughout the recovery from COVID-19, consumers and governments from least developed countries such as Myanmar, Cambodia, Laos have not capitalized on the pandemic induced e-commerce opportunities due to persistent barriers. These include costly broadband services, over reliance on cash payments, consumers lack of trust, poor digital skills amongst the population and governments limited attention to e-commerce.

Product information

Labels or product information is a tool not only to raise awareness of consumers, but it is also a marketing measure for the business. While labelling processes will encourage regional intra trade within ASEAN, there is a risk of consumers not trusting the labels which are not clear or there are too many labels and certificates at national and regional level that result in consumers not finding the sustainable product as a viable alternative. The fact that sustainability of a product cannot always be checked by consumers, it makes it difficult to make decisions towards sustainable options. For this reason, sustainability turns into reliance of trustful relations with the brands consumers choose.

Although there are efforts to recognize certification and standards amongst each AMS through ASEAN mutual recognition plans, it is not fully harmonized ASEAN SCP labelling, certification and information system that prevents confusion to an AMS consumer.

2. Consumers are faced with challenges at the 'how to use stage' due to:
    - Lack of awareness of sustainable products
    - Limited access to after sales support

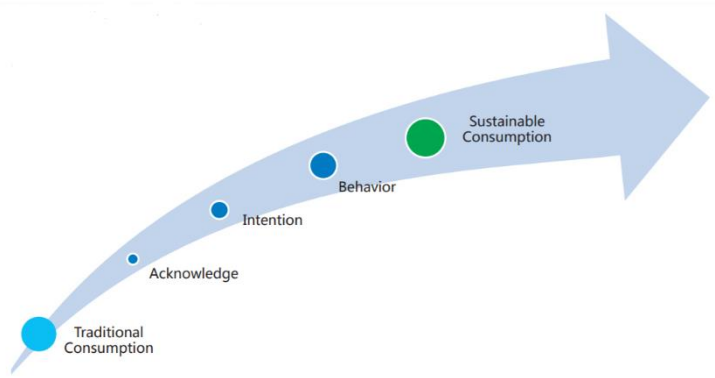
Awareness and consumer behaviour

In changing consumer behaviour, the emphasis is not only on knowledge but how the knowledge is applied for the betterment of our own quality of life as well as not jeopardizing current and future generation.

Consumer awareness of sustainable consumption is deepening globally as highlighted by the 205 Nielsen study.

However, the changes in action by consumers in making decisions on sustainable products generally to date have not been significant despite sustainable consumption policies put in place by governments. This is due to the lack of SCP driven culture of living responsibly with rising development. Consumers constantly make choices that do not support their long-term sustainability values. Their intention of caring for the environment does not correspond to actual purchasing of sustainable products. So, there is a need to fill this gap and transform consciousness/ awareness into action although the consumers may exhibit favourable attitudes towards sustainability. Consumer information has an important role to play in this process addressing the discrepancy between what consumers say and do which is the intention/attitude-behaviour gap. This willingness to change attitude and the consumers' actual behaviour is biggest challenge for policy makers, businesses, and non-profit organizations in wanting to promote sustainable consumption (Johnstone and Tan 2015).

The assumption is that consumers are rational actors and simply by providing information about the environmental consequences of their choices, they would change their behaviour and make more green and sustainable choices. However, documented behavioural studies indicate consumer irrationality and other factors that predominantly and successfully influence their decisions on making sustainable purchases.



Pathway of consumption behaviour change

The market has developed effective methods of emotionally manipulating people towards consumerism, resulting in consumers not being the most powerful stakeholder in the product value chain. At times, government awareness campaigns can be mitigated by well financed advertising campaigns by conventional businesses who tend to encourage consumers to buy products which are not resource efficient and environmentally sustainable.

Businesses play an important role in deciding on the design and resource used to make any products and services. Businesses have the capacity to apply a life cycle perspective when manufacturing products and therefore able to engage with suppliers (upstream) and waste managers/ recyclers (downstream) and initiate improvements / changes to make sustainable products.

However, even if sustainable products are available, consumer behaviour is affected by psychological and social factors (Gifford, 2011) that make them irrational decision makers who are influenced by the following:

- Ideology/Belief (I should buy what I want, technology will solve environmental problem)
- Mistrust (Those eco labels are just a marketing gimmick)
- Advertising (Your phone is outdated; you should buy a new one)
- Perception (If only I do it, it is not going to make a difference)
- Lock in (I already have a car, so why do I need to take public transport)
- Perceived risk of sustainable options (what if the solar panel installed does not work)
- Social norms (will I be the only one buying or doing it)

Governments still needs to educate and empower consumers, but this should go beyond ‘information’ about benefits of sustainable products. Any campaigns run by governments or non-profit organizations such as consumer associations should address the factors stated above such as advertising, social norms, incentives, trust etc. Particularly, the consumers’ beliefs/ideologies are key influencers of consumer behaviour as it can prevent them from

logically evaluating sustainable alternatives and thus perpetuating existing unsustainable habits of consumption. Businesses should include sustainability reporting as part of their annual compliance in order for consumers to make informed decisions based on credibility and trust.

After sales support

Limited after sales support also hinder the mainstreaming of sustainable products. Increased consumerism of 'use and throw' is attributable to the lack of after sales service support. Repair and reuse are deemed to be time consuming and unfashionable. The 'planned obsolescence' strategy by multinational companies by designing its products to have a limited life span coupled with the consumers behaviour of "use and throw" can be attributed to poor or absence of after sales support. Businesses still continue its practice of planned obsolescence despite being imposed huge fines when its components are not recyclable.

Consumers need to be discerning when purchasing products from the market as with the advent of globalization, there are now many more market players in each consumer sector. However, due to consumer irrationality, we tend to habitually stick to the products we are familiar with due to convenience and branding. Consumers should by word of mouth or social media 'name shame' these companies for not being responsible and unsustainable in its practices. These are ways to shift consumers away from unsustainable products despite being famous.

Companies such as Unilever, Ikea have changed their business models to incorporate sustainability into their core operations globally. More recently this year, Gojek and Grab have committed to using electric vehicles and considering alternatives to plastic wares in terms of delivering take away food. This is due to their investors who have demanded sustainability. In the long run, businesses who do not innovate will lose its market share if they do not innovate themselves.

3. Consumers are faced with challenges at the **"disposal"** stage due to:
    - Inadequate waste disposal facilities
    - Limited take back programmes /initiatives for reuse, recycle, upcycle

Lack of waste disposal facilities and over production of waste

As the ASEAN region has different markets, varying degrees of economic development and diverse culture, tackling rising environmental concerns is a challenge. In 2017, the ASEAN 6 (Indonesia, Malaysia, Philippines, Vietnam, Singapore, Thailand) had higher GDP per capita than the ten AMS (Singstat, 2018). But the ASEAN 6 also generated more waste than the remaining four AMS. The increase in population growth has resulted in ASEAN producing huge amount of municipal solid waste.

Culture and religion also differ amongst AMS and implementation of policies have to take into consideration local culture, religious beliefs and habits as it may conflict with technological

waste management protocols and result in unsuccessful implementation of policies that promote sustainable consumption.

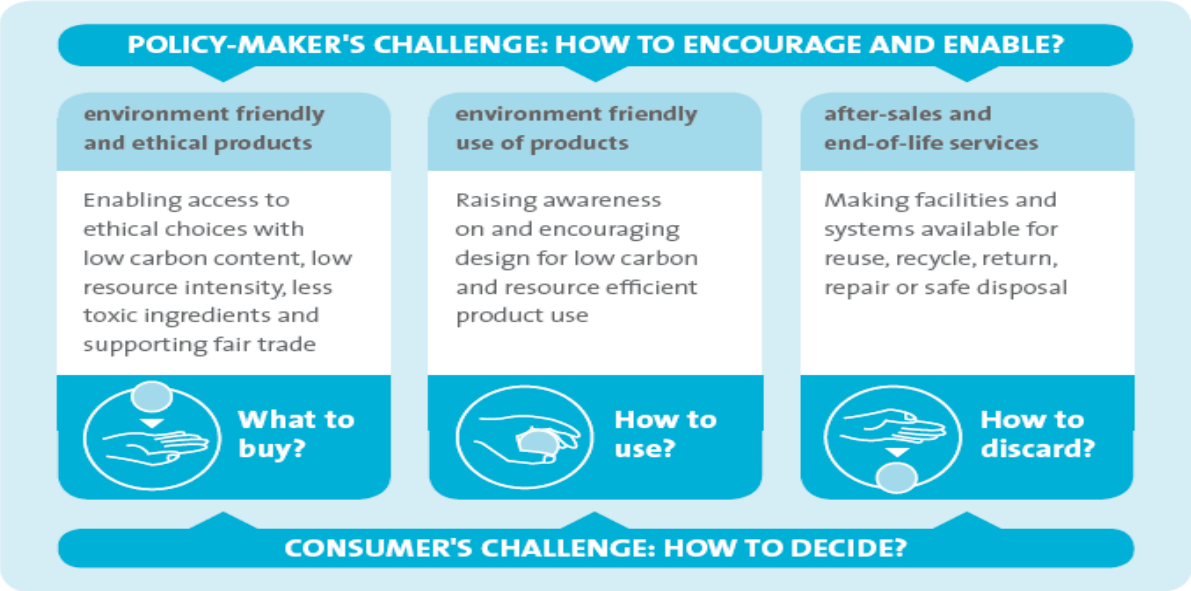
For most of the AMS, development of waste management facilities and policy implementation has not kept up with economic development. Most AMS rely on conventional waste management and recycling facilities which results in waste leaking out to the environment through green gas emissions. Communities living in these areas of landfills are affected health wise.

There are limited take back schemes which is a form of 'extended producer responsibility' where businesses take back their products once consumers want to discard them especially consumer electronics with REM materials such as TVs, refrigerators, washing machines, computers, mobile phones, printers, batteries etc. that are difficult to recycle. By giving the responsibility to the businesses to collect and recycle, they are thus encouraged to design products that are easier to de- construct which will be less harmful to the environment.

In light of COVID-19 and the increased use of plastics for the sake of safety and hygiene as well as the rising utilization of e-commerce transactions for the day-to-day consumption of takeaway food and purchase of online grocery, plastic waste has increased exponentially, and governments are yet to address these waste in the long term. The 2019 studies indicate that Indonesia, Philippines, Vietnam, Thailand and Malaysia are the top most plastic polluting countries with ASEAN as a whole contributing a third of global mismanaged plastic waste. Collective action from consumers, business and governments are needed to make it work.

3.4 Turning challenges/ barriers into opportunities for Sustainable Consumption

Consumers, businesses, and governments need to work hand in hand to address the barriers discussed above and consider the opportunities that policy makers and businesses can use to engage, enable, encourage and exemplify for consumers to purchase and experience sustainable products. Governments implement relevant and appropriate policies that promote sustainable consumption. Consumers need to make more informed decisions about what they purchase in terms the product/service, its use and disposal, whilst businesses need to provide information and make available sustainable options.



Policy makers can enable access to ethical, green choices with low carbon content, low resource intensity, less toxic ingredients and supporting fair trade. On how to use, policy makers and businesses raise awareness and encourage design for low carbon and resource efficient product use. And on how to discard, both policy makers and businesses together should ensure facilities, systems and technology are available for consumers to reuse, recycle, return, repair or safely dispose of used products.

It must be noted that technology changes alone are insufficient to achieve efficiency gains to cope with climate change and greenhouse gas emissions. Consumers need to make lifestyle changes in order to be sustainable as their choices impact the environment. Policy makers and businesses need to provide relevant information to consumers such as product lifetime extension and product sustainability information and support positive consumer behaviour change. Businesses need to develop new business models that are supported by the government through policies and infrastructure to make sustainable lifestyle a default option for consumers. Consumer advice on replacing, repairing, upgrading or recycling products reduces new manufacturing but businesses can still provide gainful employment through repair businesses and second-hand shops that contribute positively to sustainable lifestyles in the areas of food, energy and energy efficient products, mobility and leisure.

Example-Thailand as an emerging economy in ASEAN, characterized by a rapidly growing middle-class population, a sustained economic growth and export-oriented production, despite having a clear strategy for SCP in recognizing clean technology, sustainable products, eco labelling, these efforts have been shaped by production. There is no uptake on sustainable products as consumers are not aware due to lack of engagement and lack of participation of civil society groups in SCP decision making.

The approaches for meeting the challenges/ barriers of sustainable consumption by various stakeholders can be categorized as below:

HOW TO BUY

Challenge	Government	Business	NGO
Limited Access to ethical green product and services	***Show it:*** *lead by example, adopt policies on green public procurement* ***Encourage visibility****: provide support to shops and retailers offering ethical products and labels* ***Know the audience****: Recognize habits, local consumption patterns and routines. Information alone does not do the trick!* ***Use the carrot****: intro duce incentives such as tax reductions, exemptions, low interest rates to enable affordability and motivate change in consumer behavior but these have to be phased out with a time bound implementation.*	*Invest in visibility: provide shelf space for ethical products and put them next to usual offers* ***Build a local network:*** *work at community level to harness area-based messengers* ***Embrace inclusivity:*** *blend sustainability criteria in brand development* ***Offer-choices:*** *facilitate access and options to sustainable products at affordable prices* ***Build the brand:*** *make ethical products house-hold names* ***Invest in collective innovation:*** *R&D for new concepts or designs through user-integrated approach*	***Lead and guide:*** *develop information materials on how/ where to access fair trade products* ***Clean-up:*** *carry out 'supermarket sweeps' to weed out unethical products from markets, and encourage green products on shelves* ***Transform and reach out:*** *evolve into, and engage with, social enterprises and help consumers access ethical markets* ***Agent of change:*** *act as not-for-profit intermediary and link consumers to ethical products*
Lack of transparency and credibility of product performance	***Safeguard sustainability:*** *develop guidelines on product sustainability criteria and reporting, on corporate green purchasing and on ethical trade* ***Green*** *means ethical: Develop a consumer friendly labelling system such as the "traffic-light" system* ***Keep track:*** *conduct market surveillance activities and technical training in testing and monitoring* ***Mark the spot:*** *implement 'trade marks' for ethical retail stores*	***Make it easy:*** *make product and services in-formation easily accessible (consumer hotline, website, customer service)* ***Get it across:*** *with 3Cs of communication (clarity, credibility and comparability) when offering products & services* W***alk the talk:*** *put sustainability into practice for example, retailers can measure and report on their carbon footprint (refrigeration, lighting, baking, air- conditioning)*	***Demystify labels****: educate consumers on how to read labels Check and balance: test products and publicise findings!* ***Name and shame:*** *highlight bad performing products or 'green washing' practices* ***Protect and serve****: promote standardisation, quality and consumer protection issues*

HOW TO USE

CHALLENGE	GOVERNMENT	BUSINESS	NGO
Consumers are unaware of the concept and advantage of low impact product use	***Protect consumers**: develop guidelines and regulations on product advertising. For example, for advertisements that target children, or false and misleading or direct-to-consumer (DTC) marketing* ***Path the way:** launch national education campaigns on environ- mentally friendly use of products* ***Change it**: replace or phase-out products with high impact in the use phase, such as CFC and HCFC to CFC-free refrigerant*	***Get bold:** adopt voluntary agreements to comply and self-regulate, such as voluntary reporting, targets for product improvements, emission reductions, or certification schemes* ***Involve everyone**: design cross-sector campaigns to tackle habits and routines. For example, universal chargers for mobile phones can include manufacturers, users, distributors, retailers, regulators, media, etc. develop a base: build local product use support services* ***Get wired:** build immediate feedback mechanisms into products on impact of use such as smart meters for real time information on energy consumption.*	***Call for change**: organize national campaigns for sustainable lifestyles to change consumer behavior. For example, FOMCA-Malaysia "Change begins with Me" program that was implemented with multi stakeholders for 3 years to change consumer behavior.* ***Use without owning:** steer into sharing, collective and collaborative consumption* *Build capacity: develop knowledge centers on sustainable products e.g. info materials* ***Help with 'how':** develop guides on eco-friendly usage or operation of products and services* ***Highlight the bad:** support programme to phase-out products and services with high impact in use-phase*

CHALLENGE	GOVERNMENT	BUSINESS	NGO
No after-sales support	***Nurture responsibility:*** *develop policies on extended producer responsibility (EPR)* ***Provide guidance:*** *develop guidelines* *on due diligence and liability* ***Put-up helplines:*** *setup national consumer hotlines*	***Recognition:*** *award initiatives for innovative after-sales services (through business associations)* ***Invest in customer relationship management:*** *set-up accessible after-sales support to extend product life-time and create added product value for customer* ***Move forward:*** *evolve from products to services and make the conventional product part of the service offer. For example, in home ownership,* *facilitate renting, sharing, leasing, building maintenance after selling the property to the buyer*	***Insist on producer responsibility:*** *push for adoption of extended producer responsibility* ***Help complaints:*** *facilitate consumer redress. The National Consumer Complaint Centre (Malaysia) operated by FOMCA supports the Consumer tribunal set up by the government. Similarly, CASE-Singapore, VINASTAQ-Vietnam, YLKI-Indonesia, FFC- Thailand have consumer helpdesk respectively, provide web portals to facilitate consumer queries, complaints and redress as well as facilitate mediation between consumers and businesses.* ***Do service****: act as a service provider supporting the extended product needs beyond selling point. For example, carpooling service connecting various destinations to a common parking facility (products to services*

HOW TO DISCARD

CHALLENGE	GOVERNMENT	BUSINESS	NGO
Lack of waste disposal / management infrastructure	***Close the loop**: implement national strategies on 3R (provide incentives for consumers to reduce, reuse, recycle), setup waste infrastructure* ***Get partners:** enter public-private partnerships for waste management* ***Encourage conformity:** develop regulations for banning products and preventing waste*	***All players**: support institutionalization of informal sector which takes-back, recycles and upcycles re-used materials* ***Fix it:** adopt voluntary labels such as 'easy-to- repair' labels do it this way: provide 'how-to-dispose' information on labels and or product sustainability information* ***Follow suit:** adopt sector- wide take-back, or 3R, initiatives* ***Innovative partnership:** enter into private-private, private-community partnerships for recycling and upcycling waste management*	***Educate:** raise awareness and campaign for the 3Rs and waste prevention* ***Sort them out:** develop guides on household waste management* ***Go into action mode:** initiate a 3R activity or campaign, e.g. "No Plastic Bags Day"*
Few take back mechanism	***Strike nationwide:** develop national action plans on extended producer responsibility for major product chains* ***Say 'how':** develop guidelines of implementation on take-back and re-use obligations or deposit-refund schemes* ***Reward the deeds:** provide incentives to community initiatives for the 3Rs, e.g. discount on housing assessment rates in Malaysia* ***Pat on the back:** encourage and support good nation-wide take back practices, e.g. for expired drugs*	***Take it:** adopt take- back, deposit & returns systems* ***Play it:** demand and implement regulations on extended product liability* ***Get hooped:** manage the entire lifecycle of a consumer product. Encourage the consumers to return* ***Go for more:** explore resource efficiency gains and cost reduction possibilities through recycling*	***Get them to take:** campaign for take-back policies and practices* ***Get heard** push for extended producer responsibility and take back obligations* ***Rise to the occasion**: Collect and make good use of waste that is specially created due to a specific occasion or celebration. E.g. Samarth Bharat Vyas Peeth, an NGO in Thane (India) collects Nirmalya (floral waste) used in the Ganesh Chathurti festival and gives back fertiliser made out of floral waste to citizens*

3.5 Various types of consumer information tools and instruments to promote Sustainable Consumption

Consumer Information and the goals of changing behavior

In order to enable sustainable consumption choices through informed decision making, consumers need accurate and credible sustainability information. To claim a product is sustainable, its sustainability impact needs to be assessed. Consumer information tools are the means to communicate this assessment information to consumers to facilitate sustainable lifestyles in harmony with nature.

The consumer information tools act as a marketing tool for businesses, whilst for the government it is a consumer protection measure, an economic approach to sustainable consumption as well as demand driven by green public procurement. For consumers, it is simply a guide on how to change and behave sustainably.

For policy makers, the desirable change in consumer behaviour would comprise five dimensions:

- **Avoidance** – to not consume specific products
- **Shift –** to use products that are comparably less carbon intensive
- **Saving –** to use products over longer time frames before replacing them
- **Consideration –** to influence others
- **Advocate –** to support policies that reduce consumption and encourages businesses to decarbonize production

➢ **Information/communication provision tools**

Information tools designed to change consumer behaviour can be considered voluntary soft policy instruments (Cohen 2014). Policy makers often prefer these consumer information tools over market-based measures (carbon taxes) or command-and-control approaches (fuel efficiency standards), in that information tools place responsibility for outcomes on consumption on consumers. Policy makers are more inclined to rely on voluntary change by consumers as market-based measures and regulatory tools are often rigid and not communicated effectively.

Apart from supporting **behavioural change** of consumers, information tools also increase **carbon literacy** levels in the wider population to change social norms in the long term which contributes to an understanding of consumption-based emissions as well as the linkages between greenhouse gases and climate change. In addition, the information tools provide **knowledge** regarding causes of climate change, the **implications** of various consumer choices with regards to global warming as well as **convince consumers** towards low-carbon lifestyles and products.

To be effective, information tools would have to induce significant changes in consumer behaviour.

However, as there is a gap between understanding benefits of sustainable consumption and taking actions, just merely implementing awareness raising campaigns that provide information (with regards to product qualities, certification, how to use and discard the product etc.) to educate consumers is not sufficient to translate intentions into practice. It is often assumed that when consumers make poor choices, it is due to lack of information or misinformation.

Evidence shows that for consumers to positively change their behaviour, in addition to the information, they should be provided with clear directions, tools with which they can take action or sustainable alternatives are made affordable and available to meet their needs.

It is not enough for government to simply run public campaigns for awareness but rather a more systematic approach of ensuring sustainable options is available, accessible and affordable to consumers.

The various consumer information tools include:

- Standards, certifications and labels (type 1 ecolabels) that outreach, educate consumers and build trust
- Self-declared environmental claims (type 2 ecolabels)
- Consumption and life-style calculators
- Consumer information campaigns including consumer education programmes, social influencer
- Special influence through digital tools such as social media apps, games or web platforms
- Behavioural insights and nudges

Standards and certification

Standards refer to specific criteria or norms of material goods and services. Certification refers to a formal accreditation process in which it is confirmed that the certified product meets a given set of minimum standards. Certifications are used as tools for policy and marketing as well as guide consumer decisions in tourism, energy efficiency and food systems. Certification also help businesses to benchmark their products and services and to improve their performance.

Labels

i) Carbon emission footprint labels (Eco Labels)

All ecolabels including carbon emission footprint labels are specifically designed to focus on energy use and emissions of GHG. Ecolabels rely on persuasive communication to consumers in that they seek to lure consumers to purchase a product on the basis of information. Ecolabels provide product environmental performance information to consumers at the point of sale is crucial where purchasing decisions are made. This requires that consumers understand the information, appreciate its significance, trust its reliability and feel empowered to act sustainably by purchasing the said product. (Gossling and Buckley, 2016)

Ecolabels are classified as type 1 by ISO 14024:2018 and based on life-cycle considerations. Ecolabels must be voluntary and be awarded through certification by an independent third party. It must be developed in a transparent process, be measurable and address multiple key environmental and health impacts as well as be updated regularly. Usually goes hand in hand with price incentives and proper infrastructure.

Currently, three international standards provide methods to quantify the carbon footprint of a product which are:

1. ISO 14067: Greenhouse gases – carbon footprint of products – Requirements and guidelines for quantification (2018)
2. PAS 2050 (2008) developed by Carbon Trust and the British government
3. Greenhouse Gas Protocol Life Cycle Accounting and Reporting Standard (2011) developed by World Resource Institute and World Business Council for Sustainable Development

These standards mostly draw on some of the older environmental standards from ISO.

ISO Series	ISO Standard
ISO 14020 (1998) – Environmental labels and declarations (ELD) – General principles	ISO 14024: 2018 - Environmental labels and declarations: environmental labelling type I, guiding principles and procedures.
	ISO 14021: 2016 - Environmental labels and declarations: self-declaration environmental claims, terms and definitions, Type II
	ISO 14025: 2006 - Environmental labels and declarations - Type III environmental declaration, principles, and procedures.
ISO 14040 – Environmental management – Life cycle assessment – Principles and framework	ISO14040: 2006 - Environmental management — Life cycle assessment — Principles and framework
	ISO14044: 2006 - Environmental management — Life cycle assessment — Requirements and guidelines
ISO 14060 – Guide for the inclusion of environment aspects in product standards.	ISO 14064: 2018 - Greenhouse gases – Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals.
	ISO 14067: 2018 - Greenhouse gases -- Carbon footprint of products -- Requirements and guidelines for quantification

The ISO 14067, PAS 2050 and GHG Protocol build on existing life cycle assessment methods established through ISO 14040 and ISO14044. While there are efforts to align the standards, there is still differences between each standard when calculating the carbon footprint due to boundary issues, capital assets, biogenic carbon, cut off criteria. (Wang, Wang & Yang, 2018).

Furthermore, Type II ecolabels which go through less rigorous process are less expensive for small and medium entrepreneurs to utilize but the downside is can consumers differentiate the two differing types of ecolabels to make an informed decision?

