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Environmental Management

Mitigation Measures Implemented to Establish a Low-Carbon, Sustainable Homeland

To join efforts with the local governments to cut down carbon emissions, the EPA has already approved the greenhouse gas control implementation plans of 22 municipalities, counties, and cities. Besides the launch of the low-carbon certification and rating mechanism, another major move is to combine both the public and private sectors by utilizing subsidization and auditing mechanism in order to respond to climate change and establish a low-carbon and sustainable homeland.

Strategies for carbon reduction actions

Since the promulgation of the *Greenhouse Gas Reduction and Management Act* (溫室氣體減量及管理法) on 1 July 2015, the EPA has in accordance formulated 12 sub-laws involving detailed regulations, inventory, verification management, and trading programs. Other than eight administrative regulations that were issued, there are also rewarding and subsidization regulations, with emission source efficiency standards as well as a voluntary reduction incentive mechanism in place, to motivate enterprises to reduce emission.

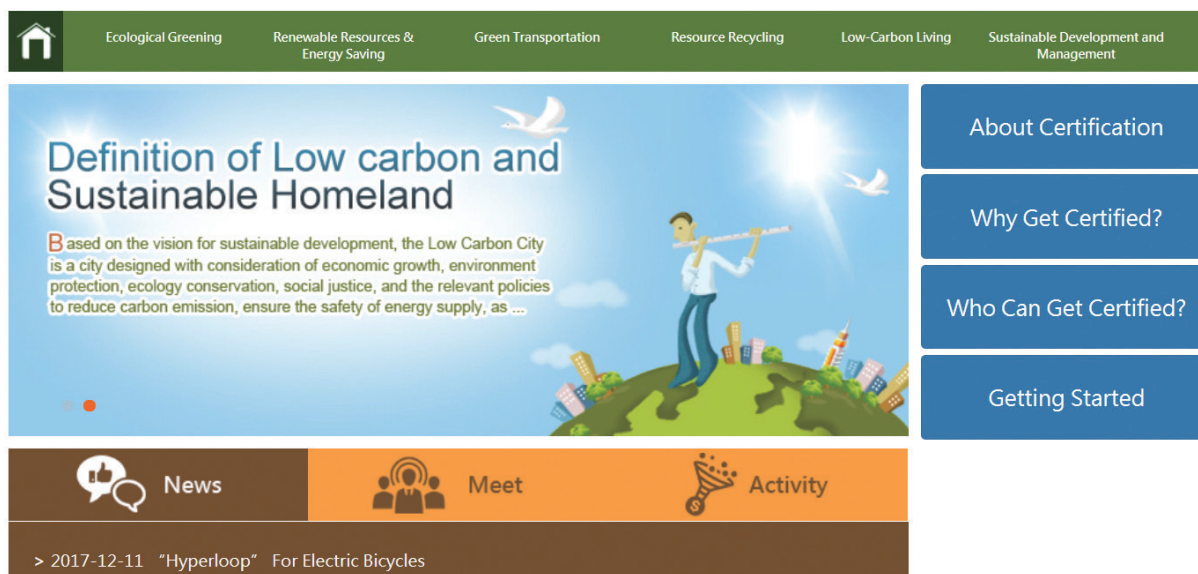
Meanwhile, the EPA has set the basic directions for mitigation and adaptation by formulating the *National Climate Change Action Guidelines* (國家因應氣候變遷行動綱領) and the *Greenhouse Gas Reduction Promotion Program* (溫室氣體減量推動方案). Meanwhile, the *Greenhouse Gas Emission Control Action Plan* (溫室氣體排放管制行動方案) was set, covering six major departments, which are energy, manufacturing, transportation, residential and commercial, agriculture, and environmental sectors.

The key points of the plan include

promoting energy transformation, expanding the ratio of renewable energy in power generation, assisting industries in green, low-carbon transformation, and developing green transportation and promoting low-carbon vehicles. Also, enhancing the baseline standards of the energy conservation design for the new buildings' outer parts, helping animal farms in marsh gas recycling, and enhancing methane recycling in waste landfills and industrial wastewater. The greenhouse gas control goals for each stage have been set with reduction measures in these

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↑ The website of the Low-Carbon and Sustainable Homeland (<https://lcss.epa.gov.tw/en/default.aspx>) discloses reduction measures implemented in neighborhoods/villages, towns, and regional governments

government agencies, effectively drawing a complete blueprint of the national carbon reduction strategy.

After the *Greenhouse Gas Reduction Promotion Program* was approved, the EPA immediately invited central competent authorities to assist 22 municipality, county, and city governments to formulate the greenhouse gas control programs suitable for each respective jurisdiction. The programs were all approved on August 2019. The entire central government has thus come together to implement locally tailored climate actions.

