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Introduction

The intensifying weather volatility has prompted all sectors, particularly business organisations, to place greater emphasis on potential impacts on society, environment, and economy. In response, the Stock Exchange of Thailand (SET) is committed to playing a role in mitigating the impacts of climate change and has therefore set a target to achieve net-zero greenhouse gas emissions by 2050. Green procurement is thus identified as a key mechanism to support the achievement of this target.

This handbook aims to provide a framework for establishing green procurement criteria across various categories of goods and services that are included within Scope 3 greenhouse gas emissions, specifically Category 1 – Purchased Goods and Services, Category 2 – Capital Goods, and Category 4 – Upstream Transportation and Distribution. Together, these categories accounted for more than 90 per cent of total greenhouse gas emissions in 2022–2023. The framework supports SET’s pathway towards achieving the net zero target in accordance with established plans. The green procurement criteria set out herein shall serve as prerequisites for SET’s suppliers, providing guidance for the development of goods and services that reduce greenhouse gas emissions, which can be classified into eight categories:



Outsource Mailing Services



Paper



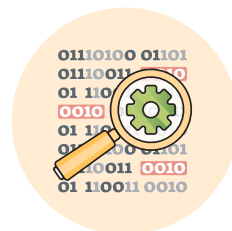
Document Delivery



**Information Technology
Equipment**



Cloud Services



Software



**General Services
(In-house)**



**General Services (Outsourced)
and General Goods**

Provisions are classified into two categories, namely:

1 Core Provisions

Provisions focusing on the reduction of greenhouse gas (GHG) emissions.

Short Term (2025–2029) and Medium Term (2030–2049):

- Compliance with existing regulations related to green procurement.
 - **National level:** Green criteria established by the Pollution Control Department (PCD)
 - **International level:** Green procurement practices developed by the European Union (EU) and the German Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV), among others.
- Calculation of GHG emissions associated with products and services delivered to SET.
- Establishment of emission reduction targets in accordance with the Science Based Targets initiative (SBTi) in order to ensure that the rate of GHG reduction is aligned with SET's management approach.
- Selection of raw materials for production or means of service delivery to SET that result in the lowest possible GHG emissions, for example, the use of renewable energy within the organisation, etc.
- Establishment of criteria to achieve GHG emission reductions in line with SET's targets, taking into account the following factors:
 - The potential of each category of goods and services to reduce GHG emissions, based on technologies or approaches expected to be developed from current knowledge.
 - National action plans on GHG emission reduction.
 - Regulations that may be enforced in the future, e.g., the (draft) Climate Change Act and related legislation.

Long Term (from 2050 onwards):

- Achievement of net zero target.

2 Additional Provisions

Additional requirements that shall be applied by SET in product and service selection processes, based on supplementary environmental considerations, when multiple products or services meet the core provisions.



Implementation




The provisions set out in this handbook shall be implemented in accordance with the following guidelines:

- 1 The provisions shall be communicated to internal departments to enable preparations for, or adjustment of, procurement practices, with due consideration given to the reduction of GHG emissions.
- 2 The provisions shall be communicated to suppliers to support the improvement of products and services delivered to SET, resulting in lower GHG emissions and fostering cooperation in setting targets towards net-zero GHG emissions.
- 3 The provisions shall be incorporated into product and service selection processes, in conjunction with other criteria such as quality, price, and supplier capability. Core provisions shall be prioritized in the selection process, with implementation timelines varying according to the category of product or service. Where more than one product or service meets the core provisions, SET may apply additional provisions to support the selection process.
- 4 To enable continuous improvement and development, SET may review and revise the provisions every three to five years, taking into account the following factors:

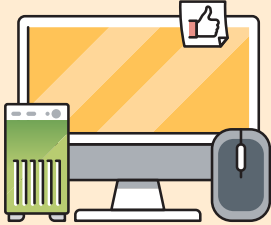


- The availability of new technologies or innovative operational approaches that support GHG emission reductions, such as more efficient use of renewable energy or services that require lower electricity consumption, etc.
- National action plans on GHG emission reduction.
- Relevant regulations on GHG control that are in force or may be introduced in the future, such as the (draft) Climate Change Act and related legislation.
- Any other changes deemed to be of material significance.