The benefits of ecolabels to businesses include that it provides:

DIFFERENTIATION | the ecolabel has a market advantage

CREDIBILITY | the ecolabel provides a genuine environmental benefit

VALIDATION | the ecolabel proves environmental claims

RIGOUR | the ecolabel requires performance testing

ACCESSIBILITY | the ecolabel is recognised by a worldwide market

RELEVANCE | the ecolabel focuses on all relevant environmental issues

INSPIRATION | the ecolabel promotes more sustainable consumption

In order to influence consumer choices based on the sustainability of the intervention, consumers need to perceive the sustainable aspects, attach some form of understanding to them and decide what these aspects mean to them. Klaus G lists 6 possible barriers for consumers on ecolabels:

- **Exposure does not lead to perception –** Consumers do not notice the label as their purchases are habitual and time pressured
- **Perception leads to peripheral processing –** Consumers see the label but usually do not care to make the effort to understand what it means. It may still affect their choice
- **Consumers make wrong inferences –** Consumers do see the label, try to understand but draw wrong inferences/ conclusions. They may buy but for wrong reasons
- **Eco information is traded off against other criteria –** Consumers prioritize other aspects of the product over sustainability. The price may be higher, the taste is not as good or family prefers something else
- **Lack of awareness/ credibility –** consumers who want to make sustainable choices may find it hard to carry out in practice
- **Lack of motivation at the time of decision making-** While consumers may have a positive attitude towards sustainability, they tend to forget when making the choice. Such dormant attitude is a major factor in explaining discrepancies between attitude and behaviour.

Standards used by AMS in developing their ecolabels

In the ASEAN region, not all AMS have adopted a carbon footprint standard and even those who have, there are differences. Indonesia, Philippines, Singapore and Vietnam base their labelling schemes on ISO 14024. Malaysia has a national scheme focussing on carbon footprint quantification for consumer products based on ISO 14025 and ISO 14067 whilst Thailand's national scheme is based on the PAS 2050. Countries such as Brunei, Cambodia, Laos and Myanmar do not have any scheme related to ecolabels or carbon footprint quantification for consumer products.

Indonesia, Philippines, Singapore and Vietnam – ISO 14024

The ISO 14024 (1999) was first developed prior to the three international standards that address carbon emission footprint quantification for consumer products and countries such as Indonesia, Philippines, Singapore and Vietnam which developed their national environmental labelling scheme early relied on this standard which is voluntary and verified by third party. Some of the countries have developed criteria for more products compared to others.

Malaysia - ISO 14025

In Malaysia, SIRIM QAS International developed its product carbon footprint scheme in 2014. The carbon footprint quantification, verification and labelling are primarily used for business-to-business communication. SIRIM, the parent body has developed a toolkit to assist businesses in calculating the carbon emissions based on the product. SIRIM QAS grants certification that facilitates market access to more than 37 countries across the world.

Thailand – PAS 2050

Thailand's carbon footprint is the most developed amongst AMS. There is an autonomous governmental organization, Thailand Greenhouse Gas Management Organization (TGO) that developed its carbon footprint label for each production unit throughout the whole life cycle of a product – the Carbon Reductional label. TGO has also launched the Carbon Footprint Reduction label where companies who actually achieve a reduction of the product's carbon footprint are allowed to use this label on their products.

In ASEAN, Indonesia, Philippines, Singapore, Vietnam have Type 1 ecolabels whereas Malaysia's ecolabel is based on carbon footprint verification and Thailand's ecolabel is based on the carbon footprint label. It is recommended that AMS should consider setting up a task force to align amongst the countries and focussing on consumption -oriented climate policy to reduce carbon footprint as studies from Moran, et al. (2018) found that changing consumer behaviour through information tools such as carbon footprint labels,

energy efficiency labels, greenhouse gas emissions can be reduced by 25%. This means consumers must be able to understand the labels.

Country	Carbon footprint for Consumer Products	
	Label	Legislation
Brunei	No label	No national ecolabelling scheme
Cambodia	No label	No national ecolabelling scheme
Indonesia		Type I ecolabel based on ISO 14024 (Ramah Lingkungan)
Laos	No label	No national ecolabelling scheme
Malaysia		Carbon footprint verification based on ISO 14025 and ISO 14067
Myanmar	No label	No national ecolabelling scheme
Philippines		Type I ecolabel based on ISO 14024 (Green Choice Philippines)
Singapore		Type I ecolabel based on ISO 14024 (Singapore Green Labelling Scheme)
Thailand		Carbon footprint label based on PAS 2050
Vietnam		Type I ecolabel based on ISO 14024 (Vietnam Green Label)

ii) Energy Efficiency Labels

As part of ASEAN's Plan of Action for Energy Cooperation, the focus is on energy efficiency and conservation in leading AMS at the regional level to achieve energy intensity reduction by 30% by 2025. ASEAN through ACE plays a central role at the regional level to develop infrastructure for the implementation of minimum energy performance

standards (MEPs) at the national level while raising consumer awareness. This is done through energy efficiency labelling and standard scheme which assist consumers when purchasing energy efficient products.

Currently, Cambodia, Laos and Myanmar do not have any energy efficient labelling and standard schemes. Laos is in the process of developing their national energy efficiency labels and standards scheme. The remaining AMS, Brunei, Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam have energy efficiency labels with differing number of products in each AMS.

Country	Energy efficiency (EE) labels (year)
Brunei	Established (2021)
Cambodia	No known plans
Indonesia	Established (2009)
Laos	No known plans
Malaysia	Established (1994)
Singapore	Established (2008)
Philippines	Established (1994)
Myanmar	No known plans
Thailand	Established (1994)
Vietnam	Established (2013)

Summary of ASEAN member states and energy efficiency labels

Cambodia, Laos and Myanmar

As these countries do not have a national energy efficiency label and standard for electrical appliances, the energy labels are dependent on the country where these products are imported from. Awareness of these labels are still low.

Brunei

The Ministry of Energy has implemented the Energy Efficiency (Standards and Labelling) Order 2021. The order, currently entering a one-year grace period from 14th June 2021 to 13 June 2022 aims to promote the use of high efficient electrical appliances in compliance with the Minimum Energy Performance Standard (MEPS). The order will be implemented in stages, first with air-conditioning system which will be followed by other household electrical appliances. The order supports the environmental credentials of the energy sector through the use of high efficiency appliances that are eco-friendly.

The Ministry of Energy has set the Minimum Energy Performance Standard (MEPS) at Coefficient of Performance (COP) of 2.9 for all air-conditioning system with a capacity of below 7.1 KW.

The Labelling Scheme will also be issued under this Order using a star rating system, aims at educating the public and consumers on the identification of energy-efficient electrical appliances in Brunei Darussalam.

Indonesia

The Indonesian Energy Efficiency Labelling program was launched in 2009 for consumer appliances and is a component of the government regulation no. 70/2009 on energy conservation. The program facilitates businesses to increase energy efficiency of a product as well as provide information to consumers about energy efficiency.

The labelling program covers compact fluorescent lightbulbs (mandatory), and voluntary labels for air conditioning, refrigerators, freezers. The label uses a star rating system of 4 stars and includes information about the energy efficiency of the product (kWh/year). The rating shows the rank of the product relative to similar products in the market and is assigned by an independent and accredited test laboratory.

Indonesia energy efficiency label provides information on energy efficiency standards, model product number and registration number

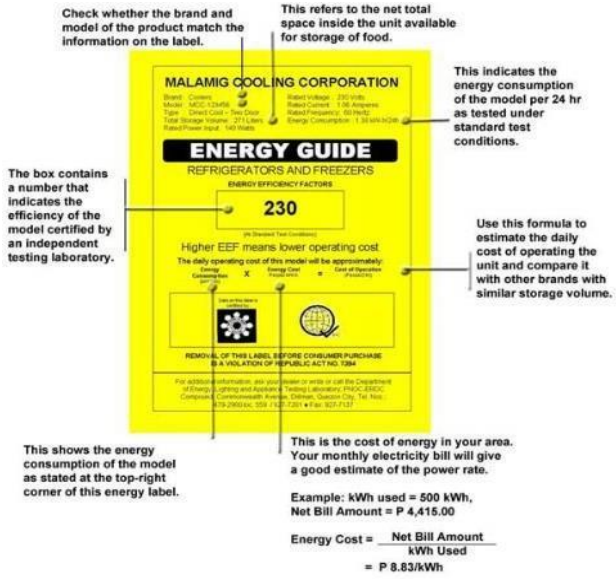
Malaysia

The Energy Commission of Malaysia through the Electricity Regulation makes it mandatory since 1994 for all manufacturers and importers of televisions, refrigerators, fans and air conditioners. The number of stars indicates energy efficiency from one to five.

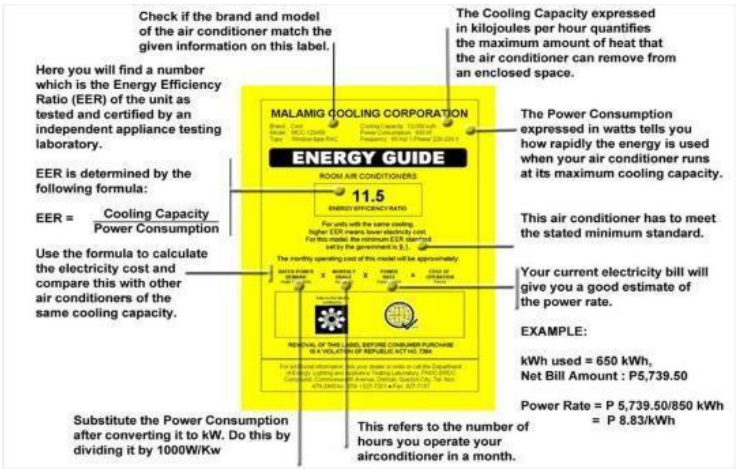
Malaysia energy efficiency label for television, refrigerator, domestic fan and air conditioner

Philippines

The Philippine government introduced the Philippines national standard (PNS) 396 for household appliances such as air conditioners, refrigerators, fluorescent lamps of which manufacturers, assemblers and importers are required to adhere and display energy labels for consumers to compare. It does not use star or tick like other labels.



Philippine energy efficiency label for air conditioners

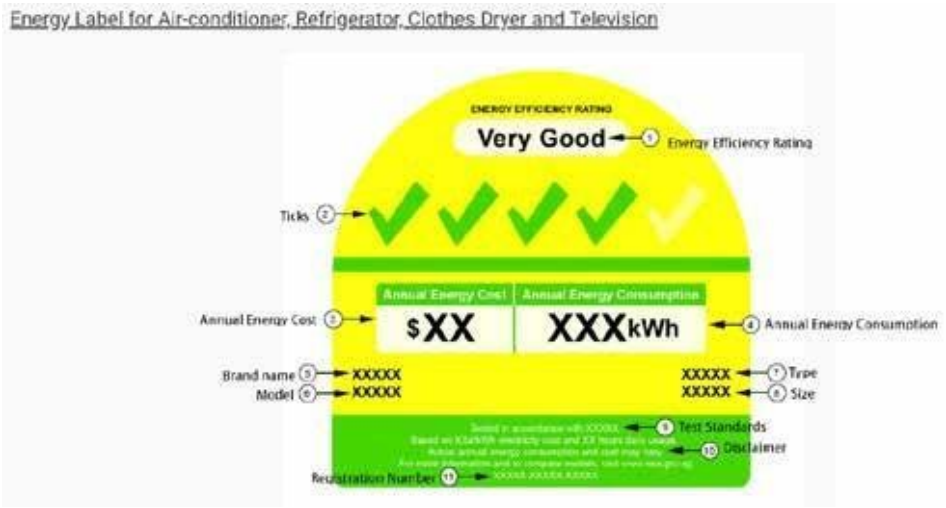


Philippine energy efficiency label for refrigerators

Philippine energy efficiency label for fluorescent lamps

Singapore

The National Environmental Agency of Singapore sets mandatory energy labelling for refrigerators, dryers, television, lamps and air conditioners to encourage more consumers to choose energy efficient products. It uses the tick system



Singapore energy efficiency label for air-conditioner, refrigerator, clothes dryer and television

Singapore energy efficiency label for lamps

Thailand

Energy efficiency labelling program by the Thailand Electricity Generating Authority, named Label No.5 now includes more than 272 million products being labelled. Consumers are informed that products with Label No.5 are highly efficient and therefore will reduce their electricity bills. Thailand also supplements the informational tool with tax incentives and subsidies for energy efficient products.

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

Vietnam

The National Energy Efficiency Program managed by the Ministry of Industry and Trade made energy efficiency labelling manadory for household appliances, office equipment, industrial equipment and road transport facilities. Vietnam's labels includes two parts which identifies the energy efficient product whilst the second is used for rating energy saving.

Figure 0.3: EE Label

According to the rating label, the products are ranked on a scale of 1 to 5 stars, where a rating of 5 stars is the highest efficiency level and 3 star is average. The label also shows consumers the average energy consumption per year (kWh/year) and the energy efficiency as shown in Fig. 3.2.

Vietnam energy efficiency label

There are 7 out of the 10 member states who have energy efficient labelling in place in terms of measurement and enforcing the standard. It is recommended that AMS could work together under the ASEAN Working Group on Climate Change (AWGCC) to include the three remaining countries to achieve energy intensity reduction in ASEAN by 30% by 2025 as well as all 10 countries adopting carbon footprint labels.

Consumption and lifestyle calculators

The Intergovernmental Panel on Climate Change (IPCC) Special Report on Global Warming of 1.5°C has reinforced the need to urgently and drastically reduce GHG emissions in order to achieve the 1.5°C target (IPCC 2018). Currently, the discussion on solutions to climate change is largely based on technology, despite the importance of behavioural change and systemic infrastructural changes (Creutzig et al. 2016; Akenji and Chen 2016). The IPCC Fifth Assessment Report (IPCC AR5) highlights the considerable influence of behaviour, lifestyles and culture, including consumption patterns and dietary changes, on emissions (IPCC 2014a). Shifting towards low-carbon lifestyles can have relatively quick impacts in consumption domains. (Lettenmeier, Laakso, and Toivio 2017)

Lifestyles of individuals consist of various elements of daily living including consumption relating to nutrition, housing, mobility, consumer goods, leisure, and services. The lifestyle carbon footprints which is GHG emissions directly emitted and indirectly induced from the final consumption of households, excluding those induced by government consumption and capital formation such as infrastructure illustrate the impact of household actions on climate change in the areas of changing meat and dairy consumption, fossil-fuel based energy, car use and

air travel. The three domains these footprints occur in – nutrition, housing, and mobility – tend to have the largest impact (approximately 75%) on total lifestyle carbon footprints.

The low carbon options with large emission reduction potentials include: car-free private travel and commuting, electric and hybrid cars, vehicle fuel efficiency improvement, ride sharing, living nearer workplaces and in smaller living spaces, renewable grid electricity and off-grid energy, heat pumps for temperature control, vegetarian-vegan diets and substitute dairy products and red meat. If these options are fully implemented as studies indicate, they could reduce the footprint of each domain by a few hundred kg to over a tonne annually. The impacts we can expect naturally vary according to what extent we adopt the options – if the level is high, they could greatly contribute to achieving the 2030 1.5 degree target.

It does not mean that individual households are solely responsible for reducing the footprints. The sheer magnitude of change required for a shift towards 1.5-degree lifestyles can only be achieved through a combination of system-wide changes and a groundswell of actions from individuals and households. The required levels of reductions imply a radical rethink of sustainability governance and need for new business models, both of which have essential roles in shifting infrastructure, the economic system, and in shaping consumer choice and patterns. A massive undertaking is thus needed to develop capacities of all stakeholders in society, both in developing and developed AMS not only to understand the need for radical transformation going forward, but also to imagine alternatives to current ways of meeting basic needs of its population, and to accept some difficult solutions that are inevitable if we are to become a sustainable society.

Consumption or lifestyle calculators can help people understand the impact of their lifestyles and action on the environment. Various lifestyle calculators are being developed online to enable monitoring of lifestyle areas and to keep global warming within the 1.5°C limit. However, there are no universal, commonly accepted calculators. Each calculator has strengths and limitations underscored by a lack of local data.

Calculators are one part of a bigger picture where complementary efforts are needed to support behaviour change. Transitioning to a more sustainable lifestyle requires an enabling environment supported by the government and businesses in which affordable, accessible, effective and desirable sustainable options are the norm and consumers have the knowledge and reliable information to make the right choice.

Consumer information campaigns including consumer education programmes

Studies have demonstrated significant relationship between awareness and consumer behavior. Consumer awareness should target different segments of the audience including current consumers, potential consumers, policy makers, community level influencers and all other persons or groups that shape opinion in a specific area.

Social behaviour change interventions are normally faced with three consumer awareness intervention need scenarios: one where there is a complete lack of awareness about a behavior service or product, another where the awareness level is inadequate and lastly, where the target audience has the wrong information. All the three scenarios need to be anticipated and addressed in the design of a consumer education strategy. To achieve this, a

reliable formative research should be conducted in a creative way to unearth deep seated target audience realities.

Consumer awareness hardly ever starts from scratch, in many cases, the target audience already has some level of knowledge about the focus product or behaviour and in a few cases they have all the required knowledge but still do not practice the behaviour. It is the objective of behaviour change interventions to activate existing knowledge and move the bearer from passive awareness to action, while disseminating new knowledge to those that do not have adequate awareness about a service, behaviour, or product. Luis et al. (2018) clustered consumers when directing campaigns at certain groups such as “alarmed” and “concerned activists” who were more interested in pro-environmental action while also identifying consumers largely unconcerned by climate change, the “disengaged” and “doubtful”. Rather than to direct informational campaigns effecting behaviour change at unconcerned consumers, momentum can easily be built where consumers are already knowledgeable of the problem and have a more positive attitude.

The design and implementation of effective consumer education strategies for essential services include:

i. **Relevance:** This is perhaps the most important consideration to make when designing a consumer education strategy. The message needs to be relevant to the target audience and their immediate environment, including peers. So should be the choice of communication channels, materials, connection points and even time of engagement.

ii. **Evidence:** Adopting an evidence-based approach is hugely beneficial to consumer education interventions. Reliable data facilitates decision making, especially around target setting, path definition, learning and assessment. Evidence-based approach calls for permanent insight gathering and interpretation but should not be complex and costly. Simple documentation of learnings from daily experiences come in handy, if properly planned and executed.

iii. **Stakeholder involvement:** Consumer behavior is not entirely intrinsic. Hence, it is influenced to a large extent by the environment and even more so by national, community and household level influencers, opinion shapers or stakeholders. Great attention should be dedicated to the identification of relevant stakeholders, influencers/opinion shapers, in order to engage them at the most appropriate stage, level and manner**.** The role of influencers in consumer education and behaviour change communication comes to the fore.

iv. **Channel integration:** Channel integration increases reach potential, message intensity and believability. Carefully design messages and activities such that they can be amplified via different channels. Go with a multi-channel approach and have a clear amplification plan. For example, always design on-ground activities in a way that they can be the content for both print and online media.

Consumer education has continued to evolve, more so in response to technologically driven trends. The next decade will see an increased shift towards remote word of mouth, especially in the developing world where smart phone penetration is incipient. Aware of this possibility, many organizations and programs have created digital transformation plans and are well on their way towards achievement of the same especially in light of COVID-19 pandemic. Social media

undoubtedly forms a major part of previous, current and future consumer education strategies, with benefits that range from general awareness to behavior adoption.

A perfect example of the place of social media in consumer education, covered in this issue, is the #TrashtagChallenge by environmental activist Younès Drici Tani, which went viral and catalysed worldwide behaviour change that encouraged thousands of young people to start clean up and waste collection operations in their neighbourhoods. To spur social media as a consumer education channel, influencers are oftentimes the intermediary between campaigns and consumers. Question is "Who is the best social influencer and, how relevant and committed will the selected social influencer be to a campaign?"

Sufficient literature exists on how to best choose a social influencer but not so much is documented on how to make the influencer an extension of the campaign in question. A non-fitting influencer may not make an extension of the campaign, no matter how much they are trained. This is due to the fact that a social influencer is made up of many moving parts including the individual, its followers in terms of numbers and demographics, interests, core content, activity types and levels and their perceptions, among other attributes. It is therefore imperative for campaigns to check the first box by making the best selection of an influencer given their prevailing circumstances. Yet, many times, this process is hardly given the attention it deserves. Instead, influencer decisions are based merely on the number of followers, selector's preference, cost and most importantly the influencer's involvement (or lack of it) with other campaigns or brands in the market.

Deliberate matching of influencers to the behaviour being promoted is often missing in many influencers decision processes. Doing so helps campaigns select the most relevant influencer; one that looks, acts and speaks the message being passed. This calls for a structured study of available influencers to identify areas of confluence between their attributes and those of the behaviour/brand in question. Granted, the higher the number of followers, the higher the reach but this does not necessarily mean that there will be a connection between the audience reached and the message or behaviour being promoted.

The reason campaigns hire influencers is mainly because influencers are better placed to be trusted and to amplify campaign messages, given their large number of aspirational followers. However, beyond selection of a relevant influencer, campaigns need to do more than an hour's briefing on the messaging or campaign attributes. They should take the influencers through a process that can be called 'influencing the influencer'. This process is quintessential in the sense that behaviour change promoters should be an extension of the campaign, they should 'feel' the behaviour and develop an emotional connection with the campaign before going out to speak for it.

Influencing the influencer involves a rapid, highly structured experiential engagement with a potential influencer, aimed at sharing the truth about the behaviour and evoking informed belief in the content to be promoted. This way, programs are assured that the most relevant influencer is amplifying the correct campaign message in a natural and passionate manner that leads to a deeper connection between the influencer, their followers and the behaviour in question. This works magic as it filters the hidden 'sponsored' perception that followers get

whenever influencers mention campaign names or messages in their engagements.

The approach to consumer education is not “one-size fits all” and is always tailored to the particular market or environment targetted. However, we are guided by these steps:

1. Market Intelligence/ Situational Analysis + Objective Setting;
2. Strategic/ Tactical planning (main approach, targeting, selection of tools, including messaging and channels);
3. Allocation of resources (Funds, People, and time);
4. Evaluation and Adaptation.

First, scoping activities need to be conducted to understand the consumer and the market. Right from the beginning, need to understand what problem is locally, the resultant challenges, and lifestyle decisions in relation to this. Through this process, clear objectives are developed in terms of potential reach and impact. Models used for this information gathering phase include on-the-ground focus group interviews, engagement of opinion leaders, and good background studies.

Second, based on the findings from the situational analysis, the most suitable consumer education strategy for the setting is developed. This includes creating messaging that will be useful and resonate locally, as well as choosing the channels with the most impactful reach.

The importance of the enabling environment for effective behaviour change must also be noted. This means the campaign must, right from the beginning, identify and engage the stakeholders who will facilitate this change. For example, in a campaign to encourage consumers to use solar based products, it is critical to engage the potential retail market that will stock the products, or potential financial institutions that will provide funding enabling purchase. With the messaging, language, and channels determined, a clear action plan is then developed.

The next step is to allocate adequate resources to the different elements of the plan. Consumer education is not cheap and its effects are only seen in the longer term, hence it requires know-how and resilience. It is crucial to make adequate financial resources available for the entire campaign. Identifying the right delivery agency is also key who have strong understanding of local rural behaviour change using experiential processes. These agencies are recruited at the beginning of the process so they are involved in the situational analysis, tool development, and planning.

This entire process is cyclical in nature, with regular reviews and monitoring conducted both internally, and with key stakeholders.

Three key take-aways when implementing consumer education campaigns are:

a. **Each market is different**. A consumer education campaign must be aligned to the market and the target consumer to be successful.
b. **Addressing the entire eco-system will support effective behaviour change**. For example, ensure necessary buy-in from opinion leaders, authorities and relevant partners. Ensure there is adequate supply of products and that suppliers are plugged into campaigns with their stocks. Engage authorities on issues of

concern regarding bad quality products, as if not addressed, they will cause loss of confidence.

c. **Be sensitive to the environment and deal with distracting "noise".** Where there is mixed messaging due to external circumstances, learn to modify or pause campaigns, for example, where there is political tension.

Ultimately, successful consumer education requires flexibility and relevance to the target consumer and market. It is also essential to note that behaviour change is not instantaneous; it requires patience and continuous effort to be impactful.

Example: Younès Drici Tani, environmental activist (social influencer)

A look back at the #TrashTagChallenge

In 2018, environmental activist Younès Drici Tani published on social media an astonishing picture of a clean-up operation in an Algerian countryside. He followed the #TrashTagChallenge, a hashtag and challenge launched a few years earlier without much echo. The challenge is simple: find a polluted or waste-covered place, clean it up, and post on social networks a picture of the place before and after the operation. Younès Drici Tani's picture quickly travelled around the world, demonstrating that a simple action can have an almost immediate impact on its direct environment. The #TrashtagChallenge went viral and for several months, thousands of photos of rivers, beaches, fields and forests cleaned all over the world bloomed on social networks. The phenomenon is still going on today and continues to change behaviours in favour of waste collection and the preservation of nature.

Social influence through digital tools such as social media, games, web portals

Web portals, social media such as Facebook, You tube, games are great at engaging people for long periods of time, getting them involved, and influencing people's behaviour through their very design. Yet this potential has (so far) been underexplored in application to other kinds of situations outside 'recreation'. There are a number of techniques for influencing user behaviour that can be derived from games and other 'playful' interactions, ranging from basic social psychology mechanisms such as goal setting via challenges & targets, to successful completion and rewards, to common game elements such as scores, levels and collections.

Strengths and limitations of information tools

Limitation:

- ✔ Information tools only works effectively if the society is already aware of environmental issues and there is clear demand for cleaner environment
- ✔ Economic factors such as price pull consumers and other stakeholders in the opposite direction of sustainability and mere eco labels cannot be relied upon to bring change in behaviour

- ✔ Information tools can only be regarded as supplement to other tools unless in situations of energy efficiency where consumers have economic incentive to buy more efficient products.

Strengths:

- ✔ Low implementation costs

In conclusion, for consumers to positively change, in addition to the information they get, they should be provided with clear directions, tools with which they can take action to ensure the sustainable alternatives they choose are affordable, accessible and available to meet their needs. Information tools can only be regarded as supplemental to other regulatory and market based tools as price usually pull consumers in the opposite direction of sustainability. Consumers are more inclined to purchase energy efficient products compared to eco labels purely based on economic advantages and there is no trade-off between sustainability and economic considerations.