Promoting the greenhouse gas inventory, registration and offset programs

With a baseline of greenhouse gas emission in place, a total of 294 enterprises had been put under control in 2018, allowing the EPA to track 85.5% of direct emission of Taiwan's industrial and energy sectors.

The greenhouse gas offset program allows more enterprises

to participate in carbon reduction. There were 86 applications to register for the offset program as of November 2019, and 43 have been approved and are expected to cut down 4,108 metric tons of CO₂e. Moreover, a micro-scale offset program (no more than 20,000 metric tons in annual reduction) is set to lower the application threshold in order to encourage medium and small businesses to participate. Registration forms and auditing procedure are simplified, and demonstration cases are also promoted as references.

Public and private sectors joining efforts to combat climate change

(1) Public and private sectors tackling climate change together

The central government has been collaborating with local governments and civil organizations to jointly promote climate change mitigation. With subsidizing and auditing mechanisms in place, grants were approved in 2019 for 22 local governments (over

NT\$181,280,000 in total) as well as 71 civil organizations to raise the sustainable, low-carbon awareness in the society.

(2) Promoting a low-carbon and sustainable homeland

To raise local governments' capacity to respond to climate change, the EPA has announced the *Low-Carbon and Sustainable Homeland Rating Promotion Program* (低碳永續家園評等推動計畫). Neighborhoods, villages, townships, municipalities, counties, and cities have been actively encouraged and assisted to take part. By the end of September 2019, there had been 22 local governments, 339 towns (92% of all 368 in Taiwan), and 4,108 villages and neighborhoods (53% of all 7,760 in Taiwan) that signed up for the program. After evaluation, those certified with silver rating included 52 villages and neighborhoods, 12 towns and cities, and 9 municipalities, counties and cities, and those with bronze rating included 794 villages and neighborhoods, 114 towns, and 11 municipalities, counties and cities.

A low-carbon and sustainable homeland is a vital part of localizing carbon reduction actions and enhancing communities' adapting capacity. Since implementation, the public has become more aware of climate change. Moreover, the biggest change is shaping low-carbon environments. Participants have now become highly aware, recognizing the importance of energy conservation and carbon reduction, and thus begun to commit to carbon reduction in their daily behaviors. Compared with 2017, the average energy conservation in 2018 is 6.15 kWh/person in Taiwan. The energy conservation achievements in 2018 is 20.85 kWh/person for villages and neighborhoods of bronze rating and 24.44 kWh/person for those of silver rating, which is four times the national average. In total, the villages and neighborhoods

of silver and bronze ratings have save 6,958 kWh in 2018, compared with 2017, which is the equivalent of reducing 37,087 metric tons of CO₂e.

Climate change mitigation

Based on the *Greenhouse Gas Reduction and Management Act*, the EPA took reference of the National Development Council's achievements of the *National Climate Change Mitigation Action Plans* (2013-2017) and mapped the future climate change mitigation tasks. After multiple cross-department discussions, the draft of the *National Climate Change Mitigation Action Plans* (till 2022) was submitted to the Executive Yuan on 7 May and then approved on 9 September 2019.

Future perspective

In combating climate change,

adaptation requires more involvement of all sectors than mitigation. As a result, the EPA will collect and evaluate each department's reduction and adaptation results based on the *Greenhouse Gas Reduction and Management Act*. The EPA will also gradually help local governments to form localized reduction strategies and revise them regularly, promoting sustainable social, economic, and environmental development in Taiwan.

Other than being an important policy for Taiwan at this stage, carbon emission reduction is also what citizens need and expect. This is a great responsibility by which the EPA always sets great store and hence will keep working hard to reduce greenhouse gas emissions and improve air quality.

Air

Boiler Improvements Effectively Cut Down Air Pollution

Implementing the *Air Pollution Prevention Action Plan* (空氣污染防治行動方案), the EPA and the Ministry of Economic Affairs (MOEA) have promoted boiler improvements via subsidization or diverse assistance programs. By the end of October 2019, 1,970 industrial boilers and 1,180 commercial ones had been improved, achieving 94% and 147.5% of the goals, respectively. The MOEA has been in charge of the industrial boiler improvements, while the EPA the commercial ones. With the assistance from local environmental bureaus, fully achieving the goals will result in reducing emission of 3,900 metric tons of sulfur oxide, 1,700 metric tons of nitrogen oxide, and 360 metric tons of particulate matter annually.

To expedite the phasing out of boilers and strengthen pollution emission reduction, the EPA has employed regulatory control and subsidization at the same time. The *Boiler Air Pollutant Emission Standards* (鍋爐空氣污染物排放標準) announced by the EPA on 19 September 2018 requires existing boilers to comply by 1 July 2020, aiming to encourage businesses using boilers to take preventative

and control actions. Besides switching to natural gas for fuel, businesses can also improve air quality by working on the fuel source, burning technology, and pollution control.

