

“Thailand’s contributions to ASEAN CE transition  
BCG Economic Strategy, focusing on the C-Pillar  
on Plastics and upcoming packaging directives”



## Insights into Thailand's D4R Standards



### Bioeconomy

Involves the production of renewable biological resources and the conversion of these resources into value added products



### Circular economy

Aims at reusing and recycling resources



### Green economy

Determines to keep economy, society and the environment in balance, leading to sustainable development

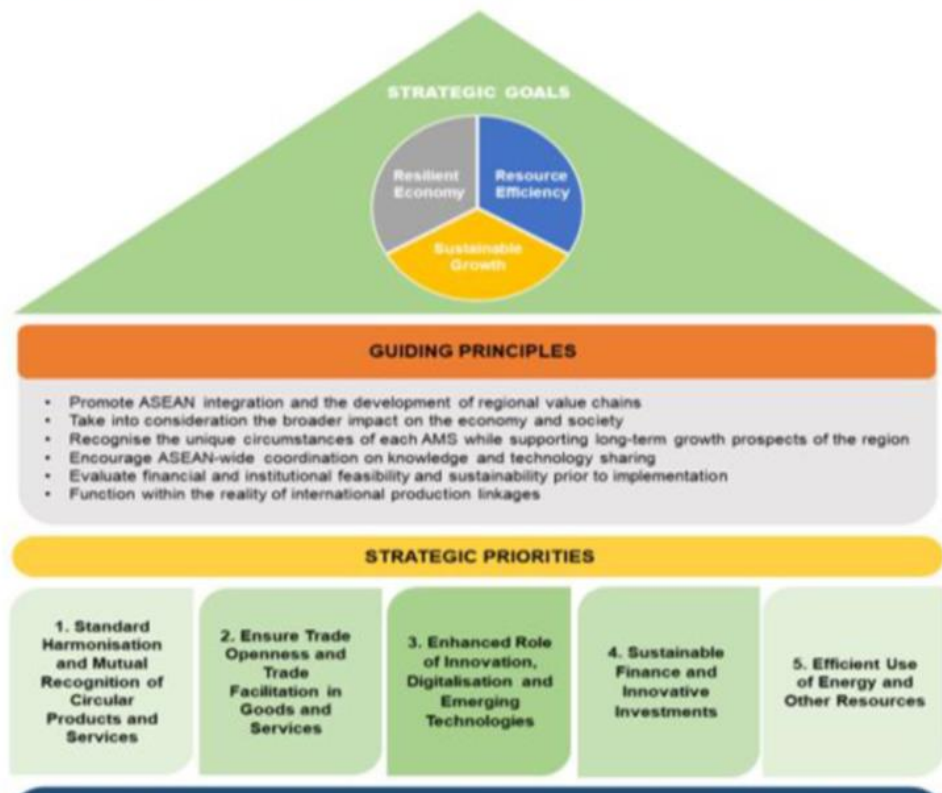


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16<sup>th</sup> April 2024



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Figure 1: Framework for Circular Economy for the ASEAN Economic Community



# Framework for Circular Economy for the ASEAN Economic Community



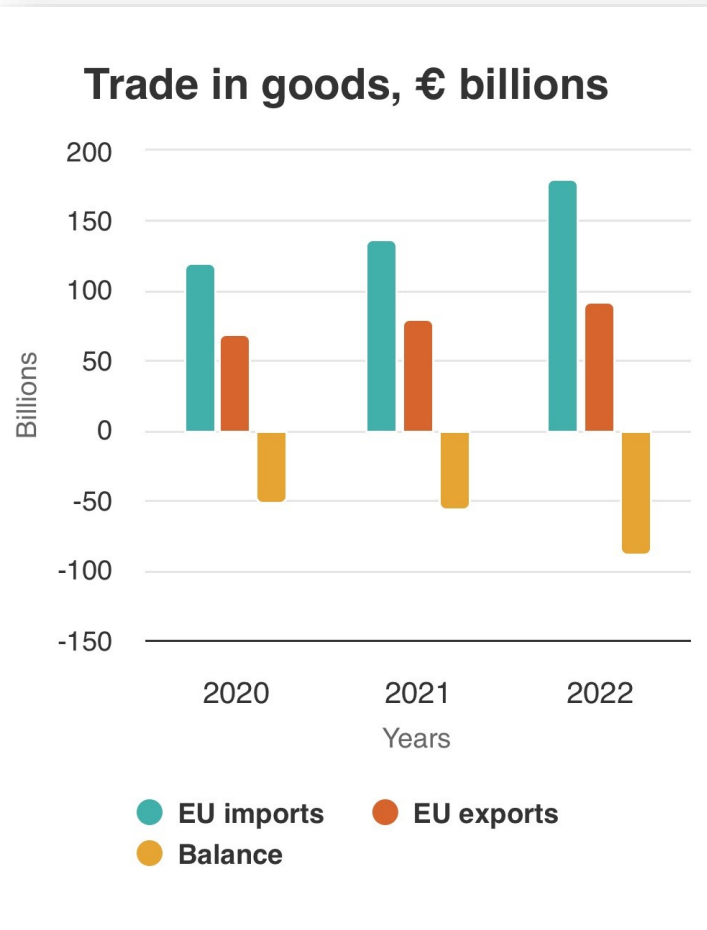
## Strategic Goal 3: Sustainable and Inclusive Growth

- ASEAN has an opportunity to lead this global shift given its rapid industrialisation, wealth in natural resources, and economic integration, by becoming a hub for circular innovations, promoting complementarities in regional supply chains through technology exchange, whilst taking into account the different levels of development of the AMS.
- ASEAN needs to create an enabling environment to sustain growth and accelerate it such as through enhancing innovative business models and coordinating resources towards circular investments.