3.6 Selecting appropriate tools and instruments for implementation of Sustainable Consumption policies

There are 3 main categories of policy instruments used by policy makers

- ❖ **Legal or regulatory instruments:** Governed by a legal structure and a system of sanctions (legally binding**) e.g.** laws, regulations, mandatory standards, prohibitions or bans where highest level of compliance is expected
- ❖ **Economic or market based instruments:** include economic incentives and disincentives which aim at bringing about an intended behaviour or outcome (potentially legally binding) **e.g.** Grants, subsidies, taxes, deposit refund system etc.
- ❖ **Information based voluntary information:** measures or initiatives aimed at influencing individuals and organizations indirectly by means of information, awareness raising. **(this portion was discussed extensively above in Part 3.5)**

Once policy makers design and the roll out the national SC policy framework as discussed in Module 2, selecting an appropriate tool or mix of tools in the implementation process need to consider the following:

- ➢ Is there a need for additional information to be imparted for the key policy officials from various government agencies who will be engaged in policy implementation?
- ➢ Are there any other stakeholders who will be involved or affected by the SC policy implementation who will need additional information? How will this information be generated and communicated to the stakeholders? There must be one communication strategy that integrates multiple tasks

- Are all resources in place including legal and administrative requirements that will be needed for implementation?
- With regards to enforcement, are all resources and responsibilities in place?
- Is a monitoring and evaluation mechanism in place that defines the process of regularly capturing data of the tool or mix of tools being implemented?

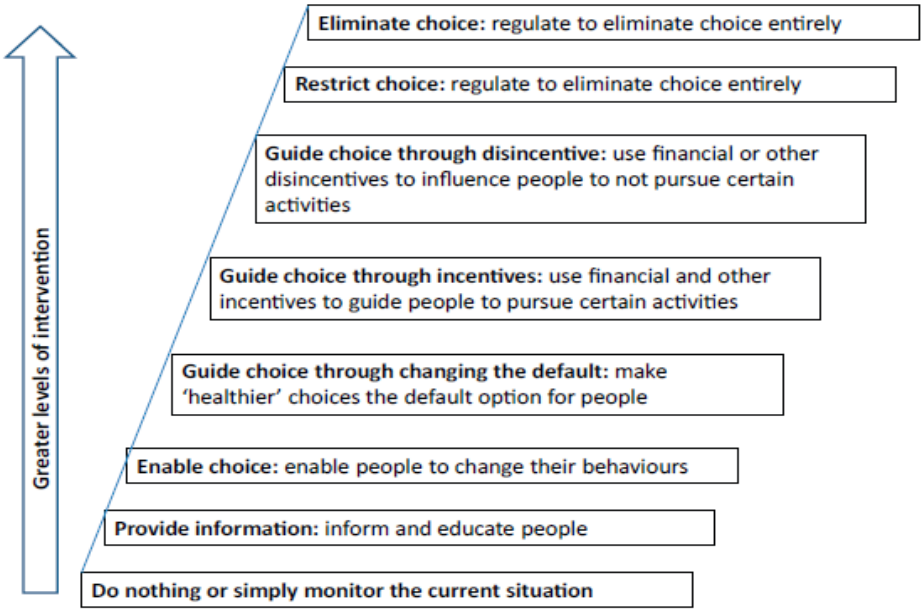
All the above elements will be of particular importance in the SC policy domain due to the cross cutting nature of SC goals.

At the implementation stage of selecting interventions or instruments to change consumer behaviour, it is crucial to know which behaviour and behaviour factors/ barriers should be addressed to achieve this change. The design of the intervention should persuade targeted consumers to choose a pro- environmental behaviour based on the targeted beneficiaries and criteria

Criteria	This includes
Effectiveness criteria: determining the likelihood of the SCP policy instrument achieving goals in the absence of constraints.	Information requirements Dependability Corrective versus antidotal focus Systemic potential Flexibility in space and time Efficiency Complexity and cross-sectoral influence
Implementation criteria: determining the likelihood of the SCP policy instrument being successfully advocated and implemented.	Equity implications Cost Social and political feasibility Institutional feasibility Monitoring requirements Enforcement/avoidability Communicability

Selection criteria for policy instruments - UNEP Switch Asia, SCP Handbook for Policy Makers

Once the action of behaviour change is identified, the next question is what intervention to pursue. The figure below shows the Intervention ladder published in a report by the Nuffield Council on Bioethics (2007). The model suggests that policy makers have a range of different options at their disposal, ranging from not doing anything to becoming increasingly paternalistic the higher one moves up the ladder. At the same time, each rung up the ladder requires more robust justification and evidence as well as funds to implement.



- **Economic/market-based tools – ENCOURAGE positive behaviours through incentives/disincentives**

Economic instruments that impact on price of product, quality and income are key factors when directly influencing consumers' decision making process. It can be used to incentivise businesses and consumers towards sustainable options such as subsidies and tax reductions, green payment/investment schemes or disincentivise by imposing levies, charges by integrating costs of pollution into price of products.

Currently, consumers do not face the full cost of their consumption. Prices of products and services, set by the market does not take into account the environmental and social cost which leads to over consumption, increased pollution and inefficient use of resources. Economic tools can be used to make environmentally friendlier products more competitive and affordable for consumers as well as make environmental hazardous products more expensive to discourage consumption. So, governments, through the implementation of economic tools highlighted below can promote sustainable development in the long term for the nation as well as expand the consumption opportunities for the poor consumers through the following policy approaches:

a) Protecting the environment and health and preventing exploitation of natural resources

Polluters pay principle for those who consume more natural resources and cause more pollution is an effective way of addressing negative effects of consumption on environment.

Policy tools that can be applied:

i. **Environmental tax** on **extraction of natural resources** or purchase of products made from such resources as well as **emission of pollutants** which would goes towards increasing the price of product. At the same time, government can also provide incentives for substitution of sustainable alternatives. ***Example:*** Vietnam has embraced environmental taxes which includes fossil fuels, plastic bags, HCFC, agrochemicals. In order to ensure political and public acceptance, the tax was increased incrementally.

ii. **Full cost pricing and use charges** for basic necessities such as water, electricity and waste management which is under-priced by local authorities to ensure vulnerable and poor households are able to still access these resources for their basic needs. The policy option of block tariff allows households to pay little if they use small amounts. For those who can afford, this leads to overconsumption. If prices of delivering such commodities are **increased to reflect actual cost**, this would support **investment in resource saving** appliances.

    Congestion charges as use charges is another tool introduced by many in even AMS to regulate the number of private cars in the city limits during peak hours that has resulted in improved air quality and less time spent in traffic gridlock for example in Singapore, Thailand and Indonesia

iii. **Elimination of subsidies that harm the environment**. Governments usually provide **subsidies** for basic necessities such as water, electricity, fuel as well as energy efficient products with the aim of supporting poor households to access these services. However, as it is applied across the board, the middle-class consumers also benefit from these subsidies that encourage over consumption. Governments such as Indonesia and has successfully reduced fuel subsidies with more **targeted financial support** policy for the poor.

iv. **Deposit refund scheme.** Deposit refund scheme means that consumers pay an additional fee at the time of purchase of products such as batteries, tyres, bottles, cans, electronic products which is subsequently refunded once the used product is returned to the designated collection point for waste collection at the end of life phase. This is a highly effective tool but expensive in terms of administration costs.

b) Providing consumption opportunities for all by reducing inequalities

In most of the countries, there is unequal consumption patterns between the wealthier consumers compared to poorer household and the disparity is growing wider in terms of education, safety and health. Appropriate policy tools that can be used are as follows:

i. **Progressive taxation.** A progressive taxation system redistributes wealth from the rich to the poor through incomes as well as housing and luxury products. This ensures that the opportunity for consumption is shared by all income groups which has reported higher levels of life-satisfaction.

ii. **Public goods and services – reduce the need to own.** Public hospitals and public schools provide free education and free health care as a way of overcoming the inequalities amongst the population. These also include other public places

such as public library, public transportation that reduces the need for individual consumption, i.e., to own products and services such as owning books and private cars. It is sustainable and beneficial to all income groups in terms of sharing/ borrowing resources rather than owning them.

Strengths and limitations of economic tools

Limitation:

- ✔ Require adequate institutions to design, implement and enforce economic tools
- ✔ Trade off by households between cost of environmental measures and sacrificing come amount of well-being in order to adjust to sustainable consumption

Strengths:

- ✔ Able to provide incentives for innovation, improvement and cost effectiveness
- ✔ Dynamic effect of providing continuous incentives

Economic tools of incentives and disincentives can be combined to encourage consumers to buy greener and sustainable products and additional fees imposed on unsustainable options. Economic instruments also require adequate institutions to ensure taxes and charges are being collected. The effect of economic tools on environmental quality is not as straightforward as regulatory tools. Changing conditions, increased income affects ability to pay and consumption levels. An effective monitoring mechanism must be put in place to regularly assess the effect of the tools as costs of environmental measures can have regressive effects on households.

- **Regulatory tools and standards – ENCOURAGE and ENABLE**

Regulatory instruments require evidence- based enforcement which are used to mandate or prohibit specific behaviour of consumers. It is also known as “command and control instruments”.

- These also includes bans/restrictions, technical/emission standards and environmental quality standards.

Restrictions/ bans are direct limitation of undesirable behaviour or technology or restriction on the sale or use of products that has negative health and environment impact.

Example*: Ban on dumping end of life vehicles in nature*

Environmental quality standards specifies a minimum desired level of environmental quality or a maximum level of pollution.

Example: *Quality standards for air*

In order to be effective, regulatory tools need to be supported by monitoring mechanism coupled with evaluation to see the impact of compliance. Clear lines of responsibilities must also be spelt out in terms of enforcement as well as sanctions in cases of noncompliance.

Regulatory tools can be implemented either as a standalone or a mix, but usually policies such as SC which cuts across various sectors would need a set of regulations to be put in place which adds costs to policy implementation.

Example: Set of tools used to effectively regulate smoking

Objective: In order to reduce consumption of tobacco products by young people by limiting its accessibility and affordability.

Relevant tools:

1. *restrict advertising of tobacco-based products*
2. *restrict the number of outlets selling tobacco products through licensing*
3. *ban sale of products to children*
4. *ban smoking in public buildings and restaurants*
5. *mandatory to put warning labels on packaging of tobacco products*

Strengths and limitations of regulatory tools

Limitation:

- ✔ Businesses are not favourable towards “command and control“ regulation
- ✔ High compliance and enforcement costs
- ✔ Rules and regulations are static and provide no incentives for innovation

Strengths:

- ✔ Directly address the source of the problem/ pollution
- ✔ Clear setting of target/goal

It is highly recommended that regulatory tool is used with a mix of other tools if want to remain flexible and have a greater compliance/ outreach

- **New behavioural tools with behavioural insights such as nudging, choice editing & creative practice-based approach**

There is evidence that despite efforts to raise awareness on sustainable consumption, an informed consumer has limited power within a cultural and economic system to make the sustainable choice.

Governments have begun to use innovative approaches by shaping values that influence consumer behaviour as well as redesigning the systems that shape consumption patterns to make it easier for consumers to make the right choice and guide people towards sustainable options.

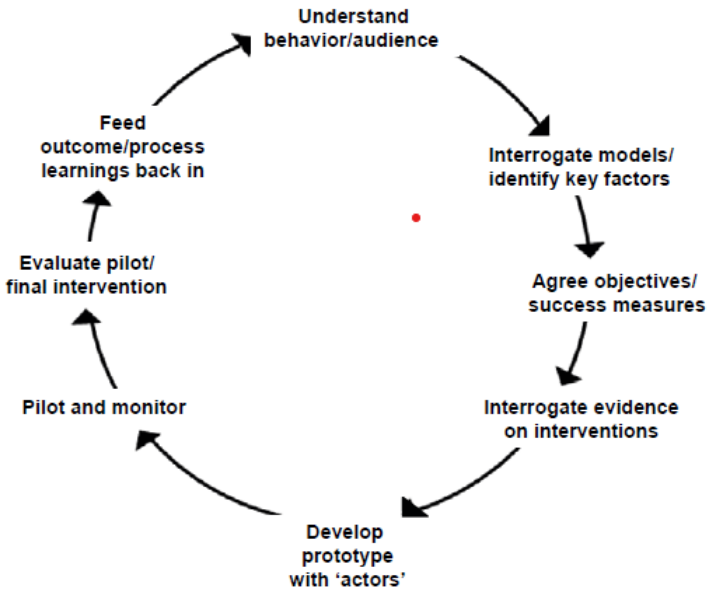
Choice editing is removing bad choices of products from the market by implementing a minimum standard of which any products falling below are not allowed in the market where else nudging is guiding consumers' behaviour in a desirable direction and this outcome becomes the easiest and most attractive option.

Values of society are changing along economic and social shifts as evident in the future growth of ASEAN where young consumers who are digitally inclined will shop online rather than visit brick and mortar stores. In order to harness and secure their sustainable consumer behaviour in the near future, a positive social architecture should be developed and put in place.

To reflect the interactions between people and systems change, policy tools should consider the following in its design:

- ***Emphasis is not placed solely on the consumer***
- ***Sustainable consumption is approached by modifying the design logic of products and services and the systems through which they are accessed***
- ***Focus on targeted changes that yield large rewards***
- ***Addresses people as social beings that influence each other in society***

In designing policy interventions with behavioural insights, **the Darnton 2008 nine principle framework** can be used to develop 'nudging' as a practical application which draws from behaviour modelling and prescribes a cyclical process in policy development and application. The circle represents 'doing by learning' where interventions are constantly revised as a result of monitoring and evaluation.



The Darnton framework involves the following 9 steps:

1. *Identify the target groups and the target behaviour.* If behaviour is too complex, it should be broken into simple behaviours or elements.
2. *Identify relevant behaviour models*, both individual and societal and a list of most influencing factors. This may involve literature review and consultation with stakeholders
3. *Select key influencing factors* and use them to develop objectives for intervention strategy /policy option
4. *Identify effective intervention techniques* that have worked and were effective in previous interventions that targeted specific influencing factors
5. *Engage target audience for the intervention* in better understanding their behaviour and the influencing factors from target audience perspective.
6. *Develop a prototype intervention* and evaluate against relevant policy frameworks and assessment tools
7. *Pilot the intervention* and *monitor the results*
8. *Evaluate impacts and processes* against objectives developed.
9. *Feedback from the lessons learned* in order to deepen the understanding of the intervention and target behaviour.

In order to evaluate which policy interventions are most effective, efficient and accepted by the public, a range of research methods can be used. Their choice depends on the purpose of the policy intervention, target audience and the context.

There are 4 types of methods often used to test behavioural change and to collect insights about policy interventions:

- **Experiments**
- **Randomised controlled trials**
- **Surveys**
- **Qualitative research**

Type of study	Pros	Cons	Minimum time horizon needed
Experiments	Can establish causality, not only correlation Can provide statistically significant results from small sample	Representativeness not feasible Laboratory is unrealistic and artificial environment	6 months
Randomized control trials	Core findings can apply to another context Can establish causality, not only correlation Allow for observations in natural settings	Very expensive to run and replicate in order to validate the results Results from one location not generalisable to another	12 months

Type of study	Pros	Cons	Minimum time horizon needed
Surveys	Representativeness is not feasible Relatively cost effective	Respondents are limited by pre-established options to questions Respondents might not be truthful Only gather data on self-reported behaviour Cannot establish causality only correlations	4 months
Qualitative research methods	Provide richer, more nuanced data about behaviour Often take place in realistic setting Participants are given freedom to express themselves, with limited intervention by the researcher.	Data collected is generally not representative of the larger population Usually have small samples due to time and cost involved	4 months

Summary of types of behavioural studies (van Bavel, et al., 2013)

In summary, qualitative methods are best suited for uncovering the diverse representations and behavioural expressions as well as factors affecting them, while quantitative methods are best suited if the goal is to establish the prevalence of certain behaviours among the population.

Traditional policy initiatives to reduce consumption and increase sustainable consumption has typically revolved around “nudge” campaigns such as voluntary eco-labelling mechanisms to help persuade consumers to change behaviour which will then presumably persuade industry to produce more sustainable products (Environmental Audit Committee 2019; Wolff and Schönherr 2011). However, conventional, information/cognitive-based campaigns have largely been unsuccessful (Goworek et al. 2012; Markkula and Moisander 2012; Ölander and Thøgersen 2014; Welch 2017) and widely criticized for being too timid and lacking in ambition with the result that the general public “has remained largely disengaged” from government sustainability campaigns (Business Green 2011; Cooper 2000, p. 49; Villa Todeschini et al. 2017).

Consequently, calls for more innovative policy solutions in motivating consumers to be more sustainable (i.e., reduce consumption and engage in more re-use, repair, and recycling of apparel) have been made (Boström and Micheletti 2016; Hellmann and Luedicke 2018; Thøgersen and Schrader 2012). In response to such calls, there are now initiatives to move away from conventional, awareness-raising approaches towards sustainable behaviour change and instead explore the feasibility of a social practice-based approach to influence

behaviour change such as creative, practice-based methods, for example upcycling workshops and contemplative theatre, especially in the area of influencing sustainable clothing/ fashion consumption. Following Harris et al. (2016, p. 311), who suggest a "combination of interventions is needed" to encourage sustainability action, it is arguable that a greater understanding of clothing consumption discourses and the role of social practice-based mechanisms as behaviour change tool sets can contribute to policymaking by aiding the effective design of pioneering initiatives to encourage enhanced sustainable behaviour change.

Upcycling is described as being different to recycling as materials and components of unwanted goods are not just re-used but are incorporated into new designs which go beyond resolving textile waste management challenges in that it is essentially a new way of thinking as well as a new way of working (Digital Universe 2011). The practice of upcycling helps to create economic benefits, environmental benefits as well as psychological and social well-being in the form of learning experiences (i.e., understandings, procedures), and feelings of empowerment and relaxation (i.e., engagements) (Bridgens et al. 2018; Sung et al. 2015). However, the lack of textile skills and time is regularly identified as a strong barrier to carrying out creative activities (Fletcher 2008; Harris et al. 2016). Bramston and Maycroft (2013) conclude that interactive upcycling workshops with focus groups enables consumers to better understand objects, cultures, and experiences when creating new products whilst simultaneously maintaining the attachment value of the original product. Although consumers increasingly recognize the value of keeping clothes for longer (Harris et al. 2016), more needs to be done to ensure less of a gap between an individual's knowledge, action and habits around ways to upcycle and their purchase behaviour when it comes to sustainable clothing practices (Cassidy and Han 2017; WRAP 2017). A social practice perspective is often proposed as a way to resolve attitude-behaviour gaps (Welch 2017), and therefore, it may be constructive to combine creative approaches such as upcycling with more collaborative forms such as theatre performances that seek to highlight for example the life cycle of a tee shirt (from the cotton plant to the landfill once it is disposed).

These are possible new types of approaches and interventions that could be used to change behaviour of consumers. Any intervention tool to be implemented must have this 4-pronged strategy:

1. ***Make the sustainable choice the default option.***

   Example: the default action in most stores is that consumers receive disposal plastic bags for their products purchased where else if a new default is where retailers are required to charge consumers if they want a plastic disposable bag, studies have shown that use of plastic bags have reduced. People are no longer passive in receiving a plastic bag but become active in now deciding if one wants to purchase a plastic disposable bag or bring your own recycled bag. Most AMS are introducing a ban on plastic bags.

2. ***Provide actionable information and tools.***

   Example: a) to reduce obesity and non-communicable diseases, it is not enough for governments just to run an information public campaign to give statistics and images

but a more systemic approach must be taken such as ensuring healthier food options are available and easily accessible. Also other “non-eco” labels such as the traffic light labelling system of food high in fat, sugar and salt or a warning symbol can be used to identify the unsustainable options.

b) to reduce high electricity bill, in addition to running public information campaigns on energy conservation, the installation and use of smart meters and smart billing enables consumers now to have real time home energy reports about their energy consumption have positive effect on consumers in conserving energy. Malaysia is in the midst of implementing smart meters and should be monitored for results and exemplification in the near future.

3. Reward, highlight and incentivise sustainable behaviour

Example: the use of role models who are respected figures in society for consumers to emulate should be highlighted by governments to citizens as behaving sustainably and is exemplary; naming and shaming of ‘bad’ products or company where in Asia, reputation is something the society cares about is another way of creating compliance without enforcement; government itself serving as example by practising sustainable public procurement practices.

Nudging people into sustainable behaviour is most effective tool only if it is used in combination with other forms of government regulation, economic incentives etc.

4. Encourage collaborative/community participation rather than individuals

Example: Policies that encourage community efforts such as a community-based kitchen garden with composting; car sharing (instead of owning a car, it allows people to rent from each other), car-pooling (share rides in the same car if going in similar route/direction). Such schemes are known as collaborative consumption, sharing economy, peer economy etc., where people are less interested in the product itself but more on the product’s function. For example, people want mobility but necessarily cars.

As life in cities become more demanding, collaborative consumption allows people to get access and function without ownership, allowing for a more sustainable lifestyles whilst making social connections and building relations with each other. Governments should institutionalize bartering systems and encourage second-hand goods stores as well as easily accessible repair centres that encourages reusing and upcycling products.

3.7 Best practices on promoting SC

Businesses can play an important role in promoting sustainable consumption to consumers through compliance with the UNEP Guidelines for businesses on Product Sustainability Information. These principles describe the fundamental criteria on which sustainability claims must be based. The Guidelines request businesses, irrespective of their size or sector to comply with all of the fundamental principles, which seek to build and reinforce each other,

and lay the foundations for the subsequent 'aspirational principles'. Under each principle, guiding questions and examples are provided to help businesses understand and apply the principles' requirements, which focuses on **5 Fundamental elements/Principles**:

- ***Reliability*** - Build your claims on a reliable basis
  - The sustainability claim must be **accurate**.
  - It must be based on a generally **accepted** methodology in the relevant **scientific** field(s).
  - Methods and standards must be applied in a way that is **consistent** with the sustainability claim.
  - The sustainability claim must be **robust.**
  - If the sustainability claim is based on an expected or assumed change in consumer behaviour, the information provider **must** be able to prove that **its assumptions on impact are substantiated.**
  - The sources of information and data **must** be t**rustworthy**. Trustworthiness can be enhanced by asking an external body to provide its assurance on the information and data, to different levels of reliability. When third party verification is applied, the verifying organisation **must** be **independent** and **competent**. Third party verification is not a requirement of the Guidelines but is considered the most reliable option.

    <u>Guiding questions</u>:

    - Are selected methods, standards and data endorsed or applied by governments, NGOs or competitors; or provided or backed by reliable scientific institutions?
    - Do the aspects assessed match the aspects that are communicated? Can you be sure that any uncertainties relating to supporting information do not jeopardise the basis of the sustainability claim? Could others uncover uncertainties or exclusions, therefore damaging the claim and your reputation? Would other stakeholders be able to support the sustainability claim? Is the information or data verified and was it verified by a competent body? Is the quantity and quality of data sufficient? Are data sources trusted by relevant stakeholders?
    - Is the verifier providing a truly independent, objective view or are their views somehow influenced by links to the provider of information. Is the verifying organisation accredited to recognised standards or codes of practice? Does the verifier has proven experience in providing assurance in the field of product sustainability?

      *Has consumer testing shown 'improved' (desired effect) behaviour (e.g. higher recycling rates, more efficient product use, purchase of sustainable product)? Do comparable cases, scientific studies or consumer surveys provide evidence for the assumed behaviour change?

- ***Relevance*** - Talk about major improvements- in areas that happen
  - The sustainability claim **must** provide information on the relevant aspects (e.g. processes, materials used in production; or impacts linked to the intended use of the product) which, according to the selected scope of the underlying study and the applied methods, **contribute significantly** to the sustainability profile of the product, i.e. the sustainability **hotspots**. At the same time, the claim **must not enhance one aspect where the product is performing well (or has improved) while masking other aspects where the product is performing poorly (or has deteriorated).**
  - The claim **must** refer to a **genuine and measurable benefit** of the product and **must exceed what is already required by law**

    Guiding questions:

    - Is the subject of the claim a major driver of the sustainability performance of the product? Is this valid for the technology and the region where the product is produced and used? Do other stakeholders share the same view? Is the assessment complete or have relevant aspects been excluded?
    - Does the product exceed regulatory requirements of the production countries and (where required) also of the consumption countries? Is the product performing better than the market average?

- ***Clarity*** - Make the information useful for the consumer. There **must** be a **direct link** between the sustainability claim and the product to avoid generalization of the claim.
  - The consumer **must** be able to **differentiate between product and brand information**.
  - The information (visual, text-based or via design) provided to the consumer **must** be **explicit** and **easy to understand** and must be **complemented,** if otherwise misleading, with an **explanatory statement**
  - The **limits** of the sustainability claim must be **clearly stated** and **must not** be **misleading** or **ambiguous.** A **single-issue criteria must not** be **used to claim that the entire product is 'sustainable'** when other issues may make it otherwise. For instance, a recycled, resource-, or energy-efficient product cannot be claimed as overall 'sustainable' if workers in the value chain are not guaranteed fair wages or conditions; thus, precise language that is clear on the limits of the claim must be used.

    Guiding questions:

- Is the connection between the claim and product clear or might consumers think that the claim is also valid for similar/all products from the same brand?
- Are all visual methods of communication (e.g. symbols, pictograms) clear and unambiguous? Is information clear and concise or too detailed and confusing? Is plain, non-technical language used for text-based information? Are additional details available elsewhere (e.g. online) to support a better understanding of the claim (more detailed, technical information can be made available here for those that seek it; see also Principle 5: Accessibility)?
- For quantitative information: Is context or a reference system provided, so consumers can better understand the impact of their consumption (e.g. understand higher and lower carbon footprints)?
- Is the claim masking negative impacts that are or could be known by the provider of information? Are limits of the claim clearly stated?
- Is imagery used in a way that is not likely to be misinterpreted?