To allow longer time for the improvement of existing boilers when it needs, the standards stipulate that the compliance deadline can be extended for two

years (allowing the improvement to be completed no later than 1 July 2022). The EPA reminds that enterprises needing the extension to submit the application for extension with proposed air pollution prevention and control plans to the competent authorities in municipalities, counties, and cities before 1 April 2020 as required by the regulation.

In addition, both the EPA and the MOEA allocated budgets to subsidize boiler improvement or assist enterprises by examining boilers on-site and providing suggestions on burning technology and pollution control measures. To encourage enterprises to carry out improvement and lessen the impact on the industry, the MOEA has set up a platform for better coordination among industrial boiler users, relevant government agencies, and natural gas suppliers. Via this platform,

enterprises can highlight the difficulties they face in carrying out improvements, such as high construction costs, to the relevant offices in order to find the solution.

Moreover, the Industry Development Bureau of the MOEA has intensified efforts in assisting the enterprises in the industrial parks under its jurisdiction. So far 1,502 boilers, that is 87% of all boilers in the industrial parks, have completed or are undergoing improvement. With respect to

boiler fuel improvement, the analysis shows that most industrial boilers had switched to gas fuels (natural gas or liquefied petroleum gas) with diesel at second place. As for commercial boilers, due to their smaller scales, most of them switched to electricity with some switching to gas fuel. The EPA and the MOEA will keep promoting boiler improvement to reduce air pollutants generated from fuel burning as they continue to strive to lessen the environmental loads brought by economic development.

Air

Technology Applied to Trace Pollution Sources in Southern Taiwan to Protect Air Quality

On 1 November 2019, the Fourth Meeting of the Air Quality Southern Response Team was held, not only conducting routine reports on weather forecasts, air quality and response measures, but also focusing on recent abnormalities detected by monitoring stations in Chiayi, Annan and Daliao at certain times of the day. The team planned to utilize technical approaches such as backward trajectory, remote satellite sensing, 3D LiDar, and pollutant composition and feature analysis to trace pollution sources and eliminate air pollution problems.

Facing the challenge of poor air quality, which is prone to occur during fall and winter in Taiwan, the EPA has since October 2019 been holding a weekly Inter-regional Cooperation, Prevention, and Response Team Against Air Pollution Meeting, involving the five southern counties and cities of Chiayi County, Chiayi City, Tainan City, Kaohsiung City, and Pingtung County. Besides providing air quality forecasts for the coming week as a reference for regional governments, the meetings also analyze any abnormalities detected in the previous week in an attempt to eliminate pollution sources and protect air quality.

The EPA stated that it has been examining air quality monitoring data since weekly meetings began

in October, and it has since found abnormalities detected by several monitoring stations at specific times of the day. For example, both Chiayi and Daliao monitoring stations detected higher sulfur dioxide concentration around midnight, and Annan station recorded higher concentrations for all pollutants. Besides using the usual meteorological data to determine pollution sources, advanced scientific methods, such as backward trajectory, remote satellite sensing for burning sites, 3D LiDAR, and analyses of pollutant composition and characteristics have been introduced to track pollution sources, so as to effectively deter illegal pollution emissions.

R e s p o n d i n g t o h i g h e r

concentrations of particulate pollutants detected at Xingying station in October 2019, the EPA appointed the Southern Branch of the Bureau of Environmental Inspection to conduct inspections of construction projects, steel industry facilities, asphalt plants and other local stationary sources. A total of 23 inspections were carried out, of which eight cases were reported. Also, responding to high concentrations of PM_{2.5}, PM₁₀, and sulfur dioxide detected by Daliao station during early mornings, the Environmental Bureau of Kaohsiung City prioritized inspections of burning facilities around that station.

In light of this, the EPA discussed carrying out inter-regional joint inspections with all environmental

protection bureaus in southern counties and cities, and planned to conduct monthly inspections of key pollution sources from November on in an effort to prevent further deterioration of air quality.

The air quality this season is better than it was last year. The average PM_{2.5} concentration in southern Taiwan detected by local

automated monitoring stations so far this year (the 43rd week) was 20.7µg/m³, lower than the average concentration of 21.5µg/m³ recorded during the same period last year.

In addition, the EPA coordinated with the Ministry of Economic Affairs and Taiwan Power Company to curtail loads and cut

emissions at Hsiehho, Taichung, and Hsinta Power Plants. On 30 and 31 October 2019, a total load curtailment of 207,678,000 kWh was achieved, resulting in emission reduction of 78.6 metric tons of SO_x, 85.9 metric tons of NO_x, and 7.4 metric tons of total suspended particles (TSP), or roughly 23.4% of daily pollution emission generated by all the power plants in Taiwan.