# EU trade relations with the Association of South-East Asian Nations.

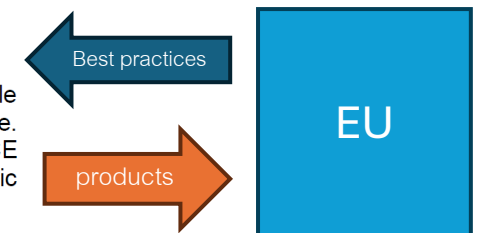
## Facts, figures and latest developments



- ASEAN as a whole represents the EU's 3<sup>rd</sup> largest trading partner outside Europe (after China and the US) with more than €271.8 billion of trade in goods in 2022. Bilateral trade in services amounted to €82.4 billion in 2020.
- The EU is ASEAN's third-largest trading partner after China and the US, accounting for around 10.2% of ASEAN trade.
- The EU is the second-largest investor in ASEAN countries. In 2020, its Foreign Direct Investment (FDI) stocks into ASEAN accounted for €350.1 billion. Although a more recent phenomenon, ASEAN investment in Europe has also been growing steadily and impressively to a total stock of over €172.4 billion in 2020.
- The EU's main exports to ASEAN are chemical products, machinery and transport equipment. The main imports from ASEAN to the EU are machinery and transport equipment, agricultural products, and other manufactured goods.

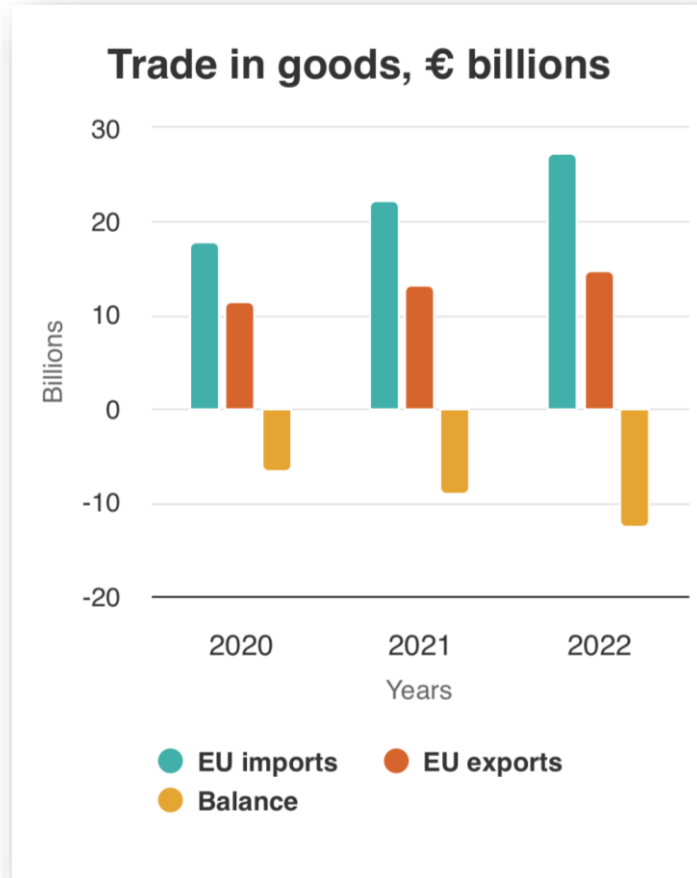
### Principle 6: Function within the reality of international production networks and linkages.

Given that production of circular goods and associated services in the region entails considerable inputs from within the region and beyond, the Framework shall be cross-border in nature. Moreover, the continued importance of global value chains means that ASEAN-specific CE strategies need to recognise global best practices, and policies adopted by key ASEAN economic partners, whilst advancing ASEAN as a strategic regional and global player and partner on CE.



# EU trade relations with Thailand

## Facts, figures and latest developments



- In 2020, total bilateral trade between the EU and Thailand amounted to €29 billion.
- The EU is Thailand's fourth largest trade partner (after China, Japan and the US), accounting for 7.5% of the country's total trade. Thailand is the EU's 26th largest trading partner worldwide.
- Thailand exported goods worth €15.1 billion to the EU in 2020. Key exports from Thailand are machinery and electronics and transport equipment, miscellaneous manufactured articles, as well as food products.
- The EU exported goods worth €11.3 billion to Thailand in 2020. Key EU exports to Thailand are machinery and transport equipment, chemicals and related products, and manufactured goods.
- Thailand is one of the most important destinations of European investments within ASEAN with €19.8 billion of outward stocks. The EU is the second-largest investor in Thailand after Japan.



# EU Packaging & Waste Packaging Directive



## Article 2

### Scope

1. This Directive covers all packaging placed on the market in the Community and all packaging waste, whether it is used or released at industrial, commercial, office, shop, service, household or any other level, regardless of the material used.



1. 'packaging' shall mean all products made of any materials of any nature to be used for the containment, protection, handling, delivery and presentation of goods, from raw materials to processed goods, from the producer to the user or the consumer. 'Non-returnable' items used for the same purposes shall also be considered to constitute packaging.