Key Environmental Impacts

The establishment and implementation of selection criteria for products and services across eight groups support the reduction of GHG emissions and help mitigate environmental impacts, according to data and references at both national and international levels. Each category of products and services has distinct environmental impacts and contributes to GHG emissions, as outlined below.

Products and Services	Impacts
 <p>Outsource Mailing Services</p>	<ul style="list-style-type: none"> • Emissions of pollutants to the atmosphere and discharge of waste into water sources during operational processes. • Consumption of energy and water during operations. • Use of chemicals during operations. • Generation of waste during operations, such as damaged products and sludge. • Direct and indirect GHG emissions arising from operational processes.
 <p>Paper</p>	<ul style="list-style-type: none"> • Deforestation and risks to biodiversity loss. • Emissions of pollutants to the atmosphere and discharge of waste into water sources during the production of pulp and paper. • Consumption of energy and water during production. • Use of chemicals during production. • Generation of waste during production, such as damaged products and sludge.
 <p>Document Delivery</p>	<ul style="list-style-type: none"> • Emissions of GHG and pollutants to the atmosphere resulting from energy consumption during use.

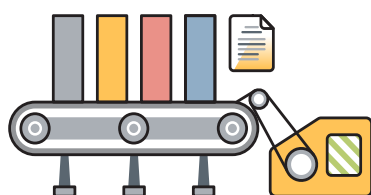


Products and Services	Impacts
 Information Technology Equipment	<ul style="list-style-type: none">• Use of finite resources and critical raw materials in the production of IT products.• Air, soil, and water pollution; accumulation of toxic substances; and impacts on aquatic life arising from the extraction and processing of raw materials, including hazardous substances used in products.• Energy consumption and GHG emissions resulting from production and use.• Generation of potentially hazardous waste from the disposal of electronic equipment.
 Cloud Services	<ul style="list-style-type: none">• Electricity consumption of IT systems (primarily from server operations).• Electricity consumption of mechanical and electrical (M&E) systems required to control data centre environment.• Direct and indirect GHG emissions associated with data centre operations, including electricity use, refrigerants for ICT systems, and waste heat that is not recovered and reused.
 Software	<ul style="list-style-type: none">• Energy consumption associated with infrastructure and resources required to support software development activities.• Energy consumption associated with computer hardware, data centres, and cloud infrastructure, including the production and disposal of hardware components and electronic equipment.

Products and Services	Impacts
 <p>General Services (In-house)</p>	<ul style="list-style-type: none"> • Use of resources such as water, energy, and various consumables. • Direct and indirect GHG emissions from operations, including electricity consumption, use of electrical appliances, and waste generated during service delivery.
 <p>General Services (Outsourced) and General Goods</p>	<ul style="list-style-type: none"> • Electricity consumption of equipment and electrical appliances used in service delivery under contractual arrangements. • Use of raw materials in the production of goods and in supporting service provision required for contract fulfilment. • Direct and indirect GHG emissions from operations and waste generated during service delivery.



Green Procurement Provisions



Outsource Mailing Services

Core Provisions

Recommended Implementation Period	Provisions
Short Term (2025–2029)	Supplier companies must identify or provide information on GHG emissions.
Medium Term (2030–2049)	Supplier companies have a strategic plan aligned with a commitment to comply with the Science Based Targets initiative (SBTi), targeting a 30 per cent reduction in GHG emissions (from the 2025 base year).
Long Term (2050)	Supplier companies have a strategic plan aligned with a commitment to comply with the Science Based Targets initiative (SBTi), targeting a 100 per cent reduction in GHG emissions (from the 2025 base year).