International Cooperation

Taiwan and Japan Sign Environmental MOU

On 30 October 2019, Taiwan and Japan signed a memorandum of understanding (MOU) on environmental protection cooperation in Tokyo. On behalf of their respective countries, the head of the Taiwan-Japan Relations Association (TJRA) I-jen Chiou and Chairman of the Japan-Taiwan Exchange Association (JTEA) Mitsuo Ohashi signed the agreement. EPA Counselor/Executive Secretary Shyh-Wei Chen and Deputy Director General of Japan's Ministry of Environment Yasuharu Ueda witnessed the signing ceremony.

Following the *Agreement on the Transfer and Disposal of Hazardous Wastes* signed in 2005 and the Taiwan-Japan Bilateral Environmental Meeting in 2015, the signing of the MOU marked an important milestone for the bilateral environmental cooperation between the two countries. The MOU was jointly drafted by the TJRA and the JTEA and was finalized after going through multiple reviews by both sides' environmental departments. With the purpose of strengthening environmental communication and information exchange, the pact has

been signed and is now officially in effect.

The MOU covers collaboration in the following fields: environmental education, environmental impact assessment, air quality control and monitoring, marine pollution control, waste management and recycling, climate change mitigation and adaptation, ecolabelling, environmental laws and regulations, hazardous chemical management, and soil remediation. To enhance environmental communication and information exchange, the pact

also includes the arrangement of the Taiwan-Japan Bilateral Environmental Meeting, which will be held annually or biennially by either country in turn.

The MOU was the result of the long-term cooperation between Taiwan and Japan and the mutual anticipation of deepening their ties in environmental protection and restoration. Through the MOU, the two countries are seeking consensus on global environmental issues and striving for environmental protection in the Asia-Pacific region.

Monitoring

Internet of Things Sensors to Tackle Air, Water and Noise Pollution

The EPA has developed new smart law enforcement devices for different types of pollution, including: unmanned aerial vehicles (UAVs) equipped with air quality sensors for 3D sensing, trackable mobile air quality sensors for flexible monitoring, underwater water-quality sensors with a concealment function, and noise detection and tracking devices with microphone arrays. In addition to the new technologies, the EPA continued to work with local environmental bureaus to install air-quality sensors and presented the monitoring results during 2019 IT Month.

There have been several significant breakthroughs in the application of environmental monitoring sensors in 2019. The following is a list of new devices Taiwan is currently deploying:

1. To better understand the dispersion of air pollutants and their impacts on ground-level air quality, the EPA worked with the Central Weather Bureau and developed UAVs equipped with high-altitude air pollutant sensors.
2. Air quality sensors mounted on vehicles that can show mobile source pollution changes with time and space.
3. Fixed and portable water quality

sensors to track down the hot zones of factory wastewater contamination.

4. Cameras that can identify license plates combined with microphone array-based sensors to detect noise sources.

With the assistance of local environmental bureaus, the EPA has installed 6,000 air-quality sensors in Taiwan, spanning 147 cities/towns, 55 major industrial parks, 169 main roads, 192 communities, and more than 30,000 factories. The sensors have been especially a big help in detecting environmental violations committed by factories. By the end of October 2019, the

EPA had issued fines totaling NT\$86,460,000 and collected more than NT\$400,000,000 in air pollution fees.

As part of 2019 IT Month, the EPA held an exhibition focusing on the Internet of Things (IoT) for environmental sustainability. The month-long exhibition kicked off on 4 December and traveled around Taiwan. It featured interactive activities to demonstrate that information technology can be utilized to help solve problems that were deemed difficult to solve in the past and how the era of using IoT technology for smart and continuous monitoring has arrived.

Waste

2019 Taiwan Circular Economy Summit Kicks Off

In an effort to step up the promotion of circular economy, Taiwan Circular Economy Week jointly hosted by the EPA and the Ministry of Economic Affairs (MOEA) kicked off with the 2019 Taiwan Circular Economy Summit on 15 October 2019 in Taipei. Participants of the meeting, including government officials and authorities of the field from the UN, Finland and multiple allied nations, gathered together to share their insights on circular economy and its applications for plastics, construction and solar energy.

The EPA also had the honor of hosting Janez Potočnik, Co-chair of the UNEP International Resource Panel and world-renowned expert on circular economy, who participated in the summit for the first time. He spoke on the UN's Sustainable Development Goals (SDGs) and strategies for increasing resource efficiency to achieve a circular economy. As Finland holds the rotating presidency of the Council of the European Union for the second half of the year, Mona Arnold, Principal Scientist of VTT Technical Research Centre of Finland, also attended the meeting as Finland's representative and spoke on their

goal to become the leading country in circular economy through effective waste management schemes.