'Packaging' consists only of:

- (a) sales packaging or primary packaging, i. e. packaging conceived so as to constitute a sales unit to the final user or consumer at the point of purchase;
- (b) grouped packaging or secondary packaging, i. e. packaging conceived so as to constitute at the point of purchase a grouping of a certain number of sales units whether the latter is sold as such to the final user or consumer or whether it serves only as a means to replenish the shelves at the point of sale; it can be removed from the product without affecting its characteristics;
- (c) transport packaging or tertiary packaging, i. e. packaging conceived so as to facilitate handling and transport of a number of sales units or grouped packagings in order to prevent physical handling and transport damage. Transport packaging does not include road, rail, ship and air containers.

## Article 9

### Essential requirements

- 1. Member States shall ensure that three years from the date of the entry into force of this Directive, packaging may be placed on the market only if it complies with all essential requirements defined by this Directive including Annex II.
- 2. Member States shall, from the date set out in Article 22 (1), presume compliance with all essential requirements set out in this Directive including Annex II in the case of packaging which complies:
  - (a) with the relevant harmonized standards, the reference numbers of which have been published in the *Official Journal of the European Communities*. Member States shall publish the reference numbers of national standards transposing these harmonized standards;
  - (b) with the relevant national standards referred to in paragraph 3 in so far as, in the areas covered by such standards, no harmonized standards exist.

ANNEX II

ESSENTIAL REQUIREMENTS ON THE COMPOSITION AND THE REUSABLE AND RECOVERABLE, INCLUDING RECYCLABLE, NATURE OF PACKAGING

1. Requirements specific to the manufacturing and composition of packaging

- Packaging shall be so manufactured that the packaging volume and weight be limited to the minimum adequate amount to maintain the necessary level of safety, hygiene and acceptance for the packed product and for the consumer.
- Packaging shall be designed, produced and commercialized in such a way as to permit its reuse or recovery, including recycling, and to minimize its impact on the environment when packaging waste or residues from packaging waste management operations are disposed of.
- Packaging shall be so manufactured that the presence of noxious and other hazardous substances and materials as constituents of the packaging material or of any of the packaging components is minimized with regard to their presence in emissions, ash or leachate when packaging or residues from management operations or packaging waste are incinerated or landfilled.

2. Requirements specific to the reusable nature of packaging

The following requirements must be simultaneously satisfied:

- the physical properties and characteristics of the packaging shall enable a number of trips or rotations in normally predictable conditions of use,
- possibility of processing the used packaging in order to meet health and safety requirements for the workforce,
- fulfil the requirements specific to recoverable packaging when the packaging is no longer reused and thus becomes waste.

3. Requirements specific to the recoverable nature of packaging

(a) Packaging recoverable in the form of material recycling

Packaging must be manufactured in such a way as to enable the recycling of a certain percentage by weight of the materials used into the manufacture of marketable products, in compliance with current standards in the Community. The establishment of this percentage may vary, depending on the type of material of which the packaging is composed.

(b) Packaging recoverable in the form of energy recovery

Packaging waste processed for the purpose of energy recovery shall have a minimum inferior calorific value to allow optimization of energy recovery.

(c) Packaging recoverable in the form of composting

Packaging waste processed for the purpose of composting shall be of such a biodegradable nature that it should not hinder the separate collection and the composting process or activity into which it is introduced.

(d) Biodegradable packaging

Biodegradable packaging waste shall be of such a nature that it is capable of undergoing physical, chemical, thermal or biological decomposition such that most of the finished compost ultimately decomposes into carbon dioxide, biomass and water.



Readiness  
of the  
(regulatory)  
regime in  
Thailand?



# The “C” Pillar of the BCG Model



The focus is on identifying measures to support the “C (Circular)” pillar of the BCG model in the field of plastics. For this purpose, the policy brief has identified 5 clusters of measures:

- **Measures on market restrictions and bans**, these include identifying the most relevant & problematic single-use plastic products in Thailand and extending the ban to cover more products than currently addressed under the Roadmap on Plastic Waste Management (2018-2030).
- **Measures for consumption reduction and promoting reuse**, these include initiating the transition to reusable food packaging, promoting reusable systems in restaurants, take-aways, food delivery services and open markets, using the power of Green Public Procurement, introducing levies on carry-out bags and introducing a deposit-return-system for reusables.
- **Measures to strengthen the recycling market**, these include defining clear institutional set-up and roles and responsibilities for standardization, certification and verification of design-for-recycling guidelines, institutionalizing material flow analysis for plastics, and setting recycled content targets.
- **Fiscal measures**, include mobilizing investments for reusable packaging, packaging with recycled content, and Material Recovery Facilities (MRF), introducing taxation for single-use plastic items and designing an appropriate Extended Producer Responsibility (EPR) system.
- **Measures on biobased and biodegradable items**, include labeling requirements for biobased and biodegradable materials, and promoting their use in selected fields of application, such as third-party certified and labelled garbage bags for separate collection of wet waste, and biobased plastics made from agricultural waste and by-products as raw materials



# กระทรวงทรัพยากรธรรมชาติและสิ่งแวดล้อม Ministry of Natural Resources and Environment

The National Environment Board approved the 2<sup>nd</sup> National Action Plan on Waste Management (2022-2027)

The National Environment Board approved the 2nd Plan at the No.3/2565 (2022) meeting on August 3rd, 2022.