- ***Transparency -*** Satisfy the consumer's appetite for information and do not hide

  - It **must** be clear **how, and by whom**, the sustainability claim was developed; and who provided the evidence behind the claim, and how (e.g. through a scientific study, multistakeholder process, company, etc.).
  - The consumer **must be able to trace** how the sustainability claim **was generated**, at least the most impactful burdens of the life cycle where improvements have been made must be available. Selected **methods, data sources, assumptions or professional judgements, value choices** (e.g. for aggregation of data) must be **available / published**. This is particularly important for single-score claims to show how the score was reached.
  - Information subject to confidentiality **must** be **accessible to competent bodies** that can verify the claim, noting that information on "health and environment" should not be considered confidential.

  <u>Guiding questions</u>:

  - Is the claim self-declared or verified by a competent, independent third party? If the claim is verified, is the certificate number clearly provided/available? Is a list of the bodies/ stakeholders involved in the claim development process available?
  - Are consumers and/or competent bodies able to assess the quality of information, and how/if it was verified?
  - Can the underlying information be made available to the public or at least to a competent body?

- ***Accessibility -*** Let the information get to the consumer, not the other way around.

- The required information **must** be clearly **visible.**
- The information **must** be readily **accessible at the time and location the consumer needs it**, during research into buying options, the point of purchase or use (as relevant).

Guiding Questions:

- Can consumers easily find the sustainability information? Are they able to come across or find the information using customary means of communication in their region (on-pack and point of sale, leaflets, websites, social media…)?
- Is the basic information as close to the product as possible and accessible without the help of external devices (e.g. scanners, websites; though these may help later)? Are there barriers (intended or unintended) that impair access to the information (e.g. small font size, technical language or data)? Are consumers able to dive deeper and evaluate the level of transparency (principle 4) and reliability (principle 1) of the information (e.g. web-based information)?

ASPIRATIONAL PRINCIPLES

Providing product sustainability information to consumers is a dynamic process, in which consumers should be engaged. Not only should information be provided to them, but they should be consulted and interacted with, to better understand their information needs. These aspirational principles are for information providers to go beyond the fundamental principles and to continuously improve the ways in which they communicate to consumers. They are not compulsory to implement (when following the Guidelines), but all users should ultimately aspire to do so. The fundamental principles must not be abandoned or replaced by the aspirational principles.

- ***3 Dimensions of Sustainability*** – Show the complete picture of sustainability
  - **All three dimensions of sustainability should be taken into account** for the provision of information, albeit with a particular focus on the most relevant aspects/hotspots for a given product
  - A combination of **complementary certification schemes should be taken into consideration.**
  - If a **single-score is used to express the overall sustainability performance, references to each of the dimensions should be further specified** (e.g. emissions reductions, energy or water use, fair remuneration to workers) according to the fundamental principles (e.g. relevance, transparency), to justify the score and show that no burden-shifting has occurred.

Guiding Questions

- Do you communicate aspects of more than one dimension through your claim?
- When claiming 'overall sustainability' of a product, do you address hotspots in all sustainability dimensions, so that burden shifting is avoided? Do consumers receive sufficient information that enables them to understand why the product is sustainable (i.e. covering all dimensions)?
- Is a combination of complementary claims feasible – i.e. do they fit together (e.g. in terms of scope) and support consumers' understanding of the claim?

➢ ***Behaviour change and longer term impacts*** - From information to action

- The sustainability claim **should** go beyond simply informing consumers, to **actively encouraging** them to adopt more **sustainable consumption patterns**. A claim **should define what the consumer can do to reduce negative sustainability impacts** (through purchase, use, re-use or disposal).
- For the change of behaviour to be sustained and not only be adopted short-term or for a one-time decision, **a longer-term relationship should be built with the consumer** to embed new consumption behaviour. The success and impact **of behaviour change should be monitored**, and the **product sustainability information should be adapted** according to the results. The sustainability information **should support the education of consumers for them to better understand and act on sustainability issues.**

Guiding Questions:

- Were consumer interests identified beforehand? Are topics that matter to consumers addressed?
- Is concise guidance provided to consumers so they know how they can take action? Are they merely informed how, or are they encouraged to actively do so?
- Do default options (e.g. pre-set energy saving mode for appliances) support sustainable behaviour?
- Are potential/ actual impacts of behaviour change communicated? Are they tangible? Do consumers receive feedback on the positive impact that results from their changed behaviour? (e.g. statistics on emissions reductions because of using the product in a certain way)
- Are behaviour changes monitored? Are changes in the way the sustainability information is provided planned accordingly?
- Is a long-term communication relationship built or planned with the consumer?
- Do you embed your product sustainability information into a wider context? And does this information help consumers to better understand their role in reducing potential negative impacts?

➢ ***Multi-channel and Innovative approach –*** Engage with consumers in diverse ways

- The sustainability claim **should** be provided using a **multi-media approach**, addressing consumers through different and innovative communication channels in different situations. The information **should** be **complementary** and not redundant, and **should not overload** the consumer. And, where feasible, the information **should be entertaining** to raise attention.

Guiding Questions:

- Do consumers have the possibility to interact (with each other or the information provider)?
- Are different information channels provided, that address different user groups? Can the channels be used differently to access the various consumer types to reinforce, repeat and amplify the product sustainability information and support behaviour change? Is the consumer also addressed in a humorous or entertaining way rather than just being educated?

➢ ***Collaboration -*** Work with others to increase acceptance and credibility

- **Multi-stakeholder consultations should be an integral part** of the development of sustainability information. The development process **should** be **open and inclusive**. The **opportunities for stakeholder involvement should be clearly communicated.**

- In particular, consumers themselves **should be invited and encouraged to feel part of a joint effort.** The product sustainability information (language, pictures, etc.) **should be inclusive**.
- **Stakeholder engagement should be continued after the sustainability claim has been issued** to enhance evaluation and adaptive measures as required. **Joint communication channels should be used** to help build trust, consistency and understanding of the claim.

Guiding Questions:

- Have you considered existing voluntary sustainability standards (use for example ITC's Standards Map to review criteria and potential application to your needs)?
- Are relevant stakeholders (partners) identified, contacted and involved in evidence gathering and development of the sustainability information? Does this include experts in the field and users (consumers) of the product? Where relevant, has a good mix of private, public and civil society stakeholders been approached?
- Is information on how to join or follow processes related to the claim development easily accessible? Are participation options clearly communicated? Are the barriers for involvement low?
- Is a follow-up process with the stakeholder group in place to assess the claim's effectiveness?
- Is the sustainability information (language, pictures, etc.) inclusive so that the consumer feels part of a group that is changing behaviour?

➢ ***Comparability -*** Help consumers choose between similar products

- Information providers **should carefully assess whether they are able to issue a claim that has the methodological, evidential and legal basis** to allow consumers to directly compare one product to a similar product, or the market average/leader. They **should also consider whether a product comparison helps consumers to make a more sustainable choice; and/or participate in approaches to define and develop comparability criteria,** led by government or third parties, including industry networks. Comparisons **should be based** on **quantitative or semi-quantitative data and adhere to benchmarks** and **methodologies provided by governments** or **third party stakeholders**.
- In any case, more specific guidance must be followed, which goes beyond the scope of these Guidelines.

Guiding Questions:

- Are there government or third-party led initiatives in which you can participate and on which you can base your product comparison?

- Does the selected methodology underlying the claim explicitly cover guidance to product comparisons? Are those guidance principles entirely fulfilled and backed up by a review of a third party (e.g. a critical review)? Is the entire life cycle of the product considered and important stages such as product use and disposal not omitted?

In addition to fulfilling the conditions of the principles, businesses can also influence consumer behaviour in the long-term post pandemic new normal era by:

- **Analyse consumer beliefs and behaviours** –Qualitative exploratory research is a precursor and sometimes substitute to quantitative research. Digital data gathering and monitoring techniques such as mobile diaries, social media-listening and AI driven message boards will be tools that help businesses understand emerging behaviours and contextual cues and get a picture of the changing consumer decision journey during the pandemic and post in the new normal, for example a smaller pack size to avoid sharing, activewear versus office wear.
- **Reinforce positive new beliefs** – Many consumers who went 'digital' during the pandemic when carrying out grocery shopping, exercising and socializing are delighted by their new experiences and are willing to continue the habit.
- **Shape emerging habits with new offerings** – Businesses can nudge consumers towards new habits through product innovation as the pandemic has spurred consumers to be more health conscious and increase their intake of supplements. It is good to align its innovation priorities with consumers' emerging concern about health and well ness.
- **Sustain new habits using contextual cues –** A cue can be a particular task, time of day or object placement. During the pandemic, more consumers are keeping hand sanitizers and disinfectant wipes near entry ways for easy access and reminder to keep hands and surfaces clean. Product packaging and marketing that reinforces the put-it-by -the-door behaviour can help consumers sustain the habit.
- **Align messages to consumer mindsets –** Businesses should ensure that their brand communications are attuned to consumer sentiment. McKinsey's surveys show that consumers are paying attention to how business treat their employees during the crisis. Consumers will see through and reject messages that seek to commercialize social issues.

The COVID-19 crisis has changed people's routines and some of these changes will outlast the pandemic. Differences in consumer behaviour will widen in the post recovery phase given that the health, economic and social impact of COVID-19 is not uniform. Businesses which develop a clear understanding of the changed beliefs, peak moments and habits of the target and adjust their product offerings, customer experiences and marketing communications will thrive in the new normal.

Best practices of thematic programmes that are developed and adopted by policy makers have resulted in creating greater impact when replicated successfully. The table below provides a snapshot in the European Union of 9 segments where sustainable consumption policies has effectively promoted sustainable behaviour. This can be used as references and

guides for policy makers to develop and customise sustainable consumption programmes in ASEAN, taking into account the social, economic and political factors of AMS and the region into consideration.

Sector	Overview of sector	Pros and cons of further analysis	Key elements of possible toolbox
Urban mobility	- **Significant environmental impact**, in particular with regard to GHG emissions. - Expected increases in transport and associated energy needs to 2030. - **EU focus** has been on technological improvements rather than modal shifts. - Need to address **policy incoherence**, **social aspects**, **infrastructure lock-in**.	**PROS** - Significant GHG impact - Rising consumption **CONS** - Infrastructure lock-in	• Guidelines for **spatial planning** (e.g.to promote public transport, modal shift, non-motorised travel); • Revise **fiscal and taxation policies** (e.g. congestion and road use charging, vehicle taxes, fuel taxes); • Redirect **infrastructure** funding (e.g. to prioritise non-motorised and public transport infrastructure); • Introduce **demand-side management policies** (e.g. restricted access schemes, deploy ITS applications in support of eco-driving, provide incentives to encourage people to try new forms of transport - e.g. free trial bus passes).
Air travel	- **Major contributor to EU GHG emissions** - Significant growth expected. - **EU focus** has been on market-based tools (EU ETS, taxes) and innovation (e.g. EU Clean Sky Joint Initiative) rather than influencing consumer behaviour. - Need to address **price elasticity of air travel**, **GHG emissions**, use of	**PROS** - Significant GHG impact - Rising consumption **CONS** - Price elasticity of air travel - International dimension	- Launch well-designed **information/education campaigns** to raise awareness **and** influence attitudes/and practices (e.g. by proposing concrete practices such as only flying once a year, more virtual meetings in light of Covid pandemic, for those who need to travel post the pandemic are assured of the safety through vaccinations and an inter-

Sector	Overview of sector	Pros and cons of further analysis	Key elements of possible toolbox
	alternative fuels, and **new modes of propulsion**. - Need to take into account **international dimension** (opposition to international measures that limit air travel, competitive distortion, carbon leakage) when designing initiatives in the area as well as the impact of Covid 19 towards ensuring safety of passengers		operable health data trust framework to facilitate safe cross border travel); - Provide **competitive alternatives to air travel** through investments and incentives differentiating between different types of travel/travellers; - **Harmonise calculation and quality of carbon offsets;** - Extend use of **airport taxes** so they can distinguish between long and short haul flights; - Encourage take-up of provisions in energy taxation Directive on levying **fuel taxes** on domestic and intra-Europe flights on the basis of bilateral agreements.
Housing: Infrastructure	- **Significant environmental impact,** particularly through energy/materials/ biodiversity/ water consumption, land use (and soil sealing). - Trend towards smaller households and hence growing demand of living space per person is expected to continue to 2020. - **EU focus** has been on promoting sustainability on supply side rather than changing consumer demands. - Need to address **social factors, infrastructure lock-in**, **weak**	**PROS** - Significant environmental impact - Existing policy framework for energy performance **CONS** - Infrastructure lock-in - Focus to date on supply side	- Develop **reliable differentiator mechanisms** (e.g. certification, labelling); - Launch **targeted information campaigns**; - Provide **economic tools** (e.g. subsidies, green loans, fiscal measures) to incentivise installation of sustainability features; - Encourage **retrofitting** and **renovation schemes** in existing housing stock;

Sector	Overview of sector	Pros and cons of further analysis	Key elements of possible toolbox
	incentives and **lack of information** on supply and demand side.		- Avoid split incentives with **mechanisms to ensure investors recoup benefits of investments**.
Housing: Energy using appliances	- **'Midrange' environmental impact.** - Demand for small appliances growing rapidly (e.g. personal computers, mobile phones), offsetting efficiency gains from large appliances and space heating. - EU regulatory tools focus on producers, application of voluntary information tools not widespread and have limited effect. - Need to address **amount and type** of appliances consumed, **change use patterns**, improve **eco-design**, **restrict sale of inefficient products**, and **incentivise** purchase of energy-efficient devices.	**PROS** - Rising consumption - Existing policy framework for eco-design **CONS** - Environmental impacts not as significant as other sectors; focused on energy	- Introduce **well-designed information and labelling tools** together with **financial incentives**. Ensure availability of substitutes or new technologies to support change in behaviour; - Encourage retailers to provide **product trials** or **money back guarantees**; - Establish **'buy back' and 'trade-in' schemes** complemented by **financial incentives**; - Develop **consumer support mechanisms**; - In promoting energy-efficient devices, highlight **costs associated with high energy-using appliances**, promote **product features with policy relevance**, **avoid additional taxation** and offer **'free' benefits** (e.g. VAT free, free extended warrantee).
Housing: Water using appliances	- **Water scarcity** is an increasing problem. - Trend towards smaller households expected to increase water consumption.	**PROS** - Addresses increasing issue of water scarcity - Existing policy framework **CONS**	- Improve implementation of Water Framework Directive provisions on **water tariffs and compulsory metering;** - To minimise regressive impact of water charging, **couple full-cost water pricing with assistance to low-**

Sector	Overview of sector	Pros and cons of further analysis	Key elements of possible toolbox
	- **EU focus** on improving quality of water, the **need to address demand increasingly recognised.** - Need to address **consumer awareness and behaviour**, **technical performance** of water supply systems, and politically sensitive issue of **managing water demand**.	- Addresses a specific sustainability issue	**income households/progressively graduate water prices based on taxes**; - Promote **demand management measures** through guidelines and sharing best practices; - Complement above with **public information campaigns** and **eco-labelling schemes**.
Food and drink	- **Significant environmental impacts,** especially from consumption of meat and dairy products. - In the EU, changes in composition of diets (e.g. replace beef with pork and poultry, increasing imports) and the way food is produced and sold (e.g. favour pre-prepared, frozen meals and convenience foods) expected to continue to 2020. - **EU focus** has been on production/process side, interventions on consumption side have been restricted to soft measures like education and awareness raising. - Reluctance of policy-makers to act in **area of consumer choice**, **structure of food supply chain**, **infrastructure**, **social, cultural and emotional**	**PROS** - Significant environmental impact - Many aspects for tools to address (choice, preparation, waste, etc.) **CONS** - International dimension - Complexity of preferences involved in food decisions	- Reorient market frameworks towards sustainability practice by **eliminating perverse subsidies**, promoting **standardised labelling** and providing **integrated infrastructure solutions** that cater to local and regional needs; - **Engage retailers and major food producers** (e.g. through public- private partnerships, setting standards) to **green upstream supply chains** and **reduce downstream impact of products** (e.g. choice editing, free trials and price promotions); - **Launch targeted awareness-raising and information campaigns**; - Establish **price mechanisms and quality standards** that support / stimulate dietary change; - Support **local/community-led niche practices or initiatives**.

Sector	Overview of sector	Pros and cons of further analysis	Key elements of possible toolbox
	factors, **cost and availability** of sustainable food and drink products.		
Clothing/ Textiles	- **Significant environmental impact**, aggravated by rising consumption levels. - **EU focus** has been on the production phase, however most textile products are imported and thus the scope for EU supply-side policy is limited. - Need to address **consumer choice/behaviour.**	**PROS** - Significant environmental impact - Rising consumption **CONS** - International dimension	- Establish **standardised labelling and certification schemes**; - Launch targeted **information campaigns** covering whole lifecycle of clothing; - **Partner with retail industry** and encourage engagement in greening upstream supply-chains and influencing consumer behaviour.
Tourism	- **Significant environmental impacts** both inside and outside Europe. - **Trends in tourism are changing**, in particular experimental tourism which includes eco-tourism, rural and community tourism is expected to grow quickly over next two decades. - EU focus on voluntary and informational initiatives, however action is limited to domestic EU tourism sector. - Need to address **social aspects**, lack of **resources/ information/ skills**, **infrastructure/ destination 'lock-in'**, **economic interests** including those of less developed countries. - Take into account **'carrying capacity' of tourism areas** in terms of visitors	**PROS** - Significant environmental impact - Existing trends toward eco-tourism **CONS** - International dimension - Complexity of social and economic aspects in destination locations	- **Introduce additional information tools** that engage consumers and industry (e.g. information and education programmes in cooperation with local stakeholders on appropriate behaviour, potential harmful environmental impacts of tourism, benefits of activities such as eco-tourism); - Use **financial instruments such** as price signals (e.g. tax on aircraft fuel/use of airports).

Sector	Overview of sector	Pros and cons of further analysis	Key elements of possible toolbox
	and their impacts in designing initiatives in the area.		
Citizen community action	Recent studies and the workshop organised for this study identify the need to go beyond traditional approaches to SCP to **address societal values and norms** through public/community engagement processes and systems that make sustainable living easier.	**PROS** -Opportunity to address societal values and norms -Bottom-up citizen-led movements -Innovative approach **CONS** -Requires political support and funding	- **Political and financial support** for bottom-up citizen-led movements; - Provide **incentives and stimulate investments in wider systems and infrastructures** (e.g. invest in local recycling facilities, provide loans and grants for products such as insulation); - Increase **knowledge and understanding** on how sustainable consumption policies and practices can evolve, building on research from social and behavioural sciences; - **Increase awareness and share best practices on on-going efforts** (e.g. Transition Towns).

3.8 Future considerations/ way forward for policy makers, businesses, and consumers in ASEAN

The aim of promoting sustainable consumption to consumers should be to move towards a zero-energy circular economy where a product has a neutral impact on resource use. This can be achieved through use of renewable energy, extending product lifetime, use of recycled materials and the reuse or recycling of products that are no longer needed by consumers and businesses.

As governments look to respond to the impact of traditional patterns of consumption on the environment, firstly AMS should lead by example and practice sustainable procurement that would lead towards making sustainable products more accessible and affordable through a bottom up approach. These effects must be coordinated at the national level through inter agency coordination with one lead agency as well as at ASEAN level as issues cuts across consumer protection, environmental concerns.

Secondly, AMS policy makers should integrate the concept of the circular economy into consumer protection frameworks will provide a more holistic understanding of the impact that products have on consumers. Just as in regulating certain products in the interest of public safety and health, AMS policy makers and ASEAN should develop criteria to regulate unsustainable production by setting minimum sustainability standards below which products are not allowed in the market. Policy makers need to incentivise businesses to adopt a life cycle perspective whilst business must act as a responsible enterprise in changing the way they produce and complying with government policies relating to sustainable production and consumption. Businesses irrespective of public or private should include sustainability information as part of their annual compliance reporting. Currently sustainability reporting is mandatory to public listed companies only and voluntary for private companies.

It is possible to have modest and resilient economic growth through appropriate policies and measures in place as fast paced growth does not automatically lead to improved health and longer lives.

However, consumers must have trust in these tools and instruments to motivate them to shift their behaviour. AMS need to ensure standards on carbon emissions, energy and recycling are set and harmonised. Only through coordinated efforts in implementation of standards and enforcement across the region coupled with consumer education to bring about awareness and empowerment will spur consumers to embrace sustainable options across the region.

Consumer rights issues and its relevant consumer protection policies in promoting SCP are important in making sustainable choices in consumption. A shift to a sustainable society with responsible lifestyles requires innovative thinking and practical experiments. There is no one size fits all blueprint.

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Module 4: Use of appropriate instruments and tools in selected sectors

This module discusses policies in the ASEAN Member States (AMS) related to sustainable consumption in four sectors, namely, food, energy, consumer electronics and plastic. Each sector is individually presented in a similar manner in the four sections below beginning with an (i) introduction of the sector, followed by an identification of (ii) specific challenges to sustainable consumption, and ending with a (iii) summary of the instruments and tools currently implemented to support sustainable consumption. As highlighted in Module 2, sustainable consumption addresses both under-consumption and overconsumption. This module adopts a lifecycle perspective to demonstrate critical phases in the sectors where challenges to sustainable consumption occur, further emphasizing that consumption starts from the use of raw materials in production processes where additional inefficiencies may occur.

4.1 Food

4.1.1 Introduction

An estimated one-third of food is either lost or wasted globally, amounting to about US$940 billion in economic losses in 2012 (FAO, 2015). Food loss and food waste in a general food production system (**Figure 4.1**) amount to 21 to 37% of annual anthropogenic GHG emissions (IPCC, 2019), roughly translating to 1.3 billion tons annually (FAO, 2011). Improving the processes from farm (agriculture) to fork (consumption) to reduce food loss and waste will be beneficial in addressing socioeconomic aspects, particularly as severely food insecure people in the region increased from 7.3% (46 million) to 10.1% (65.8 million) between 2014 to 2017 largely due to the effects of climate change on food availability and prices (FAO, IFAD, UNICEF, WFP and WHO, 2018).

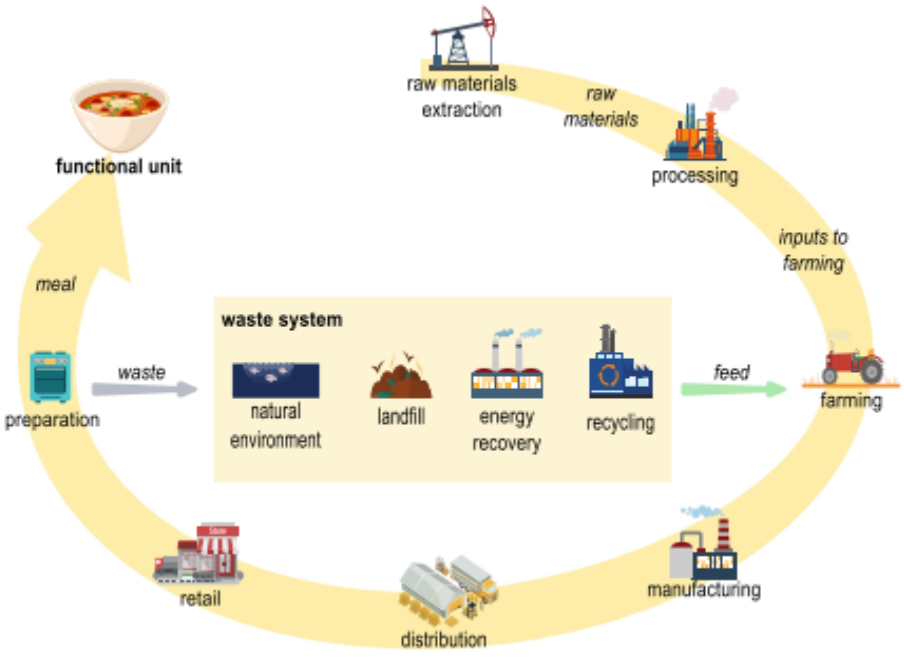


Figure 4.1. The Life Cycle of a Meal (Cucurachi, Scherer, Guinee, & Tukker, 2019)

Moreover, solutions supporting sustainable food systems, specifically in shifting to sustainable diets and reducing food loss and food waste can contribute as much as 25% to climate change mitigation (WWF, UNEP, EAT, & Climate Focus, 2020).

4.1.2 Sustainable Consumption Challenges in the Food Sector

Target 12.3 of the Sustainable Development Goal (SDG) 12 calls for halving per capita global food waste at the retail and consumer levels, and reducing food losses along production and supply chain, including post-harvest losses, by 2030. Achieving sustainable consumption will entail a closer look at when, where and how waste happens in the food life cycle to identify preventive measures and actions among stakeholders. Sustainable consumption begins from the production of food and food products, and not just cover final consumption by end consumers.

a. Food Loss and Waste

With the exception of Singapore, food continues to be a significant part of the waste streams of ASEAN countries (Ying, 2020). Food loss and food waste in South and Southeast Asia accounts for one-fourth of the food supply, and this largely happens during production (32%), and handling and storage (33%) phases of food production (**Figure 4.2**) primarily due to the lack of adequate infrastructures and storage facilities. For instance, the main causes of the pre-market food loss reported in Indonesia point to defective roads, unreliable transport systems and the lack of available cold storage units (Dickella, et al., 2020).