The EPA expressed appreciation for the generosity of its foreign guests for sharing their experiences in circular economy applications and policy development. Other feature speakers and their topics were as follows:

1. Masanobu Ishikawa, founder of Gomi Japan, spoke about the implementation experiences on plastic bottle recycling in Japan.
2. Han Tran Viet, head of the Environmental-Economic Department of the Environmental

Science Institute of Vietnam, explained Vietnam's management policies for plastic waste.

3. Olaf Blaauw, Senior Strategic Consultant of Delta Development in the Netherlands, shared detailed experiences on promoting circular economy in the construction industry.
4. Felix Koh, head of the Industrial Paper Department of Asia Pulp and Paper in Indonesia, highlighted the successful applications of broken-down paper containers for reuse purposes, which provided Taiwan more options for paper container recycling and reuse.



↑ Taiwan Circular Economy Summit 2019 jointly hosted by the EPA and the MOEA

In addition to the experts and scholars of the field, the EPA also invited some iconic companies and organizations, including: Taiwan Circular Economy Network, Plastic Industry Development Center, Unilever, Taiwan Concrete Institute, Taiwan Construction Research Institute, Taiwan Steel Union, the Chinese Institute of Environmental Engineering, Taiwan Photovoltaic Industry Association, Chen Ya Resource Technology

Corp., and TÜV Rheinland. The meeting mainly revolved around topics such as plastic waste reuse, circular construction and the reuse of reclaimed aggregate materials, and solar panel recycling.

In order to accomplish economic growth without sacrificing the environment, Taiwan has shown strong dedication in the promotion of circular economy with the implementation of the *Resource*

Recycling and Reuse Plans and the passing of the *Circular Economy Development Plan*. The EPA's final goal is to achieve zero waste and pollution by 2050. Moreover, to gain the competitive advantages in the pursuit of green economy, companies have been voluntarily forming green deals and have established a total of five major circular economy alliances in Taiwan.

Control and Evaluation

First National Enterprises Environmental Award Honorees Unveiled

The EPA has been giving the Enterprises Environmental Protection Award for 28 years to promote enterprises to implement corporate social responsibility. However, the award system was largely modified this year, with its name changed to the “National Enterprises Environmental Protection Award”. This year’s ceremony was held at CKS Memorial Hall on 8 November 2019, with EPA Minister Tzi-Chin Chang personally presenting awards to all 2019 honorees, comprising a total of 38 enterprises that received three excellence awards, seven gold awards, 12 silver awards and 16 bronze awards. Apart from these, 18 enterprises also received nomination awards.

The participating enterprises had to go through preliminary, second, and final review stages. The environmental protection achievements of all 67 participating enterprises this year were summarized by the EPA. With respect to environmental

management, 64 enterprises promoted green supply chains or green marketing, 50 announced corporate social responsibility reports, and 21 received green building certifications. With respect to energy and resource conservation, the enterprises

saved over 200 million kWh of electricity and 14.79 million metric tons of water, cut down 3.6 million metric tons of carbon emissions (equivalent to the annual carbon absorption of 9,260 Daan Forest Parks), and collected more than 360,000 metric tons of rainwater.

As for compliance with the government's environmental policies, the enterprises have contributed NT\$3.76 billion in green procurement and adopted 34 public restrooms and 29 kilometers of coastline, with 31,087 people participating in beach clean-ups.

The EPA noted that the three enterprises that won the excellence award have all received the honorary awards after having received the previous Enterprises Environmental Protection Award for three consecutive years. They were: First Commercial Bank; Bali Refuse Incineration Plant in New Taipei City, which commissions Onyx Ta-Ho Environmental Services Co., Ltd. for operations and management; and, Southern Taiwan Science Park Bureau (Tainan Science Park Resource Recycling Center). They reentered the competition this year with continued outstanding environmental protection performance, and were thus recognized by the award committee.

As for the activities of award recipients, First Commercial Bank promoted green finance, setting an education base in its Wanhua Branch to promote green finance and environmental education. Bali Refuse Incineration Plant not only uses green energy but also recycles bottom ash to manufacture retaining wall bricks, permeable bricks, and road pavement materials. Southern Taiwan Science Park Bureau established a smart system to properly dispose of waste, striving for pollution prevention and reduction.

As for honorary awards, they were given to three enterprises that have received silver awards (or higher) for three consecutive years. They were: the Tainan plant of ChipMOS Technologies Inc.; Wafer Plant III of Vanguard International Semiconductor Corporation; and Yongkang Waste Recycling (Incineration) Plant in Tainan City, which commissions Onyx Ta-Ho Environmental Services Co., Ltd. for its operation and management.