- 80% of Municipal Solid Waste will be properly managed, 36% by encouraging waste separation at households and recycling and
- To promote Waste to Energy which expects to reduce the amount of waste to be improperly disposed (e.g., open dumping, open burning) and landfilled
- To increase the use of recycle materials in production lines from recyclable waste e.g., plastic waste and paper, glass, aluminum packaging waste, from 74% – 100%
- To reduce food waste to 28% resulting in prevention of odor in landfill sites and reduction of greenhouse gas emissions
- Not less than 50% of community hazardous waste will be properly managed.
- 100% of Infectious waste and hazardous industrial waste will be properly managed.

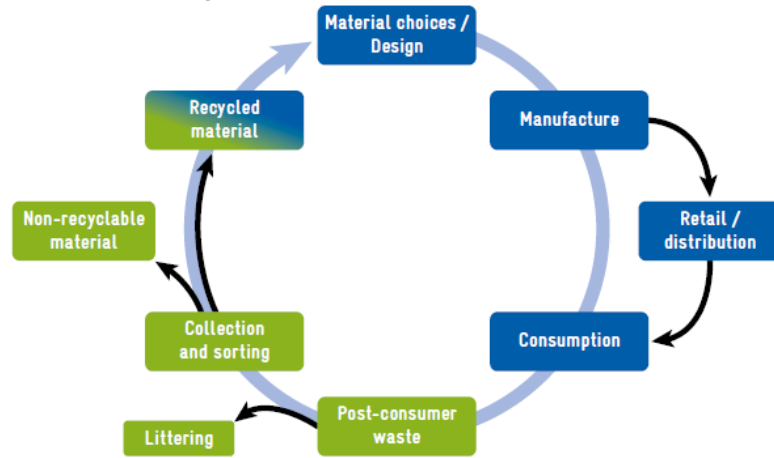
How can convert this goal into a tangible outcome?

Verifiable actions in accordance with acceptable standards

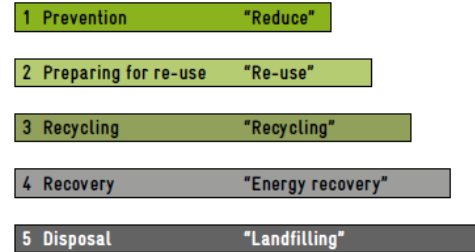


Figure 2-1: Two concepts to explain the terms "upstream" (blue in c) and "downstream" (green in c)

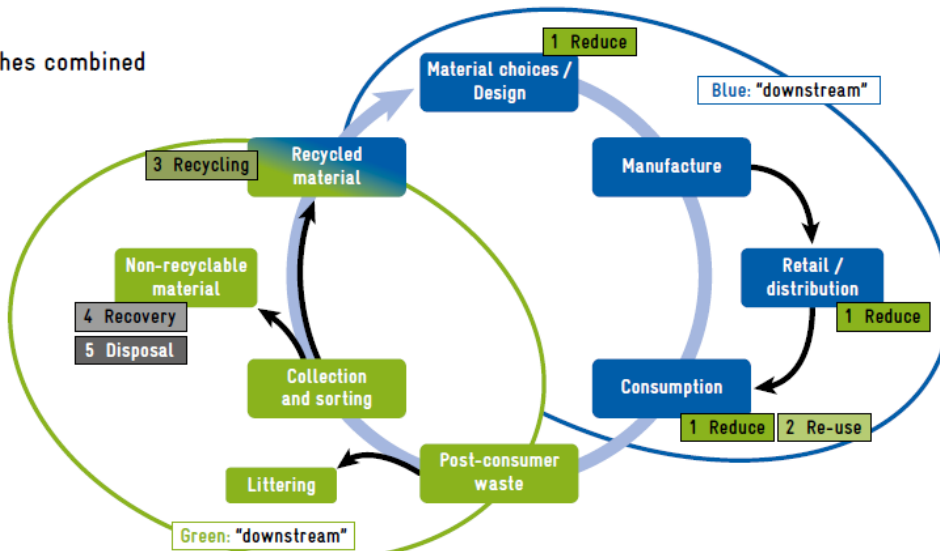
(a) Material life cycle



(b) Waste hierarchy



(c) Two approaches combined



Examples for upstream measures<sup>2</sup> are:

- (Design for) Reuse shall extend the lifetime of products, e.g. reusable packaging for the distribution of food- and drinks-to-go, multi-use shopping bags, normed beverage crates with non-branded uniform bottles to be reused by various companies for refilling and for easy logistics, flat euro-pallets, etc. (Figure 2-2)

- Design-for-recycling (D4R), addressing the composition and make-up of products and requiring the compatibility with existing recycling infrastructure: e.g. deciding for a mono-material in the design of a product or packaging;
- Plastic consumption reduction measures such as products-as-a-service<sup>3</sup> business models, and other design options for environmental sound use which shall prevent littering, allow complete emptying or minimisation of chemical risk;
- Recycled content targets (see the pre-study on recycled content)

## Design-for-recycling (D4R) - State of play



The existing legal framework in Thailand: *Challenges & Opportunities*



“1 KG”

Jasmine rice  
Gor. Kor. 43

Organic  
Thailand

But the plastic package itself?

**The Measurement Act 1999 (Section 63):** The indication of quantity of goods under section 62 or which the Packer displays on the package shall be accurate, and be in accordance with the quantity of the goods in the package. The indication of quantity of goods on the package which is inaccurate within the contingency rate as prescribed by the Minister shall be deemed accurate quantity indication.