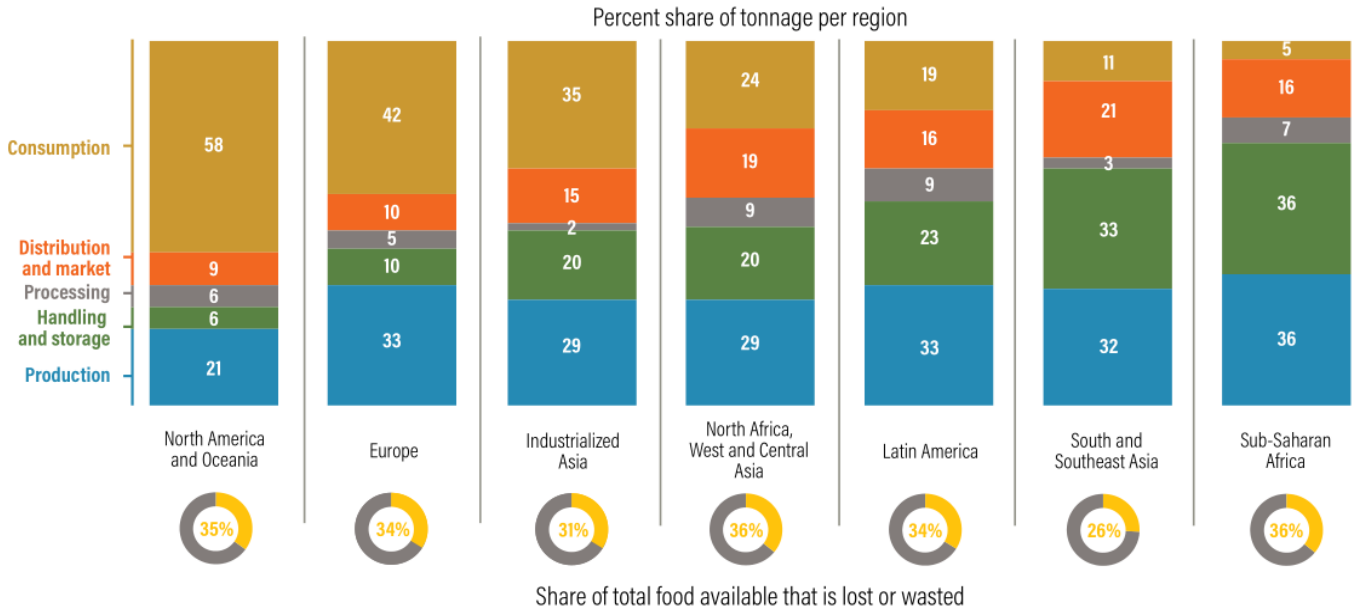


Figure 4.2. Distribution of Food Loss and Waste by Region and Stage in the Food Supply Chain, 2007 (Lipinski, 2020)

In recent years, there is growing awareness on the significant impact of cosmetic standards (e.g., only blemish-free produce being sold at food retailers) in food waste even before food

has reached the consumers. Food that do not meet such criteria end up being discarded, and contribute to food waste at distribution and market stage of the food cycle. Food loss and food waste represents lost opportunities for sustainable consumption and food security given the challenge of food insecurity and malnutrition in the region. Food loss and waste implies that more food needs to be produced to supply the demand, resulting to unnecessary stress to the environment and natural resources. Food production systems require resource inputs like seeds, soil, irrigation water, fertilizers, pesticides, machineries and fuel, which have corresponding environmental impacts. In addition, the equivalent GHG emissions of the processes required to produce food (both consumed and wasted) contributes to the already growing problem of air, soil and water pollution and even food contamination (Cogut, 2016).

b. Food Supply

Food production activities and its corresponding impacts keeps up with population growth and consumer[30] demands (UNESCAP, 2018). Foremost, the conversion of forests to farmlands for the purpose of food production results to the destruction of natural habitats and diminishing biodiversity, and an increase in GHG emissions (UNEP, 2016). Agricultural intensification and productivity requirements prompted widespread use of chemical fertilizers and pesticides to increase crop yields, which affects the soil quality and subsequently, water quality from runoff (UNEP, 2016). Moreover, the quality and safety of food[31] can be affected by the use of unregulated chemicals and chemical residues in farm produce. Biomimicry means in dealing with pests can be safer compared chemical pesticides, while the government has a very important regulatory role to ensure safety and reliability of fertilizer and pesticide production. There also exists a need to consider cross-boundary regional multi-lateral standards and norms on chemicals.

In Asia, 29 out of the 48 countries suffer from water insecurity brought about by low availability and unsustainable withdrawal (UNESCAP, 2018). Water scarcity and the increasing demand for irrigation water causes stress on water resources (UNESCAP, 2018), and the changes in precipitation patterns and temperature caused by climate change indirectly affects food supply and resource availability (UNEP, 2016). Together with climate change impacts, food loss and food waste further increase the stress that food production systems have on the environment in ensuring food supply. Smart use of water, for example, in hydroponics and sustainable farming may be considered as a supplementary means to the traditional farming, wherein technical knowhow is available and enabling local conditions are present.

[30] By 2030, ASEAN middle class is expected to increase to 70% of the population, with the potential to double consumption across the region; and an additional 40 million young work force will be added in the region. This favorable demographic is said to drive consumption in the region. See: WEF (2020). Future of Consumption in Fast-Growth Consumer Markets: ASEAN. World Economic Forum: Geneva.

[31] While this Module focuses largely on the sustainability of the food sector, adjacent concerns on the safety, quality, and claims (e.g., organic food) of food and food products need to be recognized. See: ASEAN & UNCTAD (2016). Environment Module prepared under the Project *Strengthening Technical Competency for Consumer Protection in ASEAN.* Available at http://aadcp2.org/wp-content/uploads/Environment-Module-Final-21Jan16.pdf

c. Nutrition

The changing diet in the region with preference for meat creates nutritional challenges, as well as more pressure for the food system since meat requires more inputs to produce. A study conducted in Cambodia found that students living in rural areas prefer rice meals and those living in urban areas prefer food that contain fat and protein (Foundation for International Development/Relief, 2017). In Indonesia, urbanization and industrialization contributed to the shifting preferences to more westernized food choices like fast food and ready-to-cook meals (The State of Indonesian Food Security and Nutrition, 2020).

On the other hand, low-income households opt for cheaper and often less nutritious food due to lack of access to affordable food (Rujivanarom, 2018). Particularly those employed in the agricultural sector, families often lack the means to meet the required nutritional requirements for their household (Future Learn, 2014). As significant food loss and waste happens at the production/ farming stage, the low-income households in the agriculture sector bear the economic cost of inefficient production processes and climate change, affecting their capacity for proper nutrition. In addition, foodborne diseases remain prevalent in developing countries due to a number of reasons, including poor food production processes, unsanitary water resources, and infestation of pests and worms due to the tropical climate (WHO, 2016).

4.1.3 Policy Priorities

Policies in ASEAN countries provide various responses to challenges in food security and nutrition through measures, such as infrastructure investments for agricultural productivity, shift to organic and sustainable agricultural practices, research in agriculture, and provision of nutritional guidelines and education (**Table 4.1**). Only a few countries have dedicated policies or programs on food loss and food waste reduction like Singapore's Food Security Roadmap 2012 and Thailand's plan to form a taskforce for reducing food loss and food waste (Voluntary National Review 2017). Malaysia and the Philippines also recognize food waste in advocating for better logistics to food markets and depots, and research on postharvest losses, respectively.

Food loss and waste, particularly at the beginning stages of food production, presents a significant challenge to the region as it (i) affects the improvements made in agricultural productivity, (ii) increases the stress to food production systems for food security, and (iii) affects access and affordability of food. Responding to these challenges creates opportunities for sustainable consumption of resources and equitable access to food and nutrition. At the regional level, the *ASEAN Socio-Cultural Community Blueprint 2025* calls for the integration of sustainable consumption and production (SCP) strategy and best practices into national and regional policies (ASEAN, 2016). The ASEAN Vision 2025 work plan includes environmental education (including eco-school practice), awareness, and capacity to adopt sustainable consumption and green lifestyle at all levels.

Table 4.2 provides a checklist of existing policies in the AMS related to sustainable consumption in the food sector, and in no way shall constitute an assessment of comprehensiveness of each country responses. For specific texts from policies, plans and strategies, and other references on food policies, refer to **APPENDIX A**.

Table 4.1. Policies in ASEAN Member States on sustainable consumption in the food sector

Country	Food Supply	Nutrition	Food Waste
Brunei	Rice self-sufficiency through agricultural aid and subsidies, modernization in farming, research and trials of different rice varieties, and measures to prevent pests and infestations of plants	Health promotion through industry product reformulation for healthier options, emphasis on nutritional labelling and promotion of the National Dietary Guidelines	-
Cambodia	Improve land productivity and sustainability by strengthening land-use spatial planning and classification, minimizing chemical use in agricultural practices, adopting disaster resilient practices, and agricultural modernization	Improve access and consumer knowledge on nutrition and healthy diets through awareness-raising Enhance disaster resiliency and food security for low-income and disaster affected households	-
Indonesia	Food security through staple food provision, distribution efficiency, food price stabilization, food security early warning systems, and investing in disaster resiliency and risk reduction Enhance farmer welfare and productivity through improved institutional education, protection systems, farm clusters, and business partnerships	Strengthen community nutrition through healthy diet campaigns, and enhanced nutrition surveillance systems	-
Lao PDR	Resilient agricultural production systems by shifting to organic practices and market-oriented production, improving irrigation systems, building agricultural infrastructure and technologies, and increasing farmer support	Enhance community nutrition by boosting consumption of local sustainable food products, improving school meal programs and clean water systems, cultivating highly nutritional crops, developing healthy lifestyle communication strategies, and providing aid for nurturing mothers	-
Malaysia	Improve self-sufficiency levels and climate change resiliency through new crop varieties, modernizing agricultural production and post-harvest handling, empowering cooperatives and collaborations, and educating farmers and fisher folk on modern techniques	Food supplementation programs for vulnerable children and remote communities, and awareness-raising on food safety and nutrition	Improve organic waste segregation, recycling of organic waste by-products, and logistics in food markets, depots and terminals

Country	Food Supply	Nutrition	Food Waste
Myanmar	Enhance education, training, and market and logistics infrastructures for food sector workers, investment regulations for agri-investors, and cultivation of disaster-resilient crops	Ensure access to safe and healthy food through improved food safety standards and food-borne disease surveillance, awareness-raising on nutrition, and healthy products, and comprehensive strategies for mitigating malnutrition	-
The Philippines	Improve overall land productivity by reusing one-third of degraded land and limiting global cropland	Ensure adequate nutrition for adults and children by highlighting local and regional food security	Reduce food loss within the supply chain and during the consumption stage through the evaluation of consumption and food waste trends, and research on post-harvest loss and value-creation
Singapore	Strengthen infrastructures, and research and development	Promote a healthy lifestyle through the implementation of a healthy lifestyle masterplan, creation of a handbook on nutrition labelling, and engagement of stakeholders and local communities	Enable food waste reduction, segregation, and treatment by defining built infrastructure manager responsibilities, providing proper segregation facilities within built infrastructure premises, and engaging with licensed food waste collectors, such as condominium, hotels, etc.
Thailand	Promote sustainable agriculture through water and land resource management, organic farming, produce marketing, research and innovation, and logistics systems and farmer welfare improvement	Improve quality and nutritional value of agricultural products through research and development for disease control Promote healthy lifestyle practices	Address food waste and loss issues by improving food preservation practices among communities, reusing agricultural waste, and forming a taskforce
Vietnam	Sustainable and value-adding agricultural sector through the improvement of irrigation systems, biotechnology, climate monitoring, early warning systems, and access to vocational training for farmers	Implement “10 Tips on Good Nutrition to 2020” and define nutrition targets for vulnerable women and children	-

Table 4.2. Checklist of existing policy approaches in the AMS addressing sustainable consumption challenges in the food sector

Policies/ Strategies	BRN	KHM	IDN	LAO	MYS	MMR	PHL	SGP	THA	VNM
Food Supply										
Provide aid to farmers and other workers in the agricultural sector	✓				✓		✓		✓	✓
Self-sufficiency on rice production	✓									
Research and development on crop varieties	✓	✓		✓	✓			✓		
Minimizing chemical-use in production		✓								
Stabilizing food prices		✓	✓							
Investments on infrastructures and services to improve productivity and fight environmental risks		✓	✓	✓	✓	✓		✓	✓	✓
Improving education in the agricultural sector			✓			✓				
Developing more resilient and sustainable agricultural systems		✓		✓				✓	✓	✓
Food and Nutrition										
Implementation of dietary/health guidelines	✓	✓		✓				✓		✓
Nutritional labelling	✓							✓		
Encourages industries to reformulate to healthier products	✓									
Formulate a strategy to improve nutrition among children		✓					✓			
Strengthening campaigns on healthy diets and nutrition			✓	✓					✓	
Clean water systems in health centers, communities, etc.				✓						
Education on food security and nutrition					✓	✓				
Food Loss/ Food Waste										

Policies/ Strategies	BRN	KHM	IDN	LAO	MYS	MMR	PHL	SGP	THA	VNM
Improvements in organic waste segregation					✓			✓		
Recycling by-products of organic wastes into production inputs					✓				✓	
R&D to minimize food losses throughout the supply chain					✓		✓		✓	

Further Reading

UNEP. (2019). *Collaborative Framework for Food Systems Transformation: A multi-stakeholder pathway for sustainable food systems*. United Nations Environment Programme.

4.2 Energy

4.2.1 Introduction

Energy consumption in ASEAN doubled in two decades (1995 to 2015), driven primarily by economic growth; and where an average of 4.7% increase is expected per year until 2035 with the power sector contributing the highest growth, followed by industry, transport and buildings (IRENA, 2018). As of 2015, nonrenewable energy sources still dominate the energy source of the region since many governments invest more heavily in coal and gas power generation (IEA, 2019) as opposed to renewable energy which only accounts for 17% of the energy generation in the region (IRENA, 2018). The reliance on nonrenewable energy sources may easily supply the energy needs at present, but contributes to greenhouse gas emissions and other environmental impacts from mining/ extraction, processing and transportation of oil and other fossil fuels (**Figure 4.3**). From a regulatory and commercial (producer) standpoint, the choice of fuel (renewable or nonrenewable energy) in itself already presents an opportunity for sustainable consumption. On the other hand, energy efficiency and energy conservation constitute the two options of consumers (households, commercial sector and industries) for sustainability.

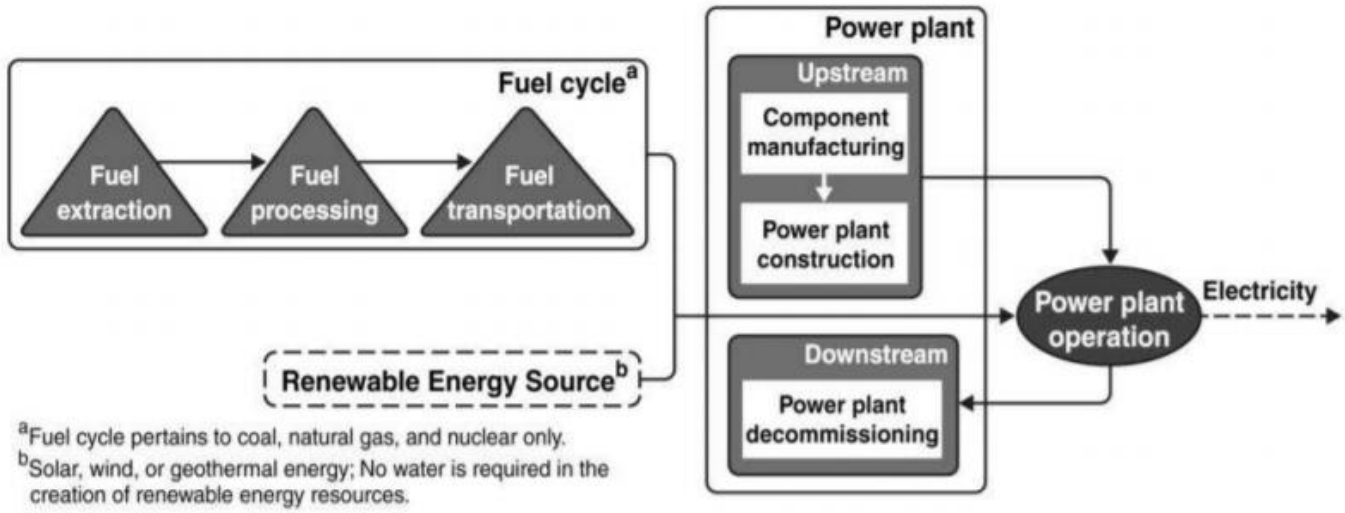


Figure 4.3. Life Cycle of Energy Generation (Meldrum, Macknick, & Heath, 2013)

4.2.2 Sustainable Consumption Challenges in the Energy Sector

The energy demand in the region continues to be fueled by increasing population and economic growth. Despite a robust economy, a significant percentage of the population still lack access to electricity. The challenges of energy security and supply mix provide implications for future energy developments since these directly relate to the GHG emissions of the region[32]. Fossil fuels remain a major source of energy, supplying more than three-fourths of the requirement of the region. On the other hand, the growing residential energy consumption points to the importance of addressing energy efficiency and consumption at the

[32] ASEAN & UNCTAD (2016) Environment Module discusses energy pricing, subsidies, access, environmental impacts and consumer protection issues in detail.

household level owing to the increasing income, middle class population, standard of living, and ownership of appliances and electronic devices.

a. Energy Security

The International Energy Agency (IEA) defines energy security "as the uninterrupted availability of energy at an affordable price". Despite the rapid development in the ASEAN region, around 10% of the population remain without access to electricity. Subsequently, these households resort to biomass burning for fuel needs, affecting their environment and health.

A combination of the fast-growing economy of the ASEAN region and the increasing population (estimated to grow by 20% by 2040) will continue to drive the energy demand (The ASEAN Post, 2018). Fossil fuels still dominate the region's energy mix, especially coal, which is one of the most abundant resources. Some countries in the region, such as Brunei, Indonesia, Malaysia, Thailand, and Viet Nam, have fossil fuel reserves that can cater to energy demand for the coming years, but may be depleted soon due to the surging demand especially for exports (ACE, 2020). Oil demand is expected to rise by 60%, while oil production falls by one third. With growing concerns on the supply nonrenewable energy, the use of renewable energy is expected to grow to help meet the rising energy demand (IEA, 2019b).

b. Reliance on Nonrenewable Energy

The abundance of fossil fuel resources in many ASEAN countries appears to be a major challenge toward the diversification of its energy mix and the lack of progress in the development of low carbon energy sources (Shi, 2016). Fossil fuels account for 74% of the total energy mix in the region and is expected to remain steady until 2040 (**Figure 4.4**). Demand for nonrenewable natural gas is growing faster than production, and many countries in the region are set to become import-dependent by the early 2020s (IEA, 2019). In archipelagic countries such as Indonesia and the Philippines, the limited electricity transmission infrastructure hinders the effective deployment of renewable energy (The ASEAN Post, 2019). As the ASEAN region pursues its renewable energy targets, the countries would need to consider increasing the flexibility of the current energy mix for future scenarios to integrate more renewable energy into the grid (Huang, Kittner, & Kammen, 2019).

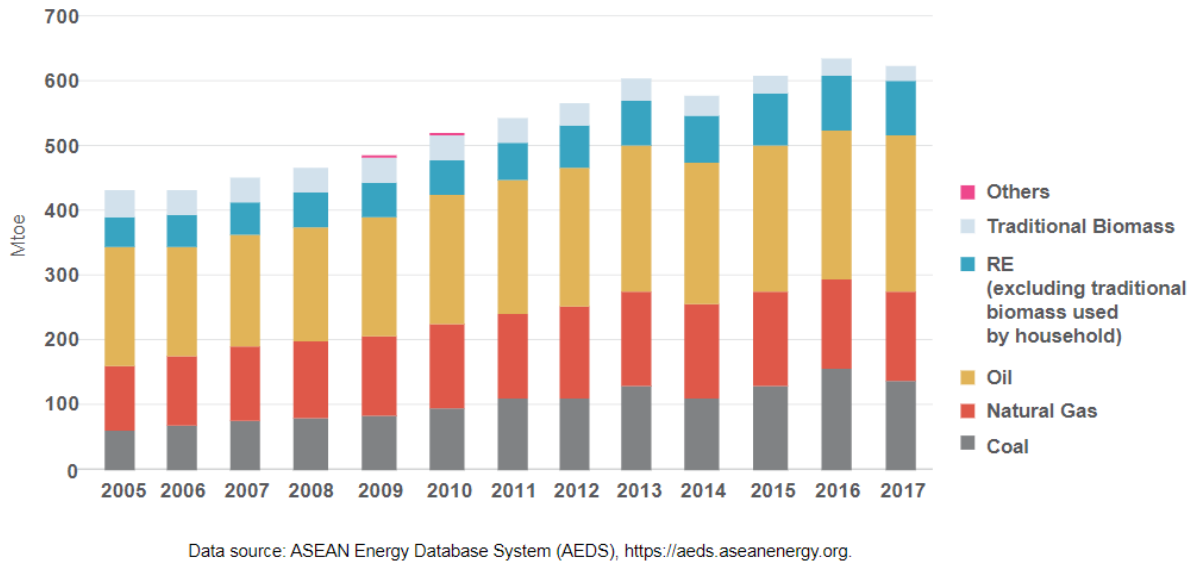


Figure 4.4. ASEAN Energy Supply by Fuel (ACE, 2020)

c. Energy Efficiency

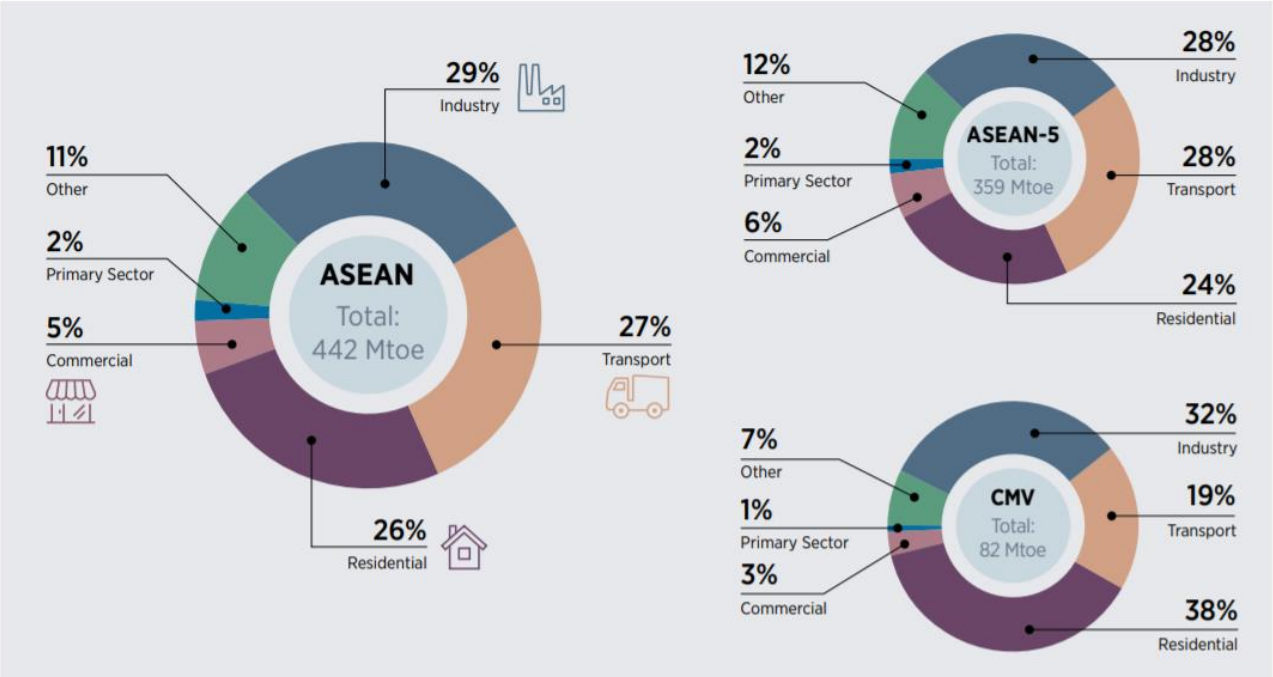
Energy efficiency is defined as the reduction of energy consumption and demand while boosting productivity. Efficiency is an important aspect in sustainable consumption of energy, especially for fast-growing sectors such as cooling and transport. In the buildings sector, bulk of electricity use comes from the residential sector due to the wider ownership of appliances – air conditioners, in particular, has been a large contributor to this increased demand (IEA, 2019). This demand is expected to continue increasing as urbanization and standards of living improve. As of 2017, only 18% of households in the region have air conditioning (ACE, 2020). On the other hand, the transport sector contributed 27% to the region's total final energy consumption in 2015, which is close to the 26% contribution of the residential sector (**Figure 4.5**). As oil is still the primary fuel for road transport even with supplementation from biofuels (IEA, 2019), the rapid growth in motorization in ASEAN can bring a myriad of negative effects such as congestion, air quality, road safety, energy security, urban livability and greenhouse gas emissions (Bakker, et al., 2017).

d. Greenhouse gas emission

The rapid economic growth in ASEAN has resulted to increased GHG emissions, with a nearly 5% increase every year for the past 20 years. The GHG emissions of the region is estimated to be 60% higher in 2050 than in 2010. In addition, the per capita GHG emissions of ASEAN are close to the world average. As fossil fuels, such as oil and coal, constitute the primary energy sources in the region (Raitzer, et al., 2015), the GHG emissions attributed to the energy sector is much higher.

As a tropical region having high humidity and temperature most of the year, the use of air-conditioning especially in urban areas, further increases energy consumption and greenhouse gas emissions (Lundgren & Kjellstrom, 2013). Energy efficiency is also improving slowly compared to other areas of Asia and the world. In addition, the use of coal as an energy source for the transport and residential sectors still continue and contribute to GHG emissions and

poor air quality (IEA, 2019). While it is true that renewable energy reduces drastically the GHG emission, life cycle thinking is still an important tool to be used in identifying the hotspot concern of renewable energy system. Taking solar panel as an example, the local government units need to consider the lifespan of the panel and its disposal means in off-grid islands when adopting these renewables.



Source: Based on IEA, 2017c.
Note: The ASEAN figure does not include Lao PDR due to non-availability of data; CMV = Cambodia, Myanmar and Viet Nam. ASEAN-5 comprises Indonesia, Thailand, the Philippines, Singapore and Malaysia.