Apart from the above, Nanhua University, which entered the competition for the first time this year and received the gold award, established a Sustainability Center and actively promoted low-carbon campuses. It was selected as one of the top 100 green universities worldwide for three consecutive years. The Zhongli Plant of Delta Electronics Inc., the silver award recipient, promoted green supply chains and set up a checking and counseling team for environment-related materials in products, asking its suppliers to comply with environmental requirements. Its projector and lighting equipment products were also certified with the Green Mark and Energy Labels. All of the aforementioned are outstanding enterprises dedicated to environmental protection, well-deserving of these accolades.

At this honoring event, the EPA gave special thanks to all awarded enterprises for their support and contribution to environmental protection. The EPA stated that besides the government's efforts,



📍 The 1st National Enterprise Environmental Award winners

it needs corporate and public participation to make Taiwan better. It is hoped that other enterprises can be inspired and follow the

fine examples set by the award recipients to progress together and strive for the common good.

Information about the award ceremony and awarded enterprises can be found at <http://aeepa.epa.gov.tw>.

Ecolabeling

Carbon Label System Reaches a Decade

Taiwan launched the Carbon Label in 2009 and became the 11th country in the world to do so. As the product carbon footprint labeling system enters its 11th year, the EPA continues to improve the system and urges enterprises to disclose their products' carbon footprints, apply for the label and commit to carbon reduction. Taiwan expects to sign agreements with other advanced countries to mutually recognize each others' carbon labels on imported and exported products.

The carbon footprint of a product (CFP) is the total amount of greenhouse gases emitted over the product's entire life cycle, from cradle to grave. Carbon labels are used to provide CFP information for consumers to refer to when shopping. Through media promotion, the public are encouraged to change their consuming behaviors. Businesses are also spurred to examine manufacturing processes and supply chains and jointly commit to carbon reduction to fulfill corporate responsibilities and build an environment-friendly image.

Carbon footprint labels, also known as carbon labels or carbon emission labels, are labels that disclose the amount of carbon emitted by enterprises, manufacturing processes, products (including services) and individuals. A product's carbon footprint is calculated by totaling the greenhouse gases generated over its life cycle, from sourcing of raw materials, manufacturing, distribution, sales and consumer use, to waste recycling and treatment, and by converting the amount to carbon dioxide equivalents. The Carbon Reduction Label, the first carbon

label in the world, was launched in 2006 by Carbon Trust, which was established in 2001 in the UK.

Eleventh country in the world to promote carbon labels

Carbon emission sources throughout the different stages of a product's life cycle become transparent under the carbon labeling system. In this way, enterprises are encouraged to adjust parts of their manufacturing process that generate more carbon, and consumers are also urged to use products in a correct manner. Together, the carbon emission from products' life cycles can be maximally reduced.

So far, countries like Australia, Canada, Japan, Korea, Thailand, the UK, and the US have already promoted policies concerning carbon footprints and set up relevant systems in striving to build a low-carbon society. This has also brought opportunities for enterprises to lower carbon emissions and has strengthened corporate brands and reputations. In 2009, the EPA started to formulate the local carbon labeling system, and in September of the same year, it held a label contest and selected the best design from

1,286 submissions and designated it as Taiwan's official carbon label. Taiwan had become the 11th country to have joined the ranks of nations with carbon labels and has now entered the second decade of promoting carbon labeling.

Promotion of the carbon labeling system in two stages

Taiwan's carbon labeling system is promoted in two stages:

1. Promoting CFP disclosure

Currently, there is no unified international standard for countries to develop relevant complementary measures for CFP labeling systems. Since there are few certified products in the early stage of carbon labeling system promotion, the carbon footprints of products of the same categories cannot be compared. Therefore, the first stage aims to encourage enterprises to analyze and disclose their CFPs.

Via carbon footprint analysis, enterprises can understand the amount of a product's greenhouse gas generated in each stage throughout its life cycle and further devise carbon reduction strategies. Measures include using environment-friendly raw materials,

reducing or recycling packaging, improving shipping efficiency, and demanding suppliers to lower their carbon footprints. Besides cutting down carbon emissions and forming green supply chains, these measures can help lower production costs at the same time.

Consumers can support manufacturers' disclosure of product carbon footprints by choosing products with carbon labels as well as following instructions on proper usage and waste treatment to lower the overall carbon emissions.

2. Developing a carbon reduction labeling system

Taiwan's carbon reduction labeling system is based on the current Carbon Label. Enterprises can use the carbon footprint stated in the Carbon Label certificates or in the carbon footprint documents issued by a third-party verification body as baselines for reduction to formulate practical reduction commitments and implementation measures. After the EPA evaluates and confirms that these promises are fulfilled, a product will be certified with a carbon reduction label.