**The Food Act 1978 (Section 27):** Food of the following characteristics shall be deemed an adulterated food: (4) food labeled to deceive or try to deceive purchasers in matters of quality, quantity, usefulness or special characteristic, or matters of place or country of production;

**The Consumer Protection Act 1979 (Section 22):** An advertisement may not contain a statement which is unfair to consumers or which may cause adverse effect to the society as a whole; that is, notwithstanding such statement concerns with the origin, condition, quality or description of goods or services as well as the delivery, procurement or use of goods or services.

The following statements shall be regarded as those which are unfair to consumers or may cause adverse effect to the society as a whole:

- (1) statement which is false or exaggerated;
- (2) statement which will cause misunderstanding in the essential elements concerning goods or services, notwithstanding it is based on or refers to any technical report, statistics or anything which is false or exaggerated;

Consumer protection: but are they sufficient to support the “C” of the BCG and the D4R principles?

# Laws and business trends in Thailand

National Standardization Act 2008 Translation

Page 1

**NATIONAL STANDARDIZATION ACT**  
**B.E. 2551 (2008)**  
**BHUMIBOL ADULYADEJ, REX.**  
**Given on the 23rd Day of February B.E. 2551;**  
**Being the 63rd Year of the Present Reign.**

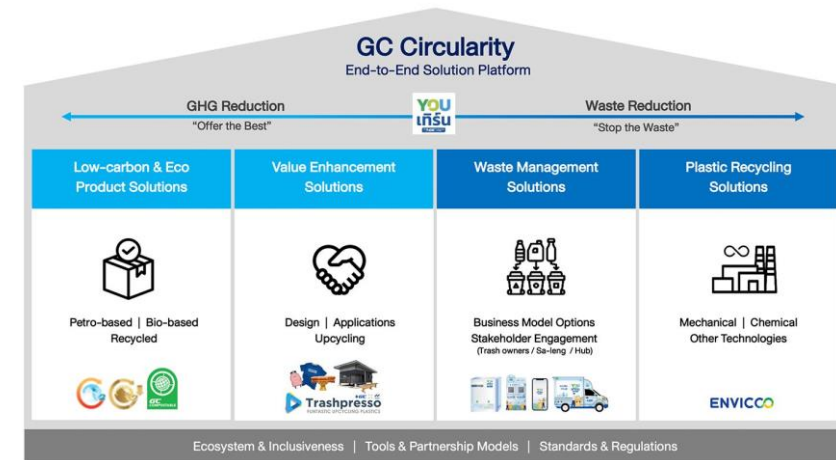
**Section 3.** In this Act:

**"Standard"** means any one or several specifications concerning the following:

- (1) products, methods of manufacture, production processes, components, structures, dimensions, sizes, types, shapes, weight, efficiency, performances, durability, or purity of the products;
- (2) packages, packaging, marking or labeling;
- (3) methods, processes, properties, efficiency or performance as related to services;
- (4) management system or administrative system regarding quality, hygiene, occupational health, environment, safety or other systems;
- (5) definitions, guidelines, recommendations, measurement units, testing, calibration, experiment, analysis, research, inspection, certification, and assessment concerning (1), (2), (3) and (4) or others as related to standardization;

**Section 13.** There shall be one or several Committees on Standardization which shall be appointed by the Council as appropriate, with the following duties and powers:

- (1) to announce the determination, amendment and revocation of standards relating to the conformity assessment;
- (2) to determine measures for the solution and prevention of problems that might hinder the national competitiveness relating to standardization or rules and regulations or academic information on standardization of other countries;
- (3) to announce the determination on the rate of service fees and exemption of service fees for inspection or assessment to the conformity assessment agency or announce the determination on the rate of service fees for inspection and for issuing certificate to the Suppliers;
- (4) to report on the result of the implementation to the Council according to the criteria, methods, and conditions prescribed by the Council;
- (5) to carry out any other matter under this Act or as assigned by the Council;



<https://sustainability.ptggroup.com/en/net-zero/decarbonization-pathways/portfolio-driven>



## In line with the EU's standards?

These guiding principles apply to (inter alia) food packages made from polypropylene (PP) including the food-contact grade, the rigid packaging (Design for Recycling Guideline PP rigid food packaging) [collectively called the "PP Plastic"]



DESIGN RECOMMENDATIONS FOR RECYCLABLE PACKAGING (D4R);  
POLYETHYLENE TEREPHTHALATE (PET) PLASTIC BOTTLES FOR BEVERAGE,  
HIGH DENSITY POLYETHYLENE (HDPE) PLASTIC BOTTLES FOR PERSONAL CARE AND  
HOUSEHOLD PRODUCTS,  
AND RIGID POLYPROPYLENE (PP) PLASTIC CONTAINERS FOR FOOD AND BEVERAGE



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## 7 แนวทางการออกแบบเพื่อการรีไซเคิลสำหรับภาชนะพลาสติก PP ชนิดคงรูป สำหรับบรรจุอาหารและเครื่องดื่ม