Additional Provisions

- 1 Materials used within the scope of service delivery should hold environmental certifications, such as:
 - Certification in accordance with SET's green procurement guidelines or other equivalent environmental product certifications; and/or
 - Products listed under the Pollution Control Department (PCD)'s green product directory.
- 2 Supplier companies are required to submit an implementation plan focused on efficient resource utilisation.
- 3 Personnel from supplier companies should participate in training programmes focused on environmental sustainability and efficient use of resources.
- 4 Supplier companies must develop and maintain a waste management strategy to manage waste generated within the scope of service delivery.



Paper

Core Provisions

Provisions	Minimum Recycled Content		
	Short Term	Medium Term	Long Term
Recommended Implementation Period	2025–2029	2030–2049	2050
General Office Paper Paper used in offices suitable for printing or photocopying	50%	75%	90%
Envelopes Paper envelopes	80%	90%	100%
Packaging Paper packaging intended for protection and containment of goods for transportation, marketing, and use	40%	60%	80%
Paper for Other Purposes Other paper products, such as notebooks, file folders, calendars, or business cards	40%	50%	75%



Additional Provisions

Supplier companies must provide evidence demonstrating that the manufacturing processes of their products take environmental impacts into consideration. Such evidence may include:

- 1 Inclusion of product on the Pollution Control Department (PCD)'s green procurement directory; and/or
- 2 Green Label certification according to SET's Green Procurement Manual, such as:
 - Certification under the Forest Stewardship Council (FSC) standard or other sustainable forest management standards;
 - Green Label certification issued by the Thailand Environment Institute (TEI), or other equivalent environmental certifications; and/or
- 3 Certification confirming that the paper has been processed using Elemental Chlorine Free (ECF) bleaching or Totally Chlorine Free (TCF) bleaching processes; and/or
- 4 Documentation confirming that the manufacturing process complies with all applicable environmental laws and regulations.



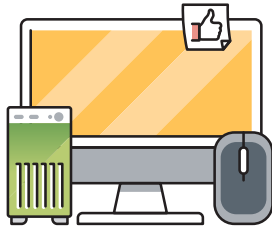
Document Delivery

Core Provisions

Recommended Implementation Period	Provisions
Short Term (2025–2029)	Supplier companies must identify or provide information on the type of fuel used, fuel efficiency, vehicle load factors, or the amount of GHG emissions generated from transport services.
Medium Term (2030–2049)	Supplier companies have a strategic plan related to GHG emission reduction or the use of renewable energy (such as electric vehicles, biofuels), achieving at least a 33 per cent reduction of GHG emissions by 2030.
Long Term (2050)	Supplier companies must demonstrate performance outcomes from the implementation of strategic plans related to GHG emission reduction or the use of renewable energy (such as electric vehicles, biofuels), achieving a 100 per cent reduction in GHG emissions by 2050.

Additional Provisions

- 1 Supplier companies must have relevant experience in the following areas:
 - Identification, assessment, and application of available technologies and measures to reduce GHG emissions, including the reduction of air pollution emissions.
 - Implementation of processes and procedures related to the monitoring and reporting of GHG emissions.
- 2 Supplier companies must have documented procedures for:
 - Monitoring and recording GHG and air pollution emissions arising from service delivery. Indicators used must include GHG emissions and energy consumption associated with the service, reported both as total annual figures and on a per tonne/unit transported–kilometre basis, or other indicators that appropriately reflect service efficiency.
 - Implementing GHG emission reduction plans through targeted measures aimed at reducing GHG emissions and air pollution.
 - Evaluating the effectiveness of GHG emission reduction plans by tracking changes in indicators and the implementation of measures specified in the plan.
 - Taking necessary corrective actions to address deviations from plans or increases in indicator values, and, where feasible, to prevent any future recurrence.