Figure 4.5. Total Final Energy Consumption per Sector (IRENA, 2018)

4.2.3 Policy priorities

The consumption of energy bears close association to climate change owing to the direct link between burning of fossil fuels and GHG emissions. Renewable energy and energy efficiency constitute the major policy approaches supporting sustainable consumption in the energy sector, in AMS (**Table 4.3**). All countries have set targets for renewable energy, which is usually accompanied by parallel actions in having government investments in the sector and incentives to promote development of the sector. Policies in the region have also indicated target reduction in energy consumption with supporting measures like promoting energy efficiency among industry and households. Energy efficiency labelling appear to be well established in many countries in the region. For specific provisions of the policies, strategies and plans of each country, refer to **APPENDIX B**. Furthermore, SDG targets such as Target 7.2 (increase substantially the share of renewable energy in the global energy mix), and Target 7.3 (double the global rate of improvement in energy efficiency by 2030) support these approaches for sustainable consumption, and access to clean and affordable energy. **Table 4.4** also presents in checklist format the existing policies or strategies in AMS that address sustainable consumption of energy.

Table 4.3. Policies in ASEAN Member States on sustainable consumption in the energy sector

Country	Energy Security	Reliance on Nonrenewable energy	Energy Efficiency	Greenhouse Gas Emissions
Brunei	(Almost 99.9% of the population is connected to the grid.)	Reduction of reliance on fossil fuels by increasing the share of renewable energy in the total power generation mix	Reduction of total energy consumption; Energy Efficiency (standards and labelling) and other legislative measures.	Implementation of strategic actions and projects in the oil and gas industry facilities to reduce greenhouse gas emissions.
Cambodia	Improved electrification in rural areas through high tension transmission lines that connect to substations and the national power grid.	Expansion and development of alternate energy sources to satisfy the energy demand and to reduce the reliance on fossil fuels.	Targeting of the reduction of total final energy consumption (TFEC) of different sectors to reduce overall national energy demand.	Proper implementation and monitoring of relevant laws and guidelines for industrial plants to prevent pollution and reduce greenhouse gas emissions.
Indonesia	Utilization of renewable energy sources to improve the coverage and quality of energy supply.	Increase the share of renewable energy in the energy mix by allocating budget to renewable energy infrastructure and increase the role of the private sector in RE development.	Reduction of energy consumption by setting targets for different sectors and electric power utilization for household appliances.	Implementation of low-carbon development efforts in key sectors to reduce greenhouse gas emissions
Lao PDR	Improvement of the nation's power system by accelerating rural electrification and strengthening energy sector institutions.	Development of renewable energy, such as hydropower, on a small power development scale for self-sufficiency and grid connection.	Development of clean energy alternatives to reduce the consumption of fossil fuels, especially for the transport sector.	Expansion of the country's forest cover to combat greenhouse gas emissions and develop a greenhouse gas inventory system.
Malaysia	Promotion of energy security through green growth and enhancement of the use of renewable energy to meet national electricity supply security.	Installation of renewable energy infrastructures to increase energy capacity; and provision of financial mechanisms and fiscal incentives and support for renewable energy sources.	Reduction of energy consumption through the promotion of energy-efficient appliances, and practices in the household, and industry and transport sector.	Implementation of a monitoring initiative where industries and the private sector report their greenhouse gas emissions and mitigation actions.

Country	Energy Security	Reliance on Nonrenewable energy	Energy Efficiency	Greenhouse Gas Emissions
Myanmar	Increase access to clean sources of energy for households not connected to the power grid system and electrify rural areas through renewable energy sources.	Expansion of the share of renewable energy by installing more renewable energy infrastructures and create an investment-friendly environment that encourages the use of renewable energy.	Promotion of efficient energy generation and distribution and climate-resilient and low-carbon energy, transport, and industrial systems.	Target the rapidly developing production sector and mitigate their greenhouse gas emissions.
The Philippines	Increase of the share of clean and sustainable energy sources to provide universal access to modern energy services.	Development and scale-up of renewable energy technology to secure sufficiency and stability of the nation's energy resources.	Introduction of new technologies and initiatives, such as electric vehicles and improvement of public facilities, to reduce overall energy consumption.	Implementation of GHG inventory management and reporting system to monitor climate-change data.
Singapore	Fair pricing of energy, without subsidies, to promote proper usage of energy.	Investment in research efforts to expand and adopt more efficient and renewable energy sources.	Promotion of efficient appliance models and mandates for energy labeling in key electrical appliances. Promotion of public transport.	Implementation of Energy Conservation Act which required an energy manager to monitor and report energy use in the industrial sectors.
Thailand	Construction of power plants to provide electricity for remote areas and development of transmission systems to accommodate power supply demands.	Provision of support for renewable energy projects to increase the share of renewable energy in the nation's energy mix.	Promotion of energy-saving products and regulation of energy use in different sectors. Provisions for use of high-performance and energy-saving machinery.	Allocation of budget to agencies that tackle climate actions to achieve greenhouse gas emission reduction targets.
Vietnam	Investment in electricity supply projects to provide electrification to rural areas and give access to affordable energy.	Investment and continuation of renewable energy projects to increase the installed capacity of renewable energy.	Promotion of clean production and energy-saving solutions to reduce energy consumption in industries and households.	Implementation of programs to reduce GHG emissions such as cleaner production practices in different sectors.

Table 4.4. Checklist of policy approaches in the AMS addressing sustainable consumption challenges in the energy sector

Policies/Strategies	BRN	KHM	IDN	LAO	MYS	MMR	PHL	SGP	THA	VNM
Energy Security										
Improvement and development of the national power grid		✓	✓	✓	✓	✓	✓		✓	✓
Utilization of renewable energy sources					✓	✓	✓		✓	✓
Investments in rural electrification projects						✓				
Reliance on Non-renewable energy										
Renewable energy targets	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Investments and government support of renewable energy infrastructures		✓	✓	✓	✓		✓	✓	✓	✓
Financial incentives for Renewable energy			✓	✓	✓		✓	✓	✓	✓
Tariffs for Renewable energy			✓		✓		✓	✓	✓	✓
Energy Efficiency										
Target for reduction of total energy consumption	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Promotion of energy efficiency initiatives in the household and transport sector	✓	✓	✓		✓	✓	✓	✓	✓	✓
Promotion of sustainable practices in the industry sector		✓	✓		✓	✓		✓	✓	✓
Greenhouse Gas Emissions										
Monitoring of GHG emissions		✓		✓	✓		✓	✓		
Target specific sectors and their GHG emissions	✓		✓			✓		✓		✓
Allocation of budget to agencies tackling climate change				✓					✓	
Set target for reduction emissions		✓			✓		✓	✓	✓	✓
Low carbon development	✓		✓							

4.3 Consumer Electronics Sector

4.3.1 Introduction

Consumer electronics refer to handheld electronic products and communications devices, which turn into electronic wastes (e-waste) at the end of its life. Compared to home appliances, consumer electronics have faster turnovers due to the regular software updates that require the latest hardware to function or added features and functionalities. The short lifespan of consumer electronics presents a significant challenge to sustainable consumption because it increases raw material demands, and the need for e-waste disposal and recycling; hence, improvements at the design and manufacturing stages (as opposed to designing for obsolescence) will be beneficial (**Figure 4.6**).

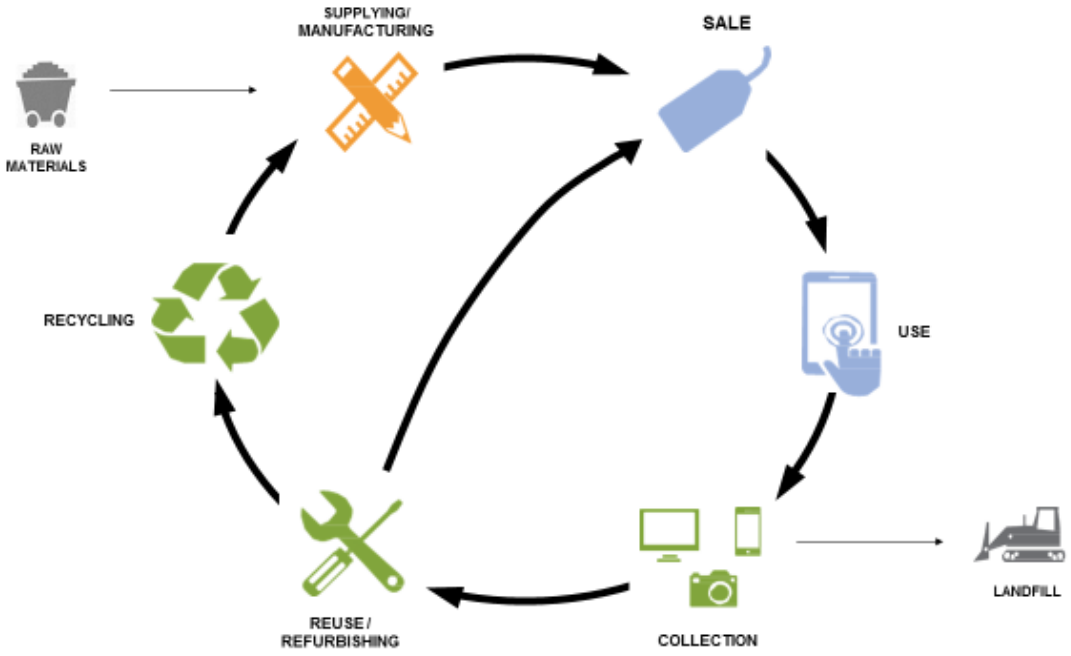


Figure 4.6. The Life Cycle of Electronic Products *(EPA, n.d.)*

High-tech products usually contain a mix of raw materials like gold, iron, oil and platinum that are mined and processed before use in manufacturing consumer electronics (EPA, n.d.). Following distribution, sale and use by consumers, these products eventually malfunction or deteriorate, and (i) undergo repairs or refurbishment to extend their lifespans, or (ii) transported to recovery facilities for proper recycling, or (iii) in many cases, become electronic waste (e-waste) stored at home or end up in landfills. Similar to the starting phase of the energy sector, mining and processing of the raw materials needed to produce the components of consumer electronics results to significant environmental impacts. In the use phase, electricity consumption of the device generates another impact that energy efficiency and conservation measures aim to address. Reuse and refurbishing present intermediate measures to extend the life span of a product, as well as designing a product for durability. Recycling makes use of recoverable and valuable materials from waste consumer electronics,

and turn these into new products, reducing the need for more raw materials in the process and the materials for disposal. However, consumer electronics like mobile phones have also replaced several electronic items that one would otherwise own, such as camera, video recorder, timer, clock, radio and portable music player, flashlight and movie player.

4.3.2 Challenges in the Consumer Electronics Sector

E-wastes poses immediate concerns in the ASEAN due to the rapid digital transformation and lack of recycling infrastructure. Electronics contain valuable materials and metals that are recoverable and recyclable. The fast technological developments in the hardware and software of many consumer electronics prompt consumers to constantly update and consume more devices. With the vast e-waste generated in the region, there is a need for adequate supporting infrastructures for proper recycling, treatment and recovery of precious metals. The involvement of informal waste sector without the proper technical capacities and infrastructure, as well as the arrival of waste imports into the region, create further challenges in the management of this waste stream.

a. Increasing Volume of Electronic Wastes

The rapid increase in e-waste volume is a common concern most especially among developing countries that still lack the appropriate waste management and treatment systems and facilities. With the rapid digital transformation and the increasing middle-class population in the region, sales of consumer electronics continue to rise. Another major factor in the growing consumption of consumer electronics in the region pertains to product obsolescence from hardware incompatibility to latest software requirements (Honda, Khetriwal, & Kuehr, 2016). Moreover, many consumers are easily influenced by advertisements to purchase brand new products with the latest specifications to keep up with the trends. As technological innovation happens quickly, new models of gadgets inundate the market every few months.

b. Improper Waste Treatment Activities

Illegal dumping, where unusable electronic parts are released into the environment after being dismantled, is one of the most common improper waste disposal activities in Southeast Asia due to the lack of awareness and knowledge on the proper disposal of e-wastes and the dangers of such unsafe practices (Honda, Khetriwal, & Kuehr, 2016). Consumers lack the knowledge of where to dispose electronics and how to segregate their wastes. Although less common, open burning of unsegregated waste may cause fire accidentally if electrical components, such as batteries, short circuits (Honda, Khetriwal, & Kuehr, 2016). In addition, there is also the lack of appropriate locations for the disposal of hazardous substances resulting from e-waste recycling processes (Honda, Khetriwal, & Kuehr, 2016).

Informal recycling activities often take place in developing countries. Backyard recycling poses a hazard to communities and the environment and may also be inefficient as this activity fails to draw out the full potential value of the processed product (Honda, Khetriwal, & Kuehr, 2016). The extent of informal recycling activities varies, and in some cases involve attempts to treat e-wastes as resource. For instance, acid baths are used to extract valuable metals like gold from circuit boards and wires, and eventually leads to the release of toxic chemicals into the environment (Honda, Khetriwal, & Kuehr, 2016). To date, extended producer responsibility

(EPR) is considered to be the most effective means in dealing with the end-of-life e-waste management. Producers usually know best in disassembly of the products, yet without economy of scale, the cost of disassembly and recycling of parts would not be feasible. Transportation of the electronic resources across boundary is also regulated by the Basel Convention, therefore, e-waste management facilities should be considered by each member state.

c. Waste Imports from Other Countries

The People's Republic of China was the primary recipient of all types of wastes for their recycling sector prior to 2018. Ever since the country's implementation of the ban on waste imports, there has been an observed surge of e-waste imports in Southeast Asian countries, most especially the developing countries (The ASEAN Post Team, 2018). About 40% of e-wastes from the US, Canada and Europe were exported to Asia, first arriving in Hong Kong before being transported to other Asian countries to avoid legal limitations (The ASEAN Post Team, 2018).

4.3.3 Policy Priorities

A recent assessment of waste management in the ASEAN region reveals that countries either lack the policies to address the e-waste management problems or are still in the process of formulating one (Jain, 2017). As an emerging waste stream, the challenge posed by the increasing e-waste generation and the need for proper treatment of such may merit a more in-depth approach moving forward particularly as waste imports are becoming a common occurrence in the region. Considering waste imports gained prominence after a ban on waste imports in other countries, **Table 4.5** notes that waste imports presently lack specific country responses. In the current strategies, a common approach among countries points to the promotion of extended producer responsibility (EPR) in e-waste management, where producers of consumer electronics take responsibility for the management of their products at the end-of-life stage. The rationale for this approach rests on the idea that manufacturers know their product best, and would have the capabilities to disassemble, treat, recycle and dispose of it at the end of its life. Only a handful of countries have policies and projects that address e-waste. Indonesia is in the process of preparing a Roadmap for e-waste management that embodies EPR. The Philippines also encourage repair to prolong the life of a product. **APPENDIX C** provides detailed policies, plans and strategies in the AMS in addressing e-waste.

Sustainable Digital Transformation: Digitalization as a Tool for Sustainability

- Digital transformation has been ongoing for many years, and has greatly accelerated in 2020 due to the COVID-19 pandemic. Many socioeconomic activities have migrated to online platforms for business survival and to provide much needed services. Short message service (SMS), smartphone applications, video conferencing and other electronic avenues have enabled banking and finance, education, work and healthcare services to be performed remotely.
- Digitalization, often referred to as Fourth Industrial Revolution, continue to transform economic activities, human lives, and ultimately the sustainability of growth and development (and the Sustainable Development Goals) on a global scale (UNU-EHS, 2019). Vast impacts and uncertainties come with the technological tools of digital transformation, such as Internet of Things, cybersecurity and big data. Recent proposals call for digitalization to be governed and shaped in a way that enhances opportunities and mitigates the risks that are closely associated with it (Renn, Beier, & Schweizer, 2021), and for digitalization to be guided by principles of human dignity such as sustainability and inclusivity (WBGU – German Advisory Council on Global Change, 2019).
- The European Digital SME Alliance (2020) proposed that digital transformation occur in a sustainable manner and support the European Green Deal and the New Circular Economy Plan through three concrete ways:

  Sustainable B2B digitalization - For digitalization to support innovation and circular economy, SMEs need to become digital frontrunners instead of digital adopters (e.g., mere shift from brick and mortal stores to e-commerce, and physical workspaces to video conferencing) through skills development. Digital SME enablers can be cultivated to support innovative business models and technologies.

  Green(er) technologies and circular economy - Digitalization itself requires massive hardware infrastructure and software development, and technologies can be harnessed to advance efficiency and reduce the energy requirement of these supporting systems. On the other hand, the technologies of digitalization (e.g., additive manufacturing and blockchain) can be used to transform linear economy and its structures to that of a circular economy, which supports product reusability and repairability and lessens resource use and pollution.

  Innovation-enabling policy and regulation - Regulations need to foster resource circularity and innovation to support the use of technology and digitalization tools to achieve ambitious sustainability goals. In information and communications technology (ICT), policies supporting interoperability can drive innovation by allowing collaborations, access to large datasets and value creation. Circularity also supports repairability of products, and this will entail that hardware and other infrastructures be open to such services where policy allows. Furthermore, openness can also refer beyond the hardware and promote open-source software to promote innovation and support the common good.

Table 4.5. Policies in AMS on sustainable consumption in consumer electronics

Country	E-waste Recycling	Proper Waste Treatment Facilities	Managing Waste Imports
Brunei	-	-	-
Cambodia	-	-	-
Indonesia	-	-	-
Lao PDR	-	-	-
Malaysia	Enable EPR through selling point facilities, and defined producer obligations	-	-
Myanmar	-	-	-
The Philippines	Promote the repair old products over purchasing new ones, and the EPR principle	-	-
Singapore	Extended Producer Responsibility scheme for e-waste, nationwide system for public collection of e-waste, restricting improper disposal of e-waste and waste treatment process monitoring		-
Thailand	-	-	-
Vietnam	-	Develop training materials to educate and implement circular economy principles in e-waste management	-

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4.4 Plastic Waste

4.4.1 Introduction

Plastic is a versatile material that has become essential to everyday life. The term “plastic” typically refers to various groups of polymers that contain a variety of useful features that have made them a popular choice for many different applications (Akenji, et al., 2019). The global production of plastic results in more than 400 million tons of plastic every year, the largest sector being single-use plastic packaging. More than 25% of the resins used globally in the production of single-use plastics are from Northeast Asia, in countries such as People’s Republic of China, Japan, and the Republic of Korea (UNEP, 2018). The plastic industry is a major source of trade for ASEAN, with 41.65 billion USD in exports and 49.28 billion USD in imports in 2017, and contributing about 20% of global plastic production.

Figure 4.7 shows the life cycle of plastic from production to disposal, including policy approaches to each stage (UNEP, 2018). While this section focuses only on plastic waste itself, many of the approaches in addressing plastic waste will need solutions upstream from production and use phase. Most of the materials used for plastic are derived from fossil hydrocarbons resulting in a majority of plastics being non-biodegradable (Geyer, Jambeck, & Law, 2017); instead, it photodegrades which means that it breaks down into smaller particles known as microplastics that threaten marine life.

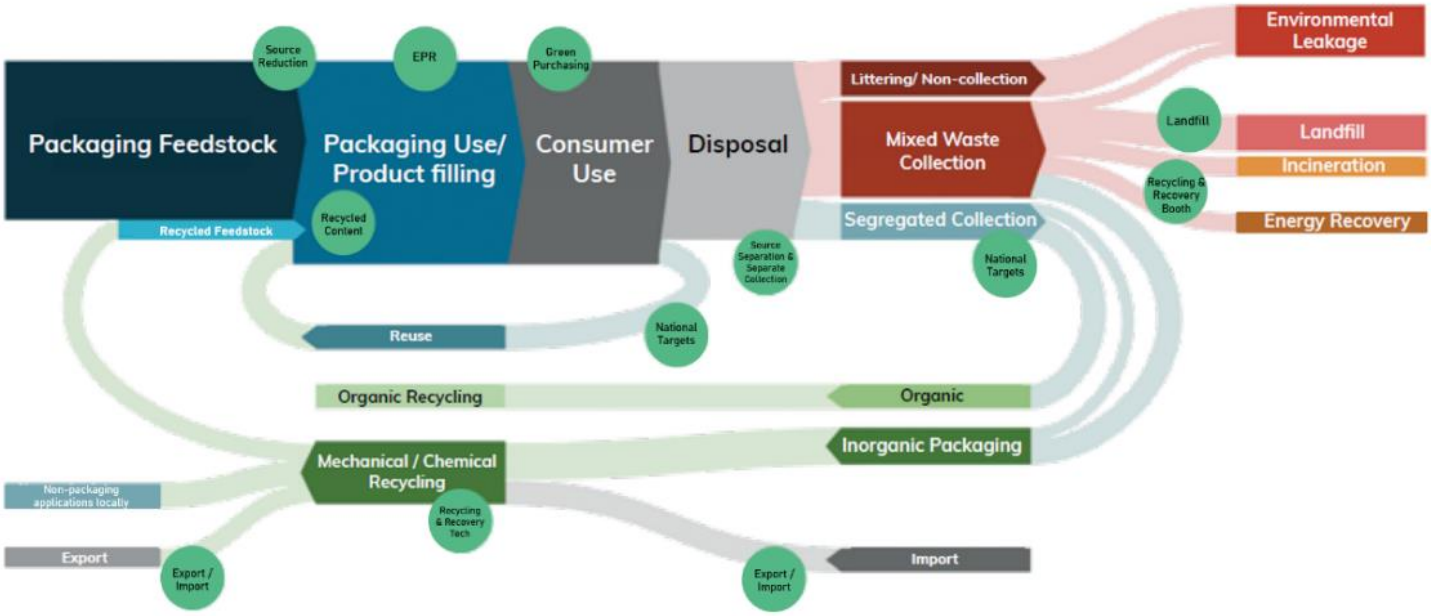

Figure 4.7. Packaging policies when viewed across the packaging life cycle (UNEP, 2019)

Out of all the plastic waste ever produced, only about 9% have been recycled, 12% destroyed through incineration, and 79% discarded and currently sit in landfills or the natural environment (Geyer, Jambeck, & Law, 2017). In 2015, almost 50% of plastic waste came from plastic packaging with almost half coming from Asia (UNEP, 2018). Single-use plastics for packaging, such as sachets, pouches, bags, and films, is one of the largest packaging markets

in the region. The use of rigid plastic packaging, such as PET bottles used by the beverage industry, has also increased with the Asia Pacific Region being the largest market for PET packaging at 31% of the global market demand (Switch-Asia, 2018).

4.4.2 Challenges with Plastic Waste

Since most of the commonly used plastics are non-biodegradable, disposal of plastic waste in itself becomes the challenge. From a life cycle perspective, the function of plastic products as single-use materials contributes to the challenge. While single-use plastics offers convenience, the consequences of this practice manifests in the disposal problem that accompanies it. Decreasing the use of single-use plastics and subsequent generation of plastic waste present significant challenges in the plastic sector. With Southeast Asia being one of the largest contributors to the plastic waste, waste trade further increases the amount of waste being disposed in the region where solid waste management mostly remains a challenge and waste leakage widespread. Without proper waste management plan in place, the increasing plastic waste generation and plastic waste leakage creates another challenge in the form of marine and ocean litter.

a. Single-use Plastics/ Packaging

An estimated 36% of all global plastic production is for plastic packaging, which is designed for single-use. According to the Ellen MacArthur Foundation's Global Commitment 2020 Progress Report, which covers 118 companies that deal with plastic packaging and 17 governments, only 1.9% of plastic packaging is reusable in 2019, a mere 0.1% increase from that of 2018 (EMF, 2020). The consumption of single-use plastic, such as packaging, has increased in the Southeast Asia region due to economic growth, urbanization, and changes in consumer behavior. While the intention for the invention of plastic was to have a carry/ plastic bag that is durable and reusable, its use later evolved to cater to its convenience and affordability.

The region has increased consumption of packaged or "takeaway" food, e-commerce activities, and the prevalent use of small portions of products that are sold in individual packaging or sachets. Most of the packaging waste eventually becomes part of the municipal solid waste. In Southeast Asia, plastic waste makes up about 14% of the overall municipal solid waste, and about half of that plastic waste comes from single-use packaging waste (Switch-Asia, 2018). Many types of single-use plastics also figure in the top ten most common waste in coastal cleanups (UNEP, 2018).

b. Plastic Waste Trade

In 2017, the People's Republic of China, one of the largest importers of processed plastic waste, issued a policy banning the import of nonindustrial plastic waste. As a direct result of this policy, most of the plastic waste has been redirected to Southeast Asian countries (Wang, Zhao, Lim, Chen, & Sutherland, 2020). Shortly after the ban, Malaysia became the largest importer of plastic scraps. Multiple containers of trash have accumulated in Southeast Asian countries such as Malaysia, Thailand, the Philippines, Vietnam, and Indonesia, causing concerns about the environmental cost of importing waste (Ives, 2019). From 2016 to 2018, the import of plastic waste grew by 171% in the region.

c. Implementation of Solid Waste Management Practices

An average of 14% of all solid waste in Southeast Asian countries is plastic waste. The dumping and burning of waste is a common practice in most countries in the region. Landfills receive almost 59% of municipal solid waste in Southeast Asia. Although there are plans and strategies for handling waste, most countries in the region lack the technology and resources to implement proper practices. Most of the recycling initiatives are handled by the informal sector and local government units (UNEP, 2017). Practices such as source segregation and separated collection of solid waste are encouraged, and even mandated by law in some countries, but the actual share of waste that undergo this process is relatively low. The implementation of waste management policies generally remains a challenge for municipal and national authorities, and most recycling activities usually depend on market forces. The issue of plastic waste requires both government and private effort, which can cause problems in terms of implementation and coordination (Akenji, et al., 2019).

d. Marine and Ocean Litter

An average of 8 million tons of plastic waste enters the ocean every year. Around 80% of the plastic waste in the ocean comes from land, where it typically fragments into smaller pieces known as “microplastics”, but can be distributed throughout the ocean and can be harmful to wildlife (GESAMP, 2015). Coastal cleanups estimate that more than one-third of collected items are single-use plastics such as plastic bottles, bottle caps, food wrappers, plastic bags, lids and straws (Ocean Conservancy, 2017). The Southeast Asian region is one of the biggest contributors to plastic waste in the ocean, with majority of the ocean plastic waste coming from Indonesia, the Philippines, Viet Nam, and Thailand (Jambeck, et al., 2015). Growing cities in Southeast Asia contribute to 60% of plastic waste leakage into the environment. Uncollected waste from land-based sources is the source of 75% of marine plastic pollution and 25% comes from leakage in municipal waste management systems (UNEP, 2020). Plastic waste usually enters the ocean from different physical locations: low-waste-density rural areas, medium-waste-density urban areas, high-waste-density urban areas, illegal dumping by trash haulers, and dumpsites on waterways (Ocean Conservancy, 2015).