มีรายละเอียดข้อกำหนดทางเทคนิค ดังต่อไปนี้

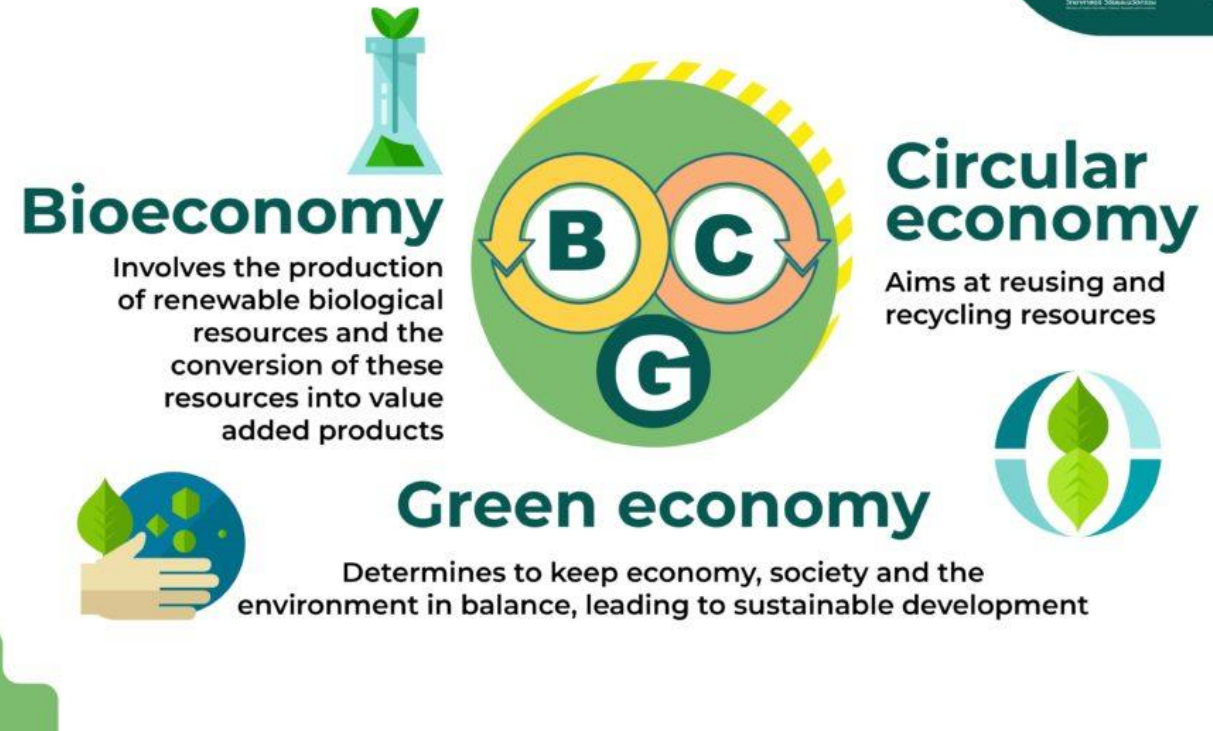
<p><b>1. Material:</b></p> <ul style="list-style-type: none"> <li>- Mono-material PP; material composition (Total amount of PP <math>\geq</math> 90% mixed Polyolefin e.g. PE <math>\leq</math> 10% in packaging)</li> <li>- Materials with <math>d &gt; 1</math> g/cm<sup>3</sup>, e.g. PS, PVC, PLA, PET, PETG, are not allowed</li> <li>- Multilayer material is all made from mono-material PP and recycled PP (rPP) is allowed (if recycle as food packaging, it must comply with food-contact materials requirements.)</li> </ul>	<p><b>1. วัสดุ</b></p> <p>1.1 ทำจากพลาสติกประเภทเดียวกัน คือ พอลิพรอพิลีน (Mono-material PP)<sup>13</sup> โดยมีสัดส่วนของพอลิพรอพิลีน (PP) ไม่น้อยกว่าร้อยละ 90 ผสมกับพอลิโอเลฟิน (PO) อื่น ได้แก่ พอลิเอทิลีน (PE) ในปริมาณไม่เกินร้อยละ 10 ของส่วนประกอบทั้งหมด</p> <p>1.2 ไม่มีพลาสติกอื่นที่มีความหนาแน่นมากกว่า 1 g/cm<sup>3</sup> เช่น พอลิสไตรีน (PS) พอลิไวนิลคลอไรด์ (PVC) พอลิแลคติกแอซิด (PLA) พอลิเอทิลีนเทเรฟทาเลต (PET) พอลิเอทิลีนเทเรฟทาเลตไกลคอล (PETG) กรณีที่เป็นวัสดุหลายชั้น (multilayer) วัสดุทุกชั้นต้องเป็นวัสดุที่ทำจากพลาสติกประเภทเดียวกัน คือ PP (Mono-material PP) ทั้งนี้รวมถึงพลาสติก PP แปรใช้ใหม่ (rPP) ด้วย (ถ้ารีไซเคิลวัสดุกลับมาเป็นบรรจุภัณฑ์อาหารต้องสอดคล้องกับข้อกำหนดวัสดุสัมผัสอาหาร)</p>
<p><b>2. Additives:</b></p> <p><b>Do not use</b></p> <ul style="list-style-type: none"> <li>- Bio-degradable (e.g. strach fiber cellulose) additives</li> <li>- Oxo-degradable additives</li> <li>- Photo-degradable additives</li> <li>- Mineral fillers (e.g. Calcium Carbonate (CaCO<sub>3</sub>), Talcum, or Talc) not increasing density more than 1 g/cm<sup>3</sup></li> <li>- Contamination of chemicals that are not allowed in food-contact materials such as flame retardants, thermal/UV</li> </ul>	<p><b>2. สารเติมแต่ง</b></p> <p>2.1 ไม่ใช่สารเติมแต่งที่เป็นอุปสรรคต่อการรีไซเคิลดังต่อไปนี้</p> <p>2.1.1 สารเร่งการแตกตัวทางชีวภาพ (bio-degradable) เช่น แป้ง ไฟเบอร์ เซลลูโลส</p> <p>2.1.2 สารเร่งการแตกตัวโดยกระบวนการออกซิเดชัน (oxo-degradation หรือ “สาร oxo”)</p> <p>2.1.3 สารเร่งการแตกตัวด้วยแสง (photo-degradable)</p>