Information Technology Equipment

Core Provisions

Recommended Implementation Period	Provisions
Short Term (2025–2029)	<ul style="list-style-type: none">Manufacturers must demonstrate a commitment to achieving net zero emissions, or a commitment to achieving targets in accordance with the Science Based Targets initiative (SBTi); orManufacturers should provide information on GHG emissions across the product life cycle; orManufacturers should present guidelines or measures to maximise the long-term use of equipment, such as long-term warranties, maintenance and repair services, procurement of spare parts, or guidance on proper equipment care, in alignment with the organisation’s sustainability policy.
Medium Term (2030–2049)	<ul style="list-style-type: none">Manufacturers should provide information on GHG emissions across the product life cycle; andManufacturers must demonstrate a commitment to achieving net zero emissions, or a commitment to achieving targets in accordance with the Science Based Targets initiative (SBTi).
Long Term (2050)	<ul style="list-style-type: none">Manufacturers must achieve net zero target.

Additional Provisions

- 1 In the short term, where GHG emission data are not available, manufacturers should provide approximate information on the weight of the equipment.
- 2 Information technology equipment should carry relevant environmental labels as specified in SET’s green procurement guidelines, such as the Thailand Environment Institute (TEI)’s Green Label, Energy Star label, or other equivalent green or energy-efficiency certifications.



Cloud Services (including Cloud-based Software)

Core Provisions

Recommended Implementation Period	Provisions
Short Term (2025–2039)	<ul style="list-style-type: none"> At least 10 per cent of electricity consumed by cloud services must be sourced from renewable energy.
Medium Term (2040–2049)	<ul style="list-style-type: none"> GHG emission data must be available in metric tonnes of carbon dioxide equivalent (tCO₂e) for the services used; or At least 20 per cent of electricity consumed by cloud services must be sourced from renewable energy, and grid carbon intensity data must be available.
Long Term (2050)	<ul style="list-style-type: none"> Supplier companies must achieve net zero target.

Additional Provisions

- Supplier companies should implement environmentally friendly procurement policies for information technology equipment that supports cloud services.
- Supplier companies must have relevant skills and experience in improving server utilisation efficiency, including server virtualisation services, usage management tools and software, and consolidation of information technology assets within data centres. The weighted average Global Warming Potential (GWP) of refrigerants used in data centre cooling systems must not exceed 10, unless it can be demonstrated that such refrigerants cannot be substituted for specific technical reasons or that substitution would reduce the energy efficiency of the cooling system.
- The proportion of electricity sourced from renewable energy for power supplied to and consumed within data centres must be calculated in accordance with EN 50600-4-3, ISO/IEC 22237, or equivalent standards.
- Electricity used in calculating the proportion specified above must originate from renewable energy sources as defined under Directive 2009/28/EC of the European Union energy legislation.



Software

Core Provisions

Recommended Implementation Period	Provisions
Operating Systems / Standard Software / Software Development	
Short Term (2025–2039)	<ul style="list-style-type: none">Software developers must demonstrate a commitment to achieving net zero emissions, or a commitment to achieving targets in accordance with the Science Based Targets initiative (SBTi).
Medium Term (2040–2049)	<ul style="list-style-type: none">Software developers must identify or provide information on GHG emissions.
Long Term (2050)	<ul style="list-style-type: none">Software developers must achieve net zero target.

Additional Provisions

- 1 Software developers must have environmental and sustainability policies in place.
- 2 Software developers should specify the associated hardware usage when the software is in standby mode, and provide information on hardware utilisation levels and energy consumption under standard operating conditions.
- 3 End-user products should allow users the flexibility to install only the functionalities they require.



General Services (In-house) / General Services (Outsourced) and General Goods

Core Provisions

Recommended Implementation Period	Provisions
Short Term (2025–2039)	<ul style="list-style-type: none"> Supplier companies should have environmental and sustainability policies in place, including commitments or initiatives to reduce GHG emissions.
Medium Term (2040–2049)	<ul style="list-style-type: none"> Supplier companies demonstrate a commitment to achieving targets in accordance with the Science Based Targets initiative (SBTi); and Environmentally friendly products that carry environmental certifications, such as a Green Label or equivalent, should be used in operations.
Long Term (2050)	<ul style="list-style-type: none"> Supplier companies must achieve net zero target; and Environmentally friendly products that carry environmental certifications, such as a Green Label or equivalent, should be used in operations.