Impacts of COVID-19 Restrictions to Consumption

- The COVID-19 pandemic has transformed the way people live and consume. A swift digitalization of essential socioeconomic activities supported the new normal way of life.
- Mobility restrictions increased food delivery services, and shifted much of the food waste generation to households (Zambrano-Monserrate, Ruano, & Sanchez-Alcalde, 2020). On the other hand, unemployment and food prices made access to food more difficult (UN, 2020).
- The fight against COVID-19 has also diverted the attention of governments and caused a decline in renewable energy incentives (Eroğlu, 2020). With little demand for mobility, the cheaper oil and non-renewable energy sources may not motivate governments to follow through clean energy policies and projects (Birol, 2020). Energy consumption has also increased in households (Elavarasan, et al., 2020), which emphasizes the need for energy efficiency and conservation measures for individual consumers.
- Sales of consumer electronics and equipment such as laptops, mobile phones and tablets increased owing to the prevailing remote work and school arrangements (DCW, 2020), and personal entertainment and social connectivity (Rodger, 2020). As a result, electronic waste generation in households can be expected to increase in the future as technology easily becomes outdated (Rodger, 2020) and also in workplaces where outdated IT are replaced (DCW, 2020).
- Disposable facemasks are emerging as a new source of microplastic fibers in the environment (Fadare & Okoffo, 2020). The widespread use of disposable hospital and personal protective equipment, which are often made of plastic or contain plastic components can become harmful microplastics as they degrade in the environment if not properly disposed of.
- While digitalization has enabled digital transactions, the product themselves remain physical entities that need to be transported from producers to consumers. For fear of virus transmission, several governments and retail stores have suspended the implementation of bans on single-use plastics, prompting the use of more single-use plastics and packaging materials for deliveries (Zambrano-Monserrate, Ruano, & Sanchez-Alcalde, 2020) and takeaways (McCormick, 2020).

4.4.3 Policy Priorities

As plastic waste has become a global problem, the ASEAN has recently launched the Regional Roadmap for Combatting Marine Debris. At the national level, countries in the ASEAN have responded with measures to reduce or prohibit the use of plastic packaging, and limit plastic waste importations (**Table 4.6**). Ban on the use of specific single-use plastics is a common measure implemented at the local or city level with the cooperation of private establishments. Management of plastic waste rests on implementation of existing waste management policies, where waste segregation, collection and recycling targets are set. Plans and targets are underway to address the growing problem of waste leakage and marine litter in the region. A growing number of private and public sector initiatives make use of single use plastics and marine litter in the manufacture of new products such are pants and shoes. Policies can look into supporting the technical capacity and infrastructure for developing high-value products from plastic waste stream to encourage waste segregation and recycling. Policies may also need to look at the design and intended use of plastic products and packaging as this affects reusability and recyclability. A checklist summary of existing policies and plans on managing plastic waste challenges in the AMS is provided in **Table 4.7**. For the text on specific policies, plans and strategies, refer to **APPENDIX D**.

Table 4.6. Policies in ASEAN Member States addressing plastic waste

Country	Single-Use Plastic	Plastic Waste Trade	Implementation of Waste Management	Marine and Ocean Litter
Brunei	Implementation of government initiatives to discourage the use of plastic bags nationwide	Prohibition of the importation of plastic waste.	Implementation of waste management laws that regulate the recycling of plastics and plans to reduce waste generation.	Prohibition of plastic waste disposal in the ocean.
Cambodia	Prohibition of importation, production, and distribution of certain plastic products and promotions on minimizing the use of plastic bags.	Prohibition of the importation of plastic waste.	Implementation of waste management laws that deal with solid waste management and implementation of the action plan to reduce waste generation.	Prohibition of storage and disposal of solid waste in waterways.
Indonesia	-	Importation of plastic waste is subject to requirements set by the Ministry of Trade.	Implementation of waste management laws that govern household waste collection and management.	Implementation of different strategies to tackle marine debris and targets for marine plastic debris reduction
Lao PDR	-	-	Mandates on waste separation for different purposes.	-
Malaysia	Targets on the reduction of the use of single-use plastic	Limitations and plans to phase out imports of plastic waste	Source separation of solid waste, including packaging and compulsory segregation of recyclables.	Plans to tackle marine debris issues.
Myanmar	Ban on the manufacture, import, trade, and distribution of plastic bags in certain cities.	Importation of plastic waste is subject to approval by the Ministry of Commerce	Implementation of environmental laws that cover waste management.	-
The Philippines	Multiple bills are currently pending under Congress and the Senate regarding the use of single-use plastics.	-	A National Solid Waste Management Commission (NSWMC) oversees solid waste management in local governments.	-

Country	Single-Use Plastic	Plastic Waste Trade	Implementation of Waste Management	Marine and Ocean Litter
Singapore	Nationwide campaign to encourage the public to reduce the use of disposables	Importation of plastic waste is subject to requirements and approval of the National Environment Agency, in line with the Basel Convention obligations for the plastic waste amendments	- Plans to implement an Extended Producer Responsibility (EPR) scheme to manage packaging waste, including plastics, with a beverage containers return scheme as the first phase. - Industry and Government partnered to launch a Packaging Partnership Programme to develop industry knowledge and capability in the sustainable management of packaging."	Implementation of an environmental law that handles provisions on marine pollution.
Thailand	Promotion of the use of bioplastics as alternatives to single-use plastics	Plans to stop plastic waste importation by 2021	Targets to properly manage solid waste, including plastics, and ensure proper waste segregation	Implementation of the management plan to target plastic waste in the ocean.
Viet Nam	Implementation of tax on non-biodegradable plastic bags and promotion of eco-friendly packaging or products to gradually replaces non-biodegradable plastic items.	Implemented temporary restrictions on the importation of plastic waste.	Targets to recycle a majority of plastic, paper, and other solid waste scraps.	Statutory provisions on the protection of marine and island environmental protection.

Table 4.7. Checklist of existing policy approaches in the AMS addressing plastic waste

Policies/ Strategies	BRN	KHM	IDN	LAO	MYS	MMR	PHL	SGP	THA	VNM
Single-Use Plastic										
Policies and initiatives to ban the use of single-use plastic packaging or products	✓	✓			✓	✓	✓		✓	✓
Policies on the production and import of plastic products		✓				✓				✓
Plastic Waste Trade										
Ban on importation of plastic waste	✓	✓								
Restrictions on the type of plastic waste imports			✓		✓	✓		✓	✓	✓
Waste Management										
Policies on source separation, segregation, and recycling	✓			✓	✓			✓		✓
Implementation of waste management systems	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Marine and Ocean Litter										
Prohibition of waste disposal in waterways and oceans	✓	✓						✓		✓
Targets and plans for tackling marine pollution		✓	✓		✓	✓			✓	

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APPENDIX A. Food Sector Policies in ASEAN

Country	Food Supply	Nutrition	Food Waste
Brunei	**Agriculture and Agri-food Incentive Scheme** - Provides agricultural aid to farmers to improve production - Implemented a 50% subsidy on farming inputs (seeds, fertilizers, insecticides, etc.) **Voluntary National Review Report of Brunei Darussalam 2020 – 2035** - Rice self-sufficiency by three-folds over the next 5-6 years - Employing hybrid and high yielding varieties, adopting modern farming and dual seasons cropping practices, encouraging domestic entrepreneurship, and introducing commercial-based rice production at a larger scale - New planting areas; field research and trials of different varieties of rice from Indonesia, Myanmar, and China	**Health Promotion Blueprint 2011 – 2015** - Advocating for less salt/sodium products or content in products - Emphasis on nutritional labelling **Ministry of Health Strategic Plan 2019 - 2023 Investing for Our Future** - Revisions and promotion of the National Dietary Guidelines **Voluntary National Review Report of Brunei Darussalam 2020 – 2035** - Policies and legislations, in line with international practices, to cover preventing infection of diseases; public health; agricultural pests and noxious plants; and protection of plant varieties - Encourage food industries to reformulate and produce healthier choice products in the market - Create demand and supply of healthier choice products through healthy choice labelling	-
Cambodia	**Cambodia's National Environment Strategy and Action Plan 2016–2023**	**The Cambodian Food-Based Dietary Guidelines**	-

Country	Food Supply	Nutrition	Food Waste
	- By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, help maintain ecosystems, and strengthen capacity for adaptation - By 2030, double the agricultural productivity and incomes of small-scale food producers - To develop participative soil mapping and land use classification and zoning tools to rationalize land allocation for agricultural and other economic activities - Increase land productivity and sustainability - Reduce poverty of rural farming communities - To design and implement economic measures, including smart agriculture, instrumental in improving waste management - Control and minimize chemical application in agricultural practices **Cambodia's Voluntary National Review 2019 on the Implementation of the 2030 agenda for Sustainable Development**	- Provides information and some guidelines on healthy eating and the amount to consume for each type of food **Strategic Framework for Food Security and Nutrition** - Constructed a strategic framework to achieve an improved access to nutritious food and to alleviate food insecurity **National Nutrition Strategy (NNS) 2009-2015** - Formulated a strategy to improve nutrition among children	

Country	Food Supply	Nutrition	Food Waste
	- Investing on research and technology to improve agricultural productivity - Minimizing the use of chemicals in agricultural practices - Development of better strategies for land management		
Indonesia	**Road Map of SDGs Indonesia 2020-2030** - Provision of staple food, especially local food from domestic production - Distribution/logistics efficiency and stabilization of food prices - Food security early warning system - Protection system for farmers as food producers - Developing business partnerships between farmers and other business actors, and developing farm clusters - Improving institutional education in agriculture - Control inflation and foods' prices through import tariff's optimalization	**Road Map of SDGs Indonesia 2020-2030** - Development of quality and added value in agricultural products - Guarantee fulfillment of basic food needs for low-income households and disaster-affected communities - Promotion/campaign of healthy diets; provision of food security infrastructure - Improve efficiency of information system and disasters management related to food and nutrition; develop social institutions - Strengthening advocacy, campaign, social, and behavior change communication for nutrition improvement - Strengthening the nutrition surveillance system	-

Country	Food Supply	Nutrition	Food Waste
	Strategic Plan of the Ministry of Agriculture 2015–2019 - Investments on infrastructures and services to fight environmental risks		
Lao PDR	**Agricultural Development Strategy 2011-2020** - Developing agricultural production systems while conserving ecosystems **National Agricultural Development Strategy 2011** - Shifting to organic agricultural practices **Voluntary National Review on the Implementation of the 2030 agenda for Sustainable Development 2018-2030** - Improve design and maintenance of irrigation systems - Improve access to infrastructure (SDG 9) - Increase value capture by smallholder farmers through partnerships with private enterprises and government support	**Lao PDR Country Strategic Plan 2017-2021** - Formulated a strategy to boost domestic and international consumption of local sustainable food products - Improvements in school meals programs **National Nutrition Strategy to 2025** - Development in communication strategies on social behavior change towards food - Promote exclusive breastfeeding and provisions of food supplements for pregnant and breastfeeding women - Improvements for clean water systems in health centers, communities, etc.	-

Country	Food Supply	Nutrition	Food Waste
	- Improve production and processing facilities with private sector - Promote labor-saving technologies suitable for small-scale farms and producer groups - Organize producer groups and cooperatives for improved access to input and product markets - Facilitating rural finance - Incorporate the value chain approach into extension services to promote private investments in the rice value chain, and possibly in higher value-adding crops - The Strategy supports the shift from a subsistence to market-oriented agricultural production that is adapted to climate change and focused on smallholder farmers - Increase the capacity of farmers' associations - Improve agricultural production infrastructure, upgrading technologies, and strengthening farmers' access to inputs and financial products		

Country	Food Supply	Nutrition	Food Waste
Malaysia	**Voluntary National Review 2021** - **National Agrofood Policy 2021-2030** incorporates the element of environment into agricultural development towards achieving a sustainable food systems. - Good and sustainable agricultural practices in the area of crops, aquaculture and livestock have been promoted by encouraging agricultural producers to adopt agricultural production certification schemes namely MyGAP and MyOrganic. The adoption of these schemes provides recognition to agricultural producers in producing quality food in an environmentally safe manner. - **Malaysian Sustainable Palm Oil (MSPO)** certification is mandatory for all stakeholders along the value chain including smallholders. Further efforts include a policy to cap the area cultivated for oil palm cultivation to 6.5 million hectares (20 per cent of agriculture land area).	**Sustainable Development Goals Voluntary National Review 2017-2020** - Implement food supplementation programs for children from poor and low-income households - Reach pockets of remote communities that have food and healthcare needs	**National SCP Blueprint 2016 – 2020** - Accelerate the landfill diversion program, including a plan for food waste management - Separate collection of organic waste if it is not composted by the waste holder with concessionaires handling the collection and further processing - Impose waste tariff to finance organic waste collection - Support establishment of treatment facilities through fiscal incentives and soft loans - Useful by-products such as compost, biogas, and biodiesel from organic waste collected marketed as fertilizers and fuels - Upskill farmers - Increase viability of cottage industry and homemade produce - Strengthen processing efficiency standards - Equip wholesale markets, food depots and national food terminals with up-to-date logistics

Country	Food Supply	Nutrition	Food Waste
			- Promote healthy diets and improve literacy on food safety, nutrition, labelling, and branding **Voluntary National Review 2021** - Efforts towards increasing household waste recycling rate to 40 per cent (see SDG12) will play a role in reducing emissions from the waste sector. - Food waste in the overall lifecycle through both reduction and recovery is currently being addressed jointly across the Ministry of Agriculture and Food Industries (MAFI), Ministry of Domestic Trade and Consumer Affairs (KPDNHEP) and Ministry of Housing and Local Government (KPKT).
Myanmar	**Myanmar Sustainable Development Plan 2018-2030** - Revise and develop education and training in the agriculture, aquaculture, and food sectors, responding to the evolving needs of farmers and the rural private sector - Create market conditions to enable greater investment in agriculture,	**Myanmar Sustainable Development Plan 2018-2030** - Develop comprehensive national strategies and actions plans to increase secure access to quality food - Develop comprehensive approaches to acute malnutrition, including emergency feeding - Enhance nutrition education and communication, including guidelines and	-

Country	Food Supply	Nutrition	Food Waste
	aquaculture and polyculture and mechanization - Develop market and logistics infrastructure to support agricultural, aquacultural and polycultural productivity and value chain enhancement - Improve investment regulations for agri-investors - Facilitate an enabling environment which enables farmers to grow, produce, and trade freely - Improve food safety standards to protect human health and extract greater value from agricultural, aquacultural, livestock and related exports	awareness raising regarding healthy food related products - Promote cultivation of crops resistant to pests, droughts, and floods - Develop plans for emergency food reserves - Empower farmers with knowledge regarding proper seed utilization - Develop conservation facilities to secure plant and animal genetic resources for food and agriculture related research - Enhance food and	
The Philippines	**Towards the Attainment of Sustainable Consumption and Production in the Philippines: A Desk Review of Trends and Issues** - By 2030, restore agricultural productivity of one third of severely degraded abandoned land - Limit global cropland to 0.2 hectares per capita	**Towards the Attainment of Sustainable Consumption and Production in the Philippines: A Desk Review of Trends and Issues** - End hunger, ensure every adult and child receives adequate nutrition, with a focus on local and regional food security	**Towards the Attainment of Sustainable Consumption and Production in the Philippines: A Desk Review of Trends and Issues** - Reduce excess nutrient release by increasing nutrient use efficiency in agriculture to reduce losses (i.e. close gap between nutrient input and plant uptake)

Country	Food Supply	Nutrition	Food Waste
			- By 2030, reduce food loss along the food supply chain and waste at the consumption stage by 50% - Assess Filipino food consumption patterns and food waste trends - Conduct studies on strategies to create value from discarded food and post-harvest losses
Singapore	**Singapore "30 by 30" plan and RIE 2020** - Research and development - Improvements and further strengthening infrastructures	**Healthy Living Master Plan 2014-2020 (Ministry of Health, 2014)** - Formulating and implementing a master plan for a healthy lifestyle - Engaging different stakeholders and the community to develop strategies to promote a healthy lifestyle - Creation of a handbook on nutrition labelling	**Singapore Food Security Roadmap 2012 (Tortajada & Hongzhou, 2016)** - Food waste reduction **Resource Sustainability Act 2019** - Occupiers of prescribed buildings must segregate food waste - Provision of food waste segregation facilities by built infrastructure managers to enable occupiers of the prescribed building to dispose of food waste separately - Treatment of food waste: Building facility managers must cause the food waste to be treated in the building or within its premises or engage a licensed waste collector to send food waste to a licensed waste disposal facility

Country	Food Supply	Nutrition	Food Waste
Thailand	**Voluntary National Review 2017** - Increase the area for sustainable agriculture by 500,000 Rai (approximately 80,000 hectare). per year under five principles - Promote and improve production for sustainable agriculture - Improve the standardization and accreditation of produce from sustainable agriculture - Improve and promote the marketing of produce from sustainable agriculture - Promote Green Loans - Support research and innovation on sustainable agriculture in an inclusive manner - Organic Farming Improvement Project to increase area for organic farming, increase produce value, boost domestic sales and consumption of organic produce, and promote accreditation of organic farming that meets international standards - New Theory Agriculture Project to support the improvement of	**Strategic Framework for Food Management in Thailand 2012** - Conduct research and development on plants for disease control and to increase the quality, safety and nutritional value of the agricultural products - Promote appropriate consumer health behaviors among individuals to avoid malnutrition problems	**Voluntary National Review 2017** - Taskforce to help address food waste and food loss issues, and promote food security through sustainable agriculture **Strategic Framework for Food Management in Thailand 2012** - Improvement of food preservation practices among household and communities to prevent losses - Promoting the use of agricultural wastes as inputs to production (e.g., fertilizers and biofuels)

Country	Food Supply	Nutrition	Food Waste
	livelihoods of farmers to become self-reliant **Strategic Framework for Food Management in Thailand 2012** - Proper management of water and land resources for agricultural use - Improvement of logistic systems		
Vietnam	**Decision No. 899/QD-TTg** - Restructuring into a more sustainable and value-adding agricultural sector **Resolution 63/NQ-CP** - Investing on the construction and repair of irrigation systems to improve food production efficiency **Decision No.11/2006/QD-TTg** - Applying biotechnology in agricultural development: **Decision No. 1956/QD-TTg** - Subsidized vocational training for farmers **No. 1183/QD-TTg** - Established climate monitoring and early warning for natural disasters	**Decision No. 189/QD-BYT** - Implemented the list of "10 Tips on Good Nutrition to 2020" **Prime Minister's Decision No. 226/QD-TTg** - Target reduction of 12% in chronic calorie deficiency among women - Target reduction to less than 8% on children with low birth weight - Target reduction of malnourished children to less than 5%	-

APPENDIX B. Energy Policies in ASEAN

Country	Energy Security	Reliance on Non-renewable Energy	Energy Efficiency	Greenhouse Gas Emissions
Brunei	**Voluntary National Review 2020** - Power grids in the country are operated by two providers: the Department of Electrical Services under the Ministry of Energy and Berakas Power Company. These 2 provide approximately 60% and 40% of the national power demand respectively. - Brunei has one of the highest electrification rates in ASEAN, with 99.9% of the population connected to the grid.	**Energy White Paper, 2014** - Reduce energy intensity (TFEC/GDP) by 45% by 2035 based on 2005 level - 124 GWh of renewable power generation by 2017 and 954 GWh by 2035 (10% renewable share in power generation) (IRENA, 2018) **UNFFCC, 2015** - 10% power generation from renewables by 2035 **Voluntary National Review, 2020** - By 2035, reduce energy intensity to 45% through Energy Efficiency and Conservation (EEC) legislative measures and initiatives - By 2035, increase Renewable Energy capacity to at least 30% in the total power generation mix	**UNFCC, 2015** - 63% reduction in total energy consumption by 2035 (IRENA, 2018) **Voluntary National Review, 2020** - By 2035, reduce energy intensity to 45% through **Energy Efficiency (Standards and Labelling) Order 2021** - Promote the use of high efficient electrical appliances in compliance with the Minimum Energy Performance Standard (MEPS) set by the Ministry of Energy - Labeling scheme using a star rating system for the identification of energy efficient electrical appliances	**Voluntary National Review 2020** - The Brunei National Climate Policy (BNCP) to pave for Brunei Darussalam's low carbon and climate-resilient pathways for a sustainable nation, with 2035 as the target year. - Ministry of Energy has implemented strategic actions towards rejuvenation projects within oil and gas industry facilities for GHG emissions abatement which has reduced the share of fugitive emissions of total GHG emissions from 38% in 2016 to 18.1% in 2018.

Cambodia	**National Policy, Strategy and Action Plan on Energy Efficiency in Cambodia** - By 2015, the national grid has sufficient capacity to support all demands of consumers already connected to the national grid - By 2018, the national grid will provide a 25% reserve capacity for the system - By 2020, the high tension transmission line will cover all cities and provinces; these cities and provinces will have at least one sub-station each to receive electricity supply from the national grid - By 2020, 80% of villages will be connected to the national grid and 95% by 2030 - By 2020, at least 50% of households will be grid-connected with the same quality of supply as those connected to the national grid and 70% by 2030	**Power Development Plan, 2008-2021** - Supply 2241 MW of electricity through hydropower (ACE, 2016) **Energy Sector Development Plan, 2005-2024.** - Diversify energy supply sources (green energy options) to mitigate reliance on fossil fuels through developing renewable energy and promoting the exploration of energy sources such as hydropower, natural gas, and coal.	**National Policy, Strategy and Action Plan on Energy Efficiency in Cambodia** - Reduce TFEC by 20% in 2035 as compared with business-as-usual, including sectoral targets: o Industry: 20% in garment factories and 70% in ice factories o Residential: 50% o Commercial: 20–30% - o Rural electrification energy savings: 80% o Replacement of biomass use: 30–50% (IRENA, 2018) - Reduce the future National energy demand by 20% until 2035, compared to business-as-usual projections	**National Policy, Strategy and Action Plan on Energy Efficiency in Cambodia** - To reduce National CO_2 emissions in 2035 by 3 million tons of CO_2 **National Environment Strategy and Action Plan (NESAP)** - - Improved monitoring and compliance of relevant law and guidelines by the key industrial plants (garment, laundry and dying, cement, and coal power-plants, etc.) that may potentially be causing air, land, and water pollution

Indonesia	**Roadmap of SDGs Indonesia** - To improve the coverage and quality of electricity supply and services as well as the utilization of renewable energy - Expand coverage of electricity services and more even distribution of electric supply - Increase private role in electric power supply - Upgrade the quality of state enterprises in electric power sectors	National Energy Policy, 2014 - 23% renewable share of TPES (around 92.2 Mtoe in 2025), which consists of 69.2 Mtoe (45.2 GW) for electricity and 23 Mtoe for non-electricity - 31% renewable share in 2030 (IRENA, 2018) **Roadmap of SDGs Indonesia** - Improve the quality of electric supply - Increase the utilization of new renewable energy (NRE) to generate electricity	**National Energy Policy, 2014** - Reduce energy consumption in 2025 by 17% in industry, 20% in transportation, 15% in household, 15% in commercial buildings as compared to business as usual (IRENA, 2018) **Roadmap of SDGs Indonesia** - Electric power utilization for household appliances - Expansion of electric power utilization in health and education sector	**Voluntary National Review 2019** - Reduction of GHG emissions through low carbon development efforts - Reducing GHG emissions and intensity of emission through key sectors in low carbon development, such as land-based sectors (forestry, peatlands, and agriculture), energy-based sectors (energy, industry, and transportation), Waste Management sector, and Coastal sectors (Mangroves and Seagrass);
Lao PDR	**Voluntary National Review 2018** - Strengthen the power system planning and project - Accelerate rural electrification and industrial development - Strengthen institutions in the energy sector	**Renewable Energy Development Strategy Policy (2016)** - 30% renewable share of total energy consumption by 2025 (IRENA, 2018) **Voluntary National Review 2018** - Develop renewable energies beyond the development of hydropower export potential focusing on small power	**National Energy Efficiency Policy (2016)** - Reduce TFEC by 10% in 2030 as compared with business as usual (IRENA, 2018) **Renewable Energy Development Strategy (2011-2025)**	**Voluntary National Review 2018** - The first country in ASEAN to ratify the Paris Agreement on Climate Change by passing a national law on its Intended Nationally Determined Contribution.