<p>stabilizers, etc. (if recycle as food packaging)</p>	<p>2.1.4 สารตัวเติม (filler) ในปริมาณที่ทำให้พลาสติกมีความหนาแน่นมากกว่า 1 g/cm<sup>3</sup> เช่น แคลเซียมคาร์บอเนต (CaCO<sub>3</sub>) ทัลคัม (Talcum) หรือ ทัลก์ (Talc)</p> <p>2.2 ไม่มีการปนเปื้อนของสารเคมีที่ไม่อนุญาตให้มีในวัสดุสัมผัสอาหาร เช่น สารหน่วงการติดไฟ สารเพิ่มเสถียรภาพต่อความร้อน/สารเพิ่มเสถียรภาพต่อรังสีอัลตราไวโอเล็ต (สาร thermal/UV stabilizers) หากต้องการนำกลับมารีไซเคิลเพื่อเป็นบรรจุภัณฑ์อาหาร</p>
<p><b>3. Barriers:</b></p> <p><b>Do not use</b> any barrier layers that obstacle PP recycling</p> <ul style="list-style-type: none"> <li>- Polyvinylidene chloride, PVDC</li> <li>- Polyamide, PA</li> <li>- Aluminium barriers</li> <li>- EVOH that is unavoidable in processing can use “&lt; 6% EVOH + PP-g-MAH tie layers” in an amount not exceeding the value specified by a standard.</li> </ul>	<p><b>3. ชั้นกัน</b></p> <p>3.1 ไม่ใช่ชั้นกันที่เป็นอุปสรรคต่อการรีไซเคิลพอลิพรอพิลีน ได้แก่</p> <ul style="list-style-type: none"> <li>- พอลิไวนิลิดีนคลอไรด์ (PVDC)</li> <li>- พอลิเอไมด์ (PA)</li> <li>- ชั้นกันอลูมิเนียม (aluminium barriers)</li> <li>- ชั้นกันพอลิเอทิลีนไวนิลแอลกอฮอล์โคพอลิเมอร์ (Ethylene vinyl alcohol copolymer, EVOH) EVOH ในปริมาณไม่เกินค่าที่มาตรฐานกำหนด<sup>14</sup></li> </ul>
<p><b>4. Colour:</b></p> <ul style="list-style-type: none"> <li>- Natural colour or White preferred</li> <li>- Do not use black colour by adding black color or carbon black to any partion or the entire piece of packaging.</li> </ul>	<p><b>4. สี</b></p> <p>4.1 ภาชนะพลาสติกพอลิพรอพิลีน ให้ใช้สีธรรมชาติ (natural colour) หรือ สีขาว (White)</p> <p>4.2 ไม่ใช่สีดำ โดยการเติมสีดำ หรือ เติมผงเขม่าดำ (Carbon black) ไม่ว่าจะส่วนใดส่วนหนึ่ง หรือ ทั้งชั้นของบรรจุภัณฑ์<sup>15</sup></p>
<p><b>5. Printing / coding / marking:</b></p> <ul style="list-style-type: none"> <li>- Direct printing, such as brand trademarks on the container, should be used ink less than 1% by weight of the total packaging.</li> </ul>	<p><b>5. การพิมพ์รหัส/การทำเครื่องหมาย</b></p> <p>5.1 การพิมพ์ข้อมูล เช่น ยี่ห้อ เครื่องหมายการค้า หรือ ข้อความใด ๆ ลงบนภาชนะพลาสติกโดยตรง ให้ใช้หมึกพิมพ์น้อยกว่า 1% โดยน้ำหนัก<sup>16</sup> เมื่อเทียบกับน้ำหนักภาชนะทั้งหมด</p>