Additional Provisions

- Personnel from supplier companies should undergo training programmes focused on environmental sustainability and efficient use of resources.
- Supplier companies should have implementation plans focused on efficient resource utilisation.
- Supplier companies must develop and maintain waste management strategies to manage waste generated within the scope of service delivery.
- In cases where service personnel may be exposed to occupational hazards such as chemical exposure, electrical risks, excessive noise, or heat:
 - Personnel must receive training on health and safety measures.
 - Personnel must wear appropriate personal protective equipment (PPE) to mitigate potential risks.



Internal Carbon Pricing (ICP)

Internal Carbon Pricing (ICP) serves as a tool to support the achievement of net zero targets. It operates by converting GHG emissions data associated with relevant products and services into a monetary value, or carbon price, by referencing carbon prices from credible sources. The carbon price applied as part of financial decision-making indicators is intended to enable the procurement of products or services with low GHG emissions.

At present, SET has adopted an ICP approach based on external carbon pricing, following a comprehensive assessment across the following four dimensions:

- 1 National carbon pricing policies, including carbon pricing legislation in countries within the same region, such as Singapore, as well as trends in Thailand's carbon pricing legislation.
- 2 ICP practices of companies within the same or similar industries, or domestic companies, as publicly disclosed through sources such as websites, sustainability reports, annual reports (Form 56-1 One Report), and CDP reports, etc.
- 3 International Renewable Energy Certificate (I-REC) prices.
- 4 Theoretical carbon prices under the International Energy Agency (IEA)'s Net Zero Emissions by 2050 Scenario for countries classified as Emerging Market and Developing Economies that have set net zero targets.

Based on this consideration, SET has decided to adopt an initial ICP of **25 USD/tCO₂e** for the following reasons:

- The price closely reflects Singapore's carbon pricing legislation, given that Singapore is located within the same region. Thailand's Excise Department has also studied Singapore's carbon tax framework and pricing levels as a reference for the development of Thailand Carbon Tax;
- The price is broadly aligned with carbon prices implemented by companies both domestically and internationally; and
- The price is neither excessively high, such that it would adversely affect the organisation's financial position, nor too low that it fails to enable the procurement of low-carbon products or services.

During the pilot phase, it is recommended that a single carbon price be applied uniformly across all categories of products and services. However, following the pilot phase, the carbon price may be adjusted to better reflect the organisation's context. Price adjustments may be undertaken every three to five years, or when significant changes occur, such as the introduction of carbon pricing policies or revisions to organisational targets, to ensure alignment with national policies and to support the achievement of the organisation's objectives.

In the next phase, once familiarity with the use of ICP has been established, SET may apply multiple internal carbon prices, as appropriate to different types of products or services. Where it is possible to calculate the actual operational cost, an implicit price may be used. However, if the actual cost cannot be calculated, or if the calculated price is not suitable for practical application, such as being excessively high that it adversely affects the organisation's financial position, or too low to incentivise increased procurement of environmentally friendly products or services, an external price may instead be applied as the ICP.

SET may apply Internal Carbon Pricing (ICP) to green procurement in two formats, as follows:

1 Use of ICP to Calculate Integrated Price

Used as a component in the selection of products and services within the procurement process.

Illustrative Steps for Calculating an Integrated Price (Example Product: Paper)

- 1 Collect relevant assumed data for the product or service, including product price and Emission Factor (EF), which may be obtained from credible reference sources or from GHG emissions data provided by the manufacturer. The aforementioned information is used to calculate the Carbon Cost and the Integrated Price (THB per ream).