In the future, products certified with carbon reduction labels will be combined with the green point system and even possibly be included in the preferential procurement lists of government agencies. This provides incentives for enterprises to apply for the labels and will certainly help to cut greenhouse gases and build green supply chains.

Likewise, consumers can choose carbon reduction label-certified products and contribute in

mitigating climate change when shopping, ultimately building a green consumption trend.

Specific achievements

(1) Certified Carbon Footprint Label products

From January 2018 to 26 March 2019, the EPA added six new product categories, revised regulations for 50 product categories, and certified 176 products with the Carbon Label. In total, the EPA has announced regulations for 98 Carbon Label product categories and certified 800 products with the label.

(2) Maintained Carbon Label promotion and communication platforms

Communication and coordination meetings have been regularly held with attendance of representatives from industry, government agencies, academia, and civil organizations in order to take into account opinions from all stakeholders. In addition, meetings to research and review carbon footprint labeling regulations and systems are also held to collect data, analyze international carbon footprint labeling trends, and research and review Taiwan's own system.

(3) Assisted enterprises in calculating CFPs and applying for the Carbon Label

1. The EPA implemented the *Assistance Plan for Product Carbon Footprint Demonstration Cases*, picking out candidates for demonstration and taking inventory of and auditing each product's carbon footprint.
2. Training seminars were organized in order to enhance

the professional capacities of carbon footprint auditors, provide opportunities for them to share experiences and learn from others, and ensure audit quality.

(4) Completed guidelines for calculating carbon footprints of products and services

The EPA formulated the *Guidelines for Calculating the Carbon Footprint of Products and Services* (產品與服務碳足跡計算指引) by referencing the life cycle assessment methods established in PAS 2050 and ISO/DIS 14067.1, and announced the guidelines to the public in February 2010. Future revisions will be carried out based on the content of the officially announced ISO 14067.

The guidelines allow enterprises to examine the carbon emissions from the entire life cycles of their products and services and also the current emission statuses of their supply chains. Now with the greenhouse gas emissions disclosed, consumers are able to choose environment-friendly products and are reminded to adopt emission-cutting measures when using them before discarding them for final disposal or recycling.

(5) Certified verification bodies

According to the *Operating Guidelines for Promoting Product Carbon Footprint Labeling* (推動產品碳足跡標示作業要點), carbon footprint verification organizations are required to obtain certification from certification organizations after 1 January 2016.

A total of four companies in Taiwan, namely BSI Taiwan, TÜV Rheinland Taiwan, Ltd., Bureau Veritas Certification and SGS,

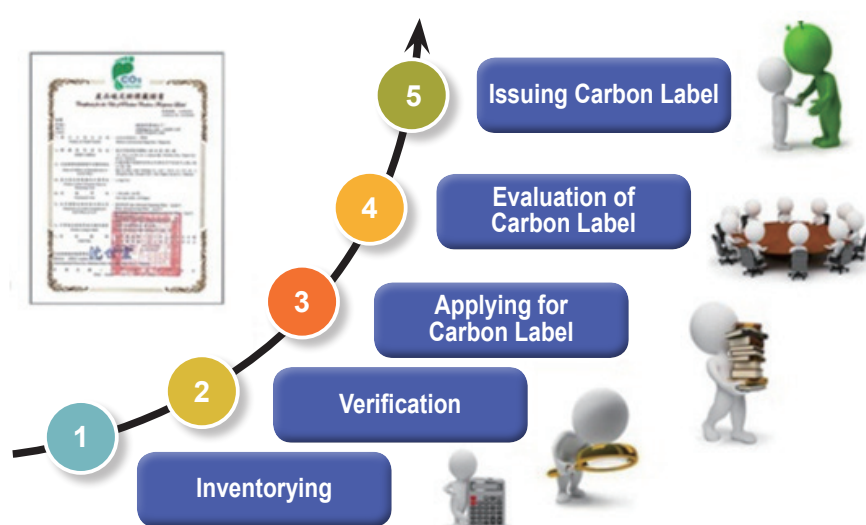
comply with relevant regulations and have obtained certification as verification organizations.

(6) Organized working group meetings to harmonize carbon footprint product categories rules among Korea, Taiwan and Thailand

On 11 April 2018, the Asia Carbon Footprint Network (ACFN) organized working group meetings to harmonize carbon footprint product category rules (CFP-PCR) among Korea, Taiwan, and Thailand. The collaboration aimed to develop harmonized PCR by which all three countries can abide. The meeting concluded with initial consensus on PCR for alcohol-free beverages and skin and hair cleansers. Edible oils were also chosen as the product category for the trial third PCR project.