<ul style="list-style-type: none"> <li>- Laser engraving is recommended for specifying the best before date and the batch number, or use inks</li> </ul>	<p>5.2 การระบุรหัสและเครื่องหมาย เพื่อแสดงข้อมูลตามกฎหมายลงบนภาชนะพลาสติกโดยตรง เช่น การระบุวัน เดือน ปีที่ควรบริโภคก่อน (best before date) และรหัสรุ่นที่ผลิต (batch number) สามารถใช้หมึกพิมพ์ได้ หรือ ใช้เทคนิคการสลักด้วยเลเซอร์ (Laser engraving)</p>
<p><b>6. Label/sleeve material, adhesive, size:</b></p> <ul style="list-style-type: none"> <li>- Labels and sleeves must be made from PP or PE</li> <li>- <b>Do not use</b> <ul style="list-style-type: none"> <li>- aluminium, metal coated, or paper</li> <li>- material with <math>d &lt; 1 \text{ g/cm}^3</math> (e.g. thin foam)</li> <li>- Other material (e.g. PA, PET, PET-G, PLA, and PVC) that obstacle to PP recycling</li> </ul> </li> <li>- Label is completely detachable, easy to peel off without leaving any residue attached to the container e.g. perforation for shrink sleeves and wrap around.</li> <li>- Sticker labels; adhesive should be that are alkali or water soluble or releasable at a certain temperature <math>\leq 85 \text{ }^\circ\text{C}</math></li> <li>- <b>Do not use</b> <ul style="list-style-type: none"> <li>- bleeding colours</li> <li>- toxic or hazardous inks (Hef. TIS 655 Part 1-2553)</li> <li>- PVC-binders</li> </ul> </li> <li>- Not allowed: heavily printed sleeves</li> </ul>	<p><b>6. ฉลากและปลอกสวม : วัสดุ กาว และขนาด</b></p> <p>6.1 วัสดุทำฉลาก ทำจากพลาสติกพอลิโพรพิลีน (PP) ซึ่งเป็นชนิดเดียวกับกับภาชนะ หรือ พอลิเอทิลีน (PE) ซึ่งเป็นกลุ่มพอลิโอเลฟิน (PO)</p> <p>6.2 ฉลากไม่มีกาวจากวัสดุอื่น ดังต่อไปนี้</p> <ul style="list-style-type: none"> <li>- วัสดุที่เป็นออลูมิเนียม เคลือบโลหะ หรือ ทำจากกระดาษ<sup>17</sup></li> <li>- วัสดุอื่นที่มีความหนาแน่นน้อยกว่า <math>1 \text{ g/cm}^3</math> เช่น โฟมแผ่นบาง</li> <li>- วัสดุอื่นที่เป็นอุปสรรคต่อการรีไซเคิลพอลิโพรพิลีน (PP) เช่น พอลิเอไมด์ (PA) พอลิเอทิลีนเทรฟทาเลต (PET) พอลิเอทิลีนเทรฟทาเลตไกลคอล (PETG) พอลิแลคติกแอซิด (PLA) พอลิไวนิลคลอไรด์ (PVC)<sup>18</sup></li> </ul> <p>6.3 ฉลากต้องสามารถแยกออกจากภาชนะได้โดยง่าย ในขั้นตอนรีไซเคิล เช่น การทำรอยพับ สำหรับฉลากที่เ็นรัด (shrink sleeve) และฉลากแบบพันรอบ (wrap around)</p> <p>6.4 กรณีฉลากประเภทสติ๊กเกอร์ (Sticker) กาวที่ใช้ต้องสามารถหลุดออก ได้ในกระบวนการล้างในน้ำ หรือ สารละลายต่าง ที่อุณหภูมิไม่เกิน 85 องศาเซลเซียส</p> <p>6.5 หมึกพิมพ์ที่ใช้พิมพ์ฉลาก ห้ามใช้หมึกพิมพ์ ที่มีลักษณะต่อไปนี้</p> <p>6.5.1 หมึกพิมพ์ที่ก่อให้เกิดสีดก (bleeding)</p> <p>6.5.2 หมึกพิมพ์ที่มีสารพิษหรือสารอันตราย (toxic or hazardous inks) เช่น โลหะหนัก สารอินทรีย์ที่มีพิษ ที่เป็นเบี่ยงในหมึกสีหรือในพลาสติกเกินค่าที่มาตรฐาน</p>

	<p>กำหนด โดยอ้างอิงตามมาตรฐานผลิตภัณฑ์อุตสาหกรรม : มอก. 655 เล่มที่ 1-2553</p> <p>6.5.3 หมึกพิมพ์ที่ใช้สารยึดเกาะประเภทพีวีซี (PVC-binders)</p> <p>6.6 ไม่ควรพิมพ์ลายหนาแน่น (heavily printed sleeves)</p>
<p><b>7. Closure:</b></p> <p>PP plastic container lids such as beverage glass lids Cup lids and food trays in the following manner is acceptable:</p> <p>The lid of the container is designed to be completely detachable</p> <ul style="list-style-type: none"> <li>- Flexible lid; easy to peel off without leaving any residue attached to the plastic container. The peel layer of the lid is made of PE plastic and avoid PVC material for closure</li> <li>- Rigid lid must be made from PP</li> </ul>	<p><b>7. ฝา</b></p> <p>ลักษณะดังต่อไปนี้ สามารถยอมรับได้ในกรณีที่มีการออกแบบฝาภาชนะพลาสติกให้สามารถแยกออกได้โดยสมบูรณ์</p> <p>7.1 ฝาลักษณะนิ่ม (flexible lid) ลอกออกได้โดยง่าย (easy peel) โดยผู้บริโภค โดยไม่เหลือเศษวัสดุติดไปกับตัวภาชนะพลาสติก และไม่ใช้ฝาลักษณะที่พลาสติก PVC เป็นส่วนประกอบ</p> <p>7.1 ฝาลักษณะแข็ง (rigid lid) ทำจากพลาสติกพอลิโพรพิลีน (PP)</p>
<p><b>8. Easy-to-empty :</b></p> <p>The Maximum residue remained in the container should not excess 5% by weight of the empty container</p>	<p><b>8. ความง่ายต่อการเทสินค้าออกให้หมด</b></p> <p>8.1 สิ่งตกค้างคงเหลือ สูงสุดที่มีในภาชนะ มีปริมาณไม่เกินร้อยละ 5 โดยน้ำหนักภาชนะเปล่า</p>





# Insights into Thailand's D4R Standards

Thailand's (and other ASEAN countries') policy and legal framework are being developed to catch up the packaging and packaging waste rules of the EU.