		development for self-sufficiency and grid connection, biofuels production and marketing, and development of other clean energies in the country	- Development of clean energy to reduce the import of fossil fuels - Increase biofuel consumption in the transport sector by 10% (ACE, 2016)	- Increase the country's forest cover to 70 percent by 2020 - The government plans to develop a greenhouse gas inventory system, a Nationally Appropriate Mitigation Action (NAMA) MRV framework, adaptation evaluation indicators, and tracking systems for climate finance.
Malaysia	**Voluntary National Review 2017** - Energy security through "Green growth **National Renewable Energy Policy, Renewable Energy Act, Sustainable Development Authority Act, Green Technology Policy, National Biofuel Policy** - Enhance the utilization of indigenous RE resources and contribute toward national electricity supply security (ACE, 2016)	**Voluntary National Review 2021** - Value-based Intermediation (VBI) Community of Practitioners (CoP) to strengthen the roles of Islamic finance in generating positive and sustainable impact to the economy, community and environment. It has issued several guidance including Sectoral Guides on Renewable Energy and Energy Efficiency to support financial industry to incorporate environmental, social and governance (ESG) risk considerations in their	**Green Technology Master Plan (2017-2030)** - Reduce electricity consumption by 15% **Voluntary National Review 2021** - Government is finalizing a blueprint for SCP, which will include energy efficient building and green mobility in its ten pathways - **National Energy Efficiency Action Plan** (NEEAP), introduced in 2016, uses incentives, minimum energy performance standards (MEPS) and energy audits among others to improve	**Voluntary National Review 2021** - National Biofuel Policy (2006) and the Malaysian Biofuel Industry Act (2007) mandated the use of palm-based biodiesel blended with petroleum diesel through phased implementation from B5 Biodiesel Programme for transportation sector (blend of 5 per cent palm-based biodiesel with 95 per cent petroleum diesel) in June 2011. Mandatory B7 Biodiesel Programme for industries with aims to

		financing and investment decision-making process. - Sustainable financing mechanisms and fiscal instruments: Green Technology Financing Scheme (GTFS) introduced in 2010 to access private funds and offer government guarantee for projects on five sectors, namely, energy, building, transport, waste and water. : Green Investment Tax Allowances (GITA) and Green Income Tax Exemption (GITE) were introduced in 2014 to spur the development of green products and technologies. Certified products and services under MyHijau Mark are eligible to apply for GITA and GITE. **Renewable Energy Act** - Provides electricity tariffs, corporate tax incentives, and financing support for renewable energy sources. **Power Sector Development** **Plan 2020-2038**	energy efficiency in residential, commercial, and industrial sectors - MEPS and the National Building Energy Intensity (BEI) programme have also improved energy efficiency with a total of 200 government buildings labelled as energy efficient under the BEI programme.	reduce GHG emissions from industrial processes and product use was introduced in July 2019, with exemptions for the power generation, maritime and bunkering sectors. - A NDC roadmap will be developed to specify mitigation actions and emission reduction targets for key GHG emitting sectors. **Nationally Determined Contribution** - Reduce emission intensity by 45% by 2030 (relative to 2005 levels)

		- Target on renewable energy capacity at 31 per cent of the total installed capacity by 2025 and at 40 per cent by 2035 - Target no new capacity of coal-fired power plants: coal power plant capacity in 2039 to be reduced by 39 per cent compared to 2020. - The Net Energy Metering (NEM) was introduced in 2016 to allow for consumers to also be producers – the energy produced from the solar PV installation will be consumed first, and any excess will be exported to the national grid at a prevailing displaced cost.		
Myanmar	**Intended Nationally Determined Contribution (INDC)** - Increase access to clean sources of electricity in communities and households without access to an electric power grid system - Rural electrification using at least 30% renewable sources to generate electricity supply	**National Renewable Energy Policy and Planning** - By 2030–31, achieve an energy mix of 38% hydro, 20% natural gas, 33% coal, and 9% other renewable sources - By 2030, the total installed hydropower capacity will be 9.4GW	**National Energy Efficiency and Conservation Policy, Strategy, and Roadmap (2015)** - Reduce electricity consumption by 20% in 2030 as compared with business as usual (IRENA, 2018) **Intended Nationally Determined Contribution (INDC)**	**Intended Nationally Determined Contribution (INDC)** - Mitigate GHG emissions in the rapidly developing industrial production sector

	Myanmar Sustainable Development Plan (MSDP) - Provide affordable and reliable energy supply to all categories of consumers, especially those living in remote areas that are currently without electricity	- By 2030, 38% of primary electricity generation capacity will be hydropower resource **Myanmar Sustainable Development Plan (MSDP)** - Scale-up use of renewable energy resources in partnership and with the agreement of local populations - Prioritize the creation of an investment-friendly environment that encourages the use of innovative, sustainable, and renewable energy generation technologies - Achieve an optimal level of renewable sources in the primary energy fuel supply mix	- Increase the number of energy-efficient cook-stoves disseminated to reduce the amount of fuelwood used for cooking **Myanmar Sustainable Development Plan (MSDP)** - Promote energy generation and distribution efficiency and conservation in industry, commercial, household, and public sector use - Promote climate-resilient and low-carbon energy, transport, and industrial systems	
The Philippines	**Department of Energy Act of 1992 (RA 7638)** - The main policy that ensures a continuous, adequate, reliable, and economic supply of energy (ACE, 2016).	**Philippine Action Plan for Sustainable Consumption and Production** - Complete mapping of renewable energy sources, mineral and land resources, etc.	**Energy Efficiency Roadmap for the Philippines, 2017-20 (2017)** - Reduce TFEC by 1% per year as compared with business as usual until 2040, equivalent to the reduction of one-third of energy demand	**Voluntary National Review 2019** - GHG Inventory Management and Reporting System - National Integrated Climate Change Database

	Towards the Attainment of Sustainable Consumption and Production in the Philippines: A Desk Review of Trends and Issues - By 2030, universal access to modern energy services from national/regional grids and local supplies, with doubling the share of global energy generated from clean, sustainable resources -	- Pilot-test emerging off-grid renewable energy sources - Continue the establishment of the grid and off-grid RE systems - Scale-up development & production of renewable energy technologies to accelerate the shift to clean energy **Voluntary National Review 2019** - Energy Efficiency and Conservation Act of 2019: Intends to secure sufficiency and stability of the country's energy resources by promoting the development and utilization of efficient renewable energy technologies and systems	- Reduce energy intensity (TFEC/GDP) by 40% in 2040 as compared to the 2005 level (IRENA, 2018) **Philippine Action Plan for Sustainable Consumption and Production** - Construct/renovate government buildings/public facilities to comply with the Philippine Green Building Code and the Energy Efficiency and Conservation Act **Towards the Attainment of Sustainable Consumption and Production in the Philippines: A Desk Review of Trends and Issues** - Introduction of electric vehicles such as e-Trikes and e-jeepneys - By 2030, energy consumption per capita at a sustainable level	and Information Exchange System was - established to serve as the primary enabling platform of the government in consolidating and monitoring - climate change-related data and information from public, private, and other stakeholders **Towards the Attainment of Sustainable Consumption and Production in the Philippines: A Desk Review of Trends and Issues** - By 2030, a 50% reduction in energy-related CO2 emissions - By 2030, reduce Short-Lived Climate Pollutants (SLCPs) from energy supply and use by a considerable percentage - By 2050, decarbonize the energy system and reduce the climate forcing of energy supply by 50%

Singapore	**A Lively and Livable Singapore: Strategies for Sustainable Growth** - Looking into appropriate energy pricing - Providing information for better decisions: make more information on energy use, costs, and benchmarks available to firms and consumers **Singapore's Climate Action Plan: Take Action Today, For a Carbon-Efficient Singapore** - Energy is priced at market cost without any subsidy so that households and businesses will use energy judiciously.	**Singapore Sustainable Blueprint (2009)** - Solar power installation of 350 MW by 2020 and 1 GW beyond 2020 - 10 140 tonnes per day by 2018 for a waste-to-energy plant **Singapore's Climate Action Plan: Take Action Today, For a Carbon-Efficient Singapore** - Adopt more efficient power generation technologies - Increase deployment of solar photovoltaic systems - Adopt cleaner fuels - To support an increasing share of intermittent electricity generation, Singapore will invest in research efforts in solar forecasting, energy storage, and smart grids. - Waste-to-Energy plants reduce waste volume by 90 percent and generate enough electricity to meet up to 3 per cent34 of Singapore's total electricity demand.	**Singapore Sustainable Blueprint (2009)** - Reduce energy intensity (TFEC/GDP) by 35% from 2005 levels by 2030 (IRENA, 2018) **Singapore's Climate Action Plan: Take Action Today, For a Carbon-Efficient Singapore** - By 2030, achieve BCA Green Mark standards for 80% of buildings - Improve the energy efficiency of building tenants and data centers - By 2030, achieve 75% use of public transport - Raise Minimum Energy Performance Standards (MEPS) for household appliances and introduce MEPS for more appliances - Encourage adoption of efficient appliance models and introduce smart home technology **A Lively and Livable Singapore: Strategies for Sustainable Growth**	**Singapore's Climate Action Plan: Take Action Today, For a Carbon-Efficient Singapore** - Increase industrial energy efficiency, reduce non-CO2 GHGs from industrial processes and adopt cleaner processes - Reduces GHG emissions by switching to natural gas, a cleaner form of fossil fuel. Energy Conservation Act - Energy-intensive users in the industrial sector are required to appoint an energy manager to monitor and report energy use, and GHG emissions-related information annually. They also have to submit an energy efficiency improvement plan and review this plan annually.

			- Mandate energy labeling and minimum performance standards for key electrical appliances, and setting energy performance benchmarks for industrial processes - Boosting energy-efficient industry designs, processes, and technologies -	
Thailand	**Voluntary National Review on the Implementation of the 2030 Agenda for Sustainable Development** - Construction of power plants (small power plants, renewable energy power plants, and private power plants) for distributing electricity in remote areas - Studied and developed transmission systems to accommodate increasing demands for power supply in populated areas - Distribute electricity to remote areas via underwater electrical cable systems.	**Alternative Energy Development Plan (2015)** - 30% renewable energy in total energy consumption by 2036, in the form of electricity (20.11% in the generation, approximately 19 684 MW), heat (36.67% of heat production, approximately 25 088 KTOE), and biofuels (25.04% in the transportation sector, approximately 8 712.43 KTOE) (IRENA, 2018) **Voluntary National Review on the Implementation of the 2030 Agenda for Sustainable Development**	**Thailand Energy Efficiency Policy 2015 Plan (2015)** - Reduce energy intensity (TFEC/GDP) by 30% in 2036 compared with the 2010 level (IRENA, 2018) Voluntary National Review on the Implementation of the 2030 Agenda for Sustainable Development - By 2036, decrease energy intensity by at least 30% - Promote energy-saving products, campaign on energy saving, and regulate service providers to use energy efficiently covering sectors of transportation,	**Voluntary National Review on the Implementation of the 2030 Agenda for Sustainable Development** - Pledged on the UNFCCC 21st Conference of the Parties to reduce GHG emissions by 20-25% from the projected BAU level by 2030, 5.58% of which is from the transport sector. - the Bureau of Budget has allocated budget to concerned agencies for climate actions and to achieve greenhouse gas emission reduction targets.

		- By 2036, the ratio of renewable energy is at 30% from 13.83% - Support investments in renewable energy by approving the purchase of renewable energy both from new projects and from projects pending approval, and through new financing method to strengthen the competitiveness of the private sector -	industry, commercial buildings, and residences - Provide incentive and financial benefits for suppliers to increase investments in high-performance energy-saving machinery	
Viet Nam	**Voluntary National Review 2018** - The Electricity Plan VII: Ensure that most rural households have access to electricity by 2020 - Energy access to affordable energy sources for all citizens by 2030 - Recently agreed with EU and MOIT to fund the "Programme to support energy development policy and enhance access to sustainable energy in rural, mountainous and island areas". This program will invest in 23 rural and mountainous electricity supply sub-projects connected	**Decision 428/QD-TTG dated March 18, 2016 (2016)** - 21% renewable energy of 60 GW installed capacity in 2020, 13% renewable energy of 96 GW in 2025, and 21% renewable energy of 130 GW in 2030 consisting of 2.1% wind, 15.5% hydro, 2.1% biomass, **and 3.3% solar** (IRENA, 2018) **Voluntary National Review 2018** - The Electricity Plan VII: &% of electricity generated from	**National Target Program for Energy Efficiency and Conservation (2015)** - Reduce TFEC by 8% in 2020 as compared with business as usual - Reduce the energy intensity of energy-intensive industries by 10% by 2020 (IRENA, 2018) **National Action Plan on Sustainable Production and Consumption up to 2020, with a Vision to 2030**	**Voluntary National Review 2018** - Cleaner production in the industry sector has to lead to cleaner production practices, such as 5-8% of energy, material, and fuel consumption. - So far, 29 provinces have applied the system of rice intensification to 395,000 ha, to create high yields and reduce GHG emissions due to enhanced technology to reduce input costs.

	to the national grid in 23 provinces. -	renewable sources by 2020 and 10% by 2030 - The country currently has 77 registered industrial wind projects in 18 provinces and cities with a total capacity of 7,000 MW. - The use of biomass energy is also growing in rural areas and it is predicted that 2,000 MW could be reached by 2030.	- By 2020, 60-70% of enterprises in intensive energy consumption and environmental pollution sectors apply clean technology and sustainable technology - By 2020, 50% of manufacturing enterprises apply cleaner production and energy-saving solutions - By 2020, 50% of the enterprises in the distribution sector is trained and implement cleaner production and energy-saving solutions -	- Viet Nam committed that, "By 2030, through domestic resources, Viet Nam will reduce 8 per-cent of total GHG emissions compared to conventional scenarios, including 20 per-cent reduction of emissions per unit of GDP compared to 2010 and an increased forest coverage of 45 per-cent" - Viet Nam implemented a program on reducing GHG emission from Deforestation and Forest Degradation, conservation, sustainable management of forests, and enhancement of forest carbon stocks (REDD+)

APPENDIX C. Consumer Electronics Sector Policies in ASEAN

Country	Increasing Volume of Electronic Wastes	Improper Waste Treatment Activities	Waste Imports from Other Countries
Brunei	-	-	-
Cambodia	-	-	-
Indonesia	-	-	-
Lao PDR	**-**	-	-
Malaysia	**National SCP Blueprint: The Pathways for Sustainable Consumption and Production (SCP) in Malaysia** - E-waste holders must return goods that can turn to e-waste to selling points - The manufacturer, assembler, importer, or dealer shall take specified products or goods back after use and shall be obliged on their own account and cost to recycle or dispose of any products or goods taken back in a specified manner - Any person shall deliver specified products or goods to the manufacturer, assembler, importer or dealer - Any dealer of specified products or goods shall receive, and store specified products or goods to be taken back **Voluntary National Review 2021**	-	**-**

Country	Increasing Volume of Electronic Wastes	Improper Waste Treatment Activities	Waste Imports from Other Countries
	- Policy focus on the 3Rs - Develop a national EPR scheme to boost the recycling industry and support expansion of green market.		
Myanmar	-	-	-
The Philippines	**The Philippine Action Plan for Sustainable Consumption and Production** - Institutionalize the extended producer responsibility principle for manufacturers - Transform business models to internalize environmental costs of production and consumption (e.g., EPR) - Promote repair of appliances, electronic gadgets instead of buying new ones - Study potential of urban mining to recover metals from electronic waste	**-**	**-**
Singapore	**-**	**Resource Sustainability Act 2019** - Certain registered producers must join licensed scheme - Collection and disposal of unwanted regulated non-consumer products - Retailers must collect and dispose of unwanted products	-

Country	Increasing Volume of Electronic Wastes	Improper Waste Treatment Activities	Waste Imports from Other Countries
		- Large retailers must offer in-store collection of certain e-waste - Restriction of unlicensed/unregistered public collection and disposal of e-waste - Recyclers must keep proper records of entire e-waste treatment process; submit reports of amount of e-waste received and materials processed/ recycled to NEA	
Thailand	**-**	-	-
Vietnam	-	**Vietnam National Action Plan on Sustainable Consumption and Production** - Apply, disseminate, and replicate good practices on efficient use of resources and cleaner production for production establishments in electronics and other economic sectors - Develop training materials, deliver training, communication, and guidelines on implementation of circular economy models for electronic waste and other economic sectors	-

APPENDIX D. Plastic Waste Policies in ASEAN

Country	Single-Use Plastic	Plastic Waste Trade	Implementation of Waste Management	Marine Pollution
Brunei	**No Plastic Bag Weekend** - An initiative by the Minister of Development that encourages no plastic bags from Fridays to Sundays (UNEP, 2019) **Voluntary National Review 2020** - Expanding the "No Plastic Bag Everyday" and "Plastic Bottle Free" initiatives nationwide - Reduce the use of Styrofoam and explore the possibility of halting Styrofoam importation and the prospect of increasing excise tax for single-use plastics	**Advisory from the Department of Environment, Parks and Recreation** - The importation of plastic waste is prohibited. (Akenji, et al., 2019)	**Environmental Protection and Management Order (2016), the Customs Order (2006), and the Workplace Health and Safety Order (2009)** - Recycling of plastics is regulated under these laws. However, recyclable materials are mostly exported due to a lack of recycling facilities. (Akenji, et al., 2019) **National Development Plan** - In the National Development Plan, there are references to building an "integrated waste management system" and an "engineered landfill disposal site". (UNEP, 2019) **Voluntary National Review 2020** - By 2035, reduce waste generation to 1 per capita per day from 1.5 kg per capita per day - By 2035, the recycling rate of 30% - Impose heavy penalties for illegal dumping of waste in - Encourage the use of recycled materials	**Prevention of Pollution of the Sea Order, 2005** - The disposal of plastic in the ocean is prohibited under the Prevention of Pollution of the Sea (Garbage) Regulations (Akenji, et al., 2019)

Country	Single-Use Plastic	Plastic Waste Trade	Implementation of Waste Management	Marine Pollution
Cambodia	**Sub-Decree on Management of Plastic Bags (2017)** - Prohibition of the importation, local production, distribution, and use of plastic bags exceeding the thickness of 0.03 millimeters with a base width of 25 centimeters or 10 inches (Akenji, et al., 2019) **National Environment Strategy and Action Plan (NESAP)** - Promote public awareness for minimizing plastic bag use and unorderly disposal	**Sub-Decree No. 36 on Solid Waste Management (dated 27 April 1999)** - Import of plastic waste is strictly prohibited	**Sub-Decree No. 113 on Urban Garbage and Solid Waste Management (2015)** - Focuses on the enhancement of the management of garbage and solid waste of downtowns with effectiveness, transparency, and accountability, referring to ensure aesthetics, public health, and environmental protection". (UNEP, 2019) **National Environment Strategy and Action Plan (NESAP)** - By 2030, substantially reduce waste generation through prevention, reduction, recycling, and reuse	**Cambodia's Sub-Decree on Water Pollution Control (1999)** - Prohibits the storage or disposal of any solid waste that leads to pollution of public waterways (Akenji, et al., 2019). **National Environment Strategy and Action Plan (NESAP)** - - By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution
Indonesia	The government plans to release an EPR policy aimed at food, drinks, and goods packaging. (UNEP, 2019)	**Ministry of Trade (MOT) Regulation No. 84/2019** - Import of plastic waste should comply with the following requirements; - It is generated from industry (not	**The Solid Waste Management Act (No.18/2008)** - Governs household waste collection and management. (Akenji, et al., 2019) **The Presidential Regulation No. 97/2017 Solid Waste Management National Policy and Strategy (2017-2025)**	**Indonesia's Plan of Action on Marine Debris 2017-2025** - Five strategies for tackling Marine Debris: behavioral change, reduced land-based leakage, reduced sea-based leakage, enhanced law

Country	Single-Use Plastic	Plastic Waste Trade	Implementation of Waste Management	Marine Pollution
		household) and not B3 (hazardous, toxic, and dangerous) - Recycled plastic will be used only for secondary raw material for the production - Importer holds import license (API-P) and gets approval from MOT (PI) for import of plastic	- A policy aimed at reducing overall waste by 30% and managing the remainder of 70% (UNEP, 2019)	enforcement, and financial commitments, and research and development - Reduce 70% of marine plastic debris (from the 2017 baseline) by the end of 2025. (Akenji, et al., 2019)
Lao PDR	-	-	**Environmental Protection Law (EPL) 2012** - Mandates waste separation for different purposes such as recycle, reuse and reprocess as new products	-
Malaysia	**Public Cleansing Management Act (SWMA) 2007 Act 672** - Requires the segregation of recyclables in households, including packaging. **Malaysia's Roadmap Towards Zero Single-Use Plastics 2018-2030**	In 2018, the housing minister of Malaysia announced that the country will be limiting the import of plastic waste and will phase out imports in three years. (Reuters, 2018)	**Solid Waste and Public Cleansing Management Act** - Mandates source separation of materials including packaging. - Compulsory segregation of recyclables according to paper, plastics, and others and place it in their respective bags (UNEP, 2019)	**Roadmap Towards Zero Single-Use Plastics 2018-2030** - Plans to tackle regional marine debris issues (Akenji, et al., 2019)

Country	Single-Use Plastic	Plastic Waste Trade	Implementation of Waste Management	Marine Pollution
	- Outlines plans and policies to reduce plastic waste **Voluntary National Review 2021** - A circular economy roadmap for plastics will be introduced to further strengthen efforts in reducing plastic waste		**National SCP Blueprint** - Set up and finance the system to meet the return and recycling obligations of packers and distributors including packaging of imported goods - Specifications on recyclable packaging materials - Ban certain materials from being used for packaging purposes	
Myanmar	Mandalay City and Yangon City implemented a ban on the manufacture, import, trade, and distribution of HDPE plastic bags in 2009 and 2011, respectively (Akenji, et al., 2019)	**Notification 22/2019 by the Ministry of Commerce (MOC)** - Approval from MOC is necessary for the import of plastic waste.	**The National Environment Policy 1994** - Covers environmental issues including waste management. Development committees in each town or city are responsible for waste management. (UNEP, 2019)	-
The Philippines	There are currently multiple pending bills on the use of single-use plastics: - HB3579, Plastic Bag Phase-Out Act, - HB07902, Act Mandating Plastic Waste	-	**Ecological Solid Waste Management Act 2000 (RA 9003)** - Covers the adaption of a comprehensive solid waste management program. - Establishment of a National Solid Waste Management Commission (NSWMC) with broad membership to oversee the implementation and to	National Plan of Action on Plastics and Marine Litter is currently being drafted.

Country	Single-Use Plastic	Plastic Waste Trade	Implementation of Waste Management	Marine Pollution
	- SB1851, Regulating the Use of Plastic Bags. - SB1948, Single-Use Plastics Regulation and Management Act. - SB650, Plastic Bag Phase-Out Act. - SB430, Plastic bag Regulation Act (UNEP, 2019) **Philippine Action Plan for Sustainable Consumption and Production** - Scale-up policies promoting "choice editing" to penalize unsustainable options (e.g. banning single-use plastics) - Develop waste minimization policies and provide a transition plan for phase-out of single-use packaging		provide guidance as well as financial and technical support to the local level - Local 10-year plans for collection and treatment, to be updated regularly and approved by the national regulating authority (Akenji, et al., 2019)	
Singapore	**Singapore Packaging Agreement (SPA)** - A voluntary initiative between the government and the private sector that provides flexibility to those who adopt cost-effective	-	**Environmental Public Health Act 2002** - Defines waste and the stakeholders involved in proper waste management. (UNEP, 2019) **A Lively and Livable Singapore: Strategies for Sustainable Growth**	**Prevention of Pollution of the Sea Act** - Handles the provisions on the protection of the marine environment, and the prevention, reduction control of marine pollution. A fine is imposed for

Country	Single-Use Plastic	Plastic Waste Trade	Implementation of Waste Management	Marine Pollution
	solutions to reduce waste (Akenji, et al., 2019) **The National Environment Agency (NEA)** - Aims to have a yearly reduction of 10,000 tonnes of packaging waste by 2020 (UNEP, 2019) **Resource Sustainability Act 2019** - Reporting of specified packaging imported or used - Submission of 3R plan for the reduction, reuse, and recycling of packaging in the country - Keep and maintain complete and accurate records containing the required information on packaging materials		- Facilitate household recycling - Targeting major sources of waste: promote recycling large sources of waste that have low recycling rates such as plastic - Improve recycling rate from 56% in 2008 to 65% in 2020 and 70% in 2030 - Provide financial support for recycling - Promote the use of recycled products	marine littering. (UNEP, 2019)
Thailand	**National Roadmap for Development of Bioplastic Industry** - Encourages the use of bioplastics as a biodegradable alternative to single-use plastics.	Thailand plans to stop the importation of plastic wastes by 2021 after the increase of imports due to China's import ban (UNEP, 2019).	**Enhancement and Conservation of National Environmental Quality Act B.E. 2535 AD 1992** - - Covers the multiple acts regarding waste management. **Master Plan on Solid Waste Management, 2016** - More than 75% of total MSW amount properly managed by 2021	**Plastic Debris Management Plan (2017-2021)** - Aims to targets plastic waste going into the ocean (UNEP, 2019)

Country	Single-Use Plastic	Plastic Waste Trade	Implementation of Waste Management	Marine Pollution
			- 100% of accumulated MSW generated in 2015 properly managed by 2019 - More than 50% of total local authorities ensure waste segregation at source conducted by 2021	
Viet Nam	**Law on Environmental Protection Tax in 2010** - Non-biodegradable plastic bags are subjected to tax. This includes bags or thin plastic-bag shaped packaging made from HDPE (high-density polyethylene resin), LDPE (Low-density polyethylene), or LLDPE (Linear low-density polyethylene resin) plastic film (Akenji, et al., 2019) **National Action Plan on Sustainable Consumption and Production** - By 2025, 85% of supermarkets, commercial centers distribute and use eco-friendly packaging which gradually replaces single-use, non-degradable plastic items, and 100% by 2030	Viet Nam has imposed temporary restrictions on the import of plastic scraps and waste. (UNEP, 2019)	**Law on Environmental Protection 2014** - Deals with regulations on solid waste and hazardous waste management. (Akenji, et al., 2019) **National Action Plan on Sustainable Production and Consumption up to 2020, with a Vision to 2030** - By 2020, 90% of scraps of plastic bags, paper, oil, iron, and steel shall be recycled	**Law on Environmental Protection 2014** - Provides statutory provisions on protection activities, measures, and resources used for marine and island environmental protection (UNEP, 2019)