Example data

- EF Primary Material Production (100% virgin) : 910.48 kgCO₂e/1 tonne of paper
- EF Closed-loop Source (100% recycled): 730.48 kgCO₂e/1 tonne of paper
- ICP: 25 USD/tCO₂e or 0.025 USD/kgCO₂e
- 1 ream = 2.5 kg.
- Exchange rate: 35.04 THB/USD (August, 2024)

*Note: As data on the GHG emission of paper are not available from the manufacturer, data on the Emission Factor from a reliable reference source are used to calculate GHG emissions.

Calculation Formula

$$\text{Carbon Cost} = \text{ICP price} \times \text{GHG emissions of product or service} \times \text{Exchange rate (if applicable)}$$

$$\text{Integrated Price} = \text{Product or service price} + \text{Carbon Cost}$$



Example of Calculation

	Option 1: Recycle Content 30% (Company A)	Option 2: Recycle Content 50% (Company B)	Option 3: Recycle Content 100% (Company C)
Product Price (THB/ream)	125	125	150
GHG Emissions of Product (kgCO₂e/ream)	$[(910.48 \times 70\%) + (730.48 \times 30\%)] \times 2.5/1000 = 2.14$	$[(910.48 \times 50\%) + (730.48 \times 50\%)] \times 2.5/1000 = 2.06$	$[(910.48 \times 0\%) + (730.48 \times 100\%)] \times 2.5/1000 = 1.82$
Carbon Cost (THB/ream)	$2.1412 \times 0.025 \times 35.04 = 1.88$	$2.0512 \times 0.025 \times 35.04 = 1.79$	$1.8262 \times 0.025 \times 35.04 = 1.60$
Integrated Price (THB/ream)	$125 + 1.88 = 126.88$	$125 + 1.79 = 126.79$	$150 + 1.60 = 151.60$

2 Procurement decisions shall be made based on the following three conditions:

- Consider whether the product or service meets the green procurement criteria. If it does not meet the criteria, the product or service shall not be procured despite offering the lowest price and shall not be included in the Integrated Price calculation.
- Select the product or service with the lowest Integrated Price.
- Where multiple products or services have the same lowest Integrated Price, select the product or service with the lowest Carbon Cost.

Example of Product or Service Comparison

Vendors Scoring	Option 1 (Company A)	Option 2 (Company B)	Option 3 (Company C)
<ul style="list-style-type: none"> Does the product or service meet the green procurement criteria? (Minimum recycled pulp content of 50%) 	Does not meet criteria	Meets criteria	Meets criteria
<ul style="list-style-type: none"> Integrated Price 	–	126.79	151.60

Based on the assessment of the **Integrated Price**, which reflects both financial value for money and environmental performance, it is therefore recommended that Option 2 be selected during the short-term period (2025–2029), as it has the lowest Integrated Price. For the medium or long term, as the market adjusts and products become more environmentally friendly and the cost of environmentally friendly paper decreases, the selection criteria may be reviewed and adjusted as appropriate.

② Use of ICP as Internal Carbon Fee

In cases where internal departments procure products or services with GHG emissions exceeding defined thresholds, ICP may be applied as a guiding mechanism to control and encourage procurement towards products or services with low GHG emissions.

The application of ICP as an internal carbon fee is divided into two main steps, as follows:

① Preparation for Internal Carbon Fee

- Communicate the internal carbon price throughout the organisation.
- Collect financial data and GHG emission data for procured products or services.
- Establish a central unit responsible for managing the internal carbon fund (in cases where an internal carbon fee is applied).