Future outlook

The EPA has established the carbon information disclosure service platform and the calculation software providing convenient access for enterprises in Taiwan to calculate CFPs. In the future, relevant government agencies will continue to hold explanatory meetings and provide training to help enterprises and industry



From Carbon Footprint to Carbon Reduction: promoting in stages

associations and organizations calculate carbon footprints and apply for the Carbon Label. Those in need will be assisted with familiarizing themselves with the carbon labeling system and to develop skills to calculate CFPs on their own. The public will also be educated and guided to learn the meaning behind the Carbon Label.

The EPA has set up the Taiwan Product Carbon Footprint website (<http://cfp.epa.gov.tw>) where enterprises can submit electronic applications for CFP labeling certificates. The EPA will also keep track of global trends and adjust the direction of the CFP labeling

system as well as complementary measures based on unified international standard practices. Furthermore, the EPA is looking forward to signing agreements with advanced nations to promote bilateral recognition of CFP labels on exported and imported products.

Via carbon labeling policies, the EPA hopes to increase the competitiveness of local low-carbon products, raise consumer awareness of carbon label products, and work toward sustainable consumption and production patterns for a low-carbon economy.

Monitoring

Guidelines Announced for Establishing and Operating Air Quality Monitoring Stations

On 9 September 2019, the EPA announced the *Air Quality Monitoring Stations Establishment and Monitoring Guidelines* (空氣品質監測站設置及監測準則) specifying types and establishing guidelines for air quality monitoring stations. The goal is to properly implement air quality monitoring and enhance the value, accessibility and applications of environmental information.


The *Air Quality Monitoring Stations Establishment and Monitoring Guidelines* were formulated based on Article 13 of the *Clean Air Act* (空

氣污染防治法), which states that the central competent authority shall establish air quality monitoring stations and provide regular public

reports of the state of air quality along with original data from cities, towns, and townships where petrochemical industrial areas

are located, and from appropriate points selected by competent authorities at all levels.

Municipality, county, and city populations (thousands)	Required number of monitoring stations
0~249	1
250~499	2 ⁽³⁾
500~749	2
750~999	3
1,000~1,499	4
1,500~1,999	5
2,000~2,749	6
2,750~3,749	7
≥3,750	8

 Minimum number of regular air quality monitoring stations required

The EPA specified the types of air quality monitoring stations and test items in the guidelines after referring to the site selection and numbers of monitoring stations in the US, EU, Japan and other countries. According to the monitoring purposes, the stations can be classified as ones that monitor for long-term national air quality trends and ones that reflect regional pollution characteristics and form a comprehensive monitoring station network.

The EPA noted that to ensure the quality and openness of the

monitoring data, the guidelines also added regulations concerning quality assurance proposals, monitoring maintenance records, data effectiveness and online access. The purpose is to construct a self-reinforcing framework for planning and management of monitoring, so as to enhance air quality monitoring and improve the establishment of monitoring stations. As a result, quality reference data for formulating air pollution control policies and measures and for assessing control results can be provided.

Water

Control and Penalty Regulations Added for Enterprises Generating No Wastewater

On 27 September 2019, the EPA issued an official letter concerning enterprises generating no wastewater, which is specifically mentioned in the *Water Pollution Control Act* (水污染防治法). Said enterprises, once taken off the regulatory list, are subject to additional regulations for control and penalization if there are risks of stored raw materials or drugs leaking and contaminating water bodies. The goal is to keep proper track of the enterprises' situation for intensified controls.

The EPA's letter focuses on enterprises that are categorized and defined by the *Water Pollution Control Act*. If an enterprise does not generate wastewater in its manufacturing procedures or discharge or store wastewater, it can be taken off the regulatory list once the competent authorities in the municipality, county, or city have completed the audit

and approval. Yet it has to have its conditions registered on the information management system for water pollution sources so that its future status can be tracked for future control.

However, an enterprise audited and approved by the competent authorities for generating no wastewater should still be put on

watch if it stores raw materials and drugs, which will pose risks of water body contamination if leaked. It is also required to follow prevention and emergency response measures specified in Article 28 of the *Water Pollution Control Act* and will be penalized if regulations are violated.

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Executive Editors

Shiuan-Wu Chang; Chien-Jen He; Chun-Wei Yang;
Shaowen Chang; Ken Lee; Jason Hoy

For inquiries or subscriptions, please contact:

Environmental Policy Quarterly

Office of Sustainable Development

Environmental Protection Administration

83, Sec. 1, Zhonghua Rd., Taipei 100, R.O.C. (Taiwan)

tel: 886-2-2311-7722 ext. 2217

fax: 886-2-2311-5486

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