2 Implementation of Internal Carbon Fee Collection

- Establishment of a carbon fund management entity responsible for administering and managing internal carbon fees within SET.
- Designation of the corporate sustainability entity to define targets or limits on GHG emissions for each internal department.
- Internal departments shall pay an internal carbon fee into the “Internal Carbon Management Fund” in cases where GHG emissions from procurement exceed the specified targets. The fee shall be calculated as follows:

$$\text{Carbon Fee (THB/tCO}_2\text{e)} = \left[\text{GHG emissions from procurement} - \text{Target GHG emissions from procurement} \right] \times \text{ICP}$$

- The carbon fund management entity shall allocate the internal carbon fees collected to support GHG emission reduction initiatives within the organisation and among external stakeholders.
- Allocation of carbon fund resources to internal departments may increase procurement budgets, enabling the purchase of higher-priced but lower-emission products or services.
- Allocation of carbon fund resources may also be used to support the transition towards low-carbon businesses among external stakeholders that contribute to the organisation’s GHG reduction through appropriate measures such as training and capacity-building for suppliers, enabling them to reduce GHG emissions and to align their operations with the organisation’s green procurement criteria.

For further information on ICP, refer to the Internal Carbon Price Manual.

Appendix

Regulations and Standards

FSC (Forest Stewardship Council)

An international non-profit organisation established in 1993 through multi-stakeholder collaboration. Its objective is to promote responsible forest management worldwide through the certification of forest-based products. The FSC label certifies that products are associated with no deforestation and comply with other principles, such as fair wages, safe working environment, and respect for community rights.

Pollution Control Department (PCD)'s Green Procurement Directory

A list comprising goods and services that have been registered as environmentally friendly, developed by the Pollution Control Department (PCD) under Thailand's Ministry of Natural Resources and Environment. Products and services included in this list comply with procurement criteria established by the PCD, which are derived from studies and assessments of relevant social, economic, and environmental factors associated with each product or service.

Green Label

A Type I environmental label in accordance with ISO 14024. Established by the Thailand Environment Institute (TEI), the Green Label certifies products that have undergone quality and environmental assessments. The label indicates that the product has been evaluated and verified to meet environmental standards according to the product criteria announced by the Green Label Policy and Management Committee, with the objective of reducing overall environmental pollution.

Marine Stewardship Council (MSC)

A non-profit organisation that establishes standards for sustainable fishing. The MSC blue label is applied to wild-caught fish or seafood products sourced from fisheries that have been certified in accordance with the MSC Fisheries Standard, which comprises a set of requirements for sustainable fisheries management.

Aquaculture Stewardship Council (ASC)

An independent, non-profit organisation and ecolabelling body that provides guidelines for responsible and sustainable aquaculture. ASC establishes standards for sustainable aquaculture farming practices from production through to supply chain.

EN 50600-4-3

A European standard for data centre facilities and infrastructure. It aims to reduce energy and resource consumption, minimise environmental impacts, and improve resource efficiency of data centres.



Directive 2009/28/EC

A European directive that promotes the use of energy from renewable sources, which entered into force on April 23, 2009.

Directive 2006/66/EC

A European directive concerning battery components and hazardous substances such as mercury, cadmium, and lead. It sets maximum limits for certain metals and chemicals in batteries, establishes collection rate targets for waste batteries, and defines financial responsibility for the collection and management of battery waste.

Thai Good Agricultural Practice (ThaiGAP)

A food safety standard implemented by the Thai Chamber of Commerce, in collaboration with the National Food Institute (NFI) and Kasetsart University. This standard represents a production system with quality and safety management that places strong emphasis on farmer welfare and consumer safety. It incorporates a traceability system to identify the origin of ThaiGAP-certified produce in order to build confidence and elevate the standards and quality of Thai agricultural products to gain international recognition.

Others

Elementary Chlorine Free (ECF)

A bleaching technique that initially applies oxygen delignification before using chlorine dioxide and bleaching agents such as hydrogen peroxide, thereby reducing the quantity of chemicals required in the bleaching process.

Totally Chlorine Free (TCF)

A bleaching technique that uses oxygen delignification combined with hydrogen peroxide or ozone as the primary bleaching agents.

Net Zero Target

The net zero target must be aligned with the standards of the Science Based Targets initiative (SBTi) or other recognised standards.

Product Emissions

The quantity of greenhouse gas emissions associated with products or services procured by SET.

Manufacturer

A company that manufactures products, for example Lenovo, a manufacturer of computers.

Software Developer

A company involved in the development of software, for example Microsoft, the developer of Microsoft Windows.

Reference

European Commission. (2023). EU green public procurement criteria for computers, monitors, tablets and smartphones. Retrieved August 1, 2024, from <https://circabc.europa.eu/ui/group/44278090-3fae-4515-bcc2-44fd57c1d0d1/library/bf592737-c5a8-43ce-99e1-dea61648d3f9/details>

European Commission. (2023). EU green public procurement criteria for Data centres, server rooms and cloud services. Retrieved August 1, 2024, from <https://circabc.europa.eu/ui/group/44278090-3fae-4515-bcc2-44fd57c1d0d1/library/24bf5149-d99b-4bc9-a7fc-132b711c46ce/details>

European Commission. (2023). EU green public procurement criteria for Food, catering services and vending machines. Retrieved August 1, 2024, from <https://circabc.europa.eu/ui/group/44278090-3fae-4515-bcc2-44fd57c1d0d1/library/9cd7f542-d33c-43f6-91af-b3838c08c395/details>

International Energy Agency. (2023). Global Energy and Climate Model. Retrieved from August 1, 2024, from <https://iea.blob.core.windows.net/assets/ff3a195d-762d-4284-8bb5-bd062d260cc5/GlobalEnergyandClimateModelDocumentation2023.pdf>

Pollution Control Department. (2023). Green criteria for copying paper. Retrieved August 1, 2024, from http://gp.pcd.go.th/codeDesign/mds_homecat/view/criteria/C1.pdf

Pollution Control Department. (2023). Green criteria for printer. Retrieved August 1, 2024, from http://gp.pcd.go.th/codeDesign/mds_homecat/view/criteria/C9.pdf

Pollution Control Department. (2023). Green criteria for envelope. Retrieved August 1, 2024, from http://gp.pcd.go.th/codeDesign/mds_homecat/view/criteria/C12.pdf

Pollution Control Department. (2023). Green criteria for computer. Retrieved August 1, 2024, from http://gp.pcd.go.th/codeDesign/mds_homecat/view/criteria/C26.pdf

Pollution Control Department. (2023). Green criteria for packaging. Retrieved August 1, 2024, from http://gp.pcd.go.th/codeDesign/mds_homecat/view/criteria/C40.pdf

Thailand Environment Institute. (2023). Green label products paper. Retrieved August 1, 2024, from <https://tei.or.th/greenlabel/en/download/TGL-08-R2-11.pdf>

Ressortforschungsplan of the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety. (2019). Guide on Green Public Procurement of Software. Umweltbundesamt. Retrieved August 2, 2024, from https://www.umweltbundesamt.de/sites/default/files/medien/479/publikationen/texte_71-2020_guide_on_green_public_procurement_of_software_2020-02-12.pdf



The Standard. (2024). เปรียบเทียบราคาคาร์บอนโลก vs. ไทย (ในอนาคต). Retrieved August 1, 2024, from <https://thestandard.co/compare-world-carbon-prices-vs-thailand-in-the-future/>

The Standard. (2024). ไทยเตรียมเก็บภาษีคาร์บอนเป็นประเทศที่ 2 ของอาเซียน ต่อจากสิงคโปร์ เร็วสุดสิ้นปีนี้. Retrieved August 1, 2024, from <https://thestandard.co/thai-carbon-tax/>

Javier Farfan, Alena Lohrmann, Gone with the clouds: Estimating the electricity and water footprint of digital data services in Europe, Energy Conversion and Management, Volume 290, 2023, 117225, ISSN 0196-8904, <https://doi.org/10.1016/j.enconman.2023.117225>. (<https://www.sciencedirect.com/science/article/pii/S019689042300571X>)

กรุงเทพธุรกิจ. (2023). “Carbon Tax” สินค้าจ่ายภาษี ตามปริมาณการปล่อยก๊าซ. Retrieved August 1, 2024, from <https://www.bangkokbiznews.com/environment/104>

