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Major Environmental Policies

Environmental Protection Administration, R. O. C. (Taiwan)

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General Policy

EPA Implements the National Environmental Protection Plan

The EPA-revised *National Environmental Protection Plan* was approved by the Executive Yuan on 24 February 2020. Since the Plan's enactment in 2008, there have been major environmental changes in Taiwan and new environmental trends in the world and, accordingly, the Plan has gone through many reviews, revisions and renewals. Throughout these years, the Plan has aligned with the principles of its 2008 version in its efforts to reach the original goals. The latest version came to fruition after numerous discussions among experts, scholars, local governments, and civil organizations. Closely linked to the UN's Agenda 2030, the revision designates 2030 as the next stage for long-term goals and sets clear and meaningful goals.

Background

The following are the major points of the *National Environmental Protection Plan*'s origins:

1. Realizing the protection of national environments, ensured by the *Constitution*, and implementing the *Basic Environment Act* (環境基本法) to achieve environmental protection and facilitate welfare for all civilians

The *Additional Articles of the Constitution of the Republic of China* (憲法增修條文) mentions that "environmental and ecological protection shall be given equal consideration with economic and technological development." And Article 7 of the *Basic Environment Act* states that "the central competent authority shall draft environmental protection laws and regulations, draw up national environmental protection plans, establish sustainable development indicators, and promote and implement such laws and regulations, plans and indicators." Accordingly, the EPA aims to follow the core of the *Basic Environment Act* so that the full effects of the Act can be realized. Under the framework of the *Basic Environment Act*, the *National Environmental Protection Plan* is an upper-tier plan in the national environmental governance, serving as the basis for the formation of all regulations regarding environmental protection as well as all relevant plans at the local level.

In This Issue

2. Reviewing Taiwan's key environmental issues, designing national environmental visions setting goals, and planning environmental strategies

Key environmental challenges confronting Taiwan include impacts from climate change, loss of water and soil resources, deterioration of ecological environments, and environmental risks to human health. The EPA has been planning national strategies in environmental protection with an approach that encompasses climate change, ecological environments, natural resources, environmental quality, development of green industries and technologies, and environment-friendly lifestyles. The ultimate goal is to create a healthy, beautiful and prosperous living environment that is full of innovations and coexists harmoniously with nature.

3. Strengthening connection to the international community and pursuing sustainable development

In the international community, the concepts of "sustainable development" and "think globally, act locally" were elaborated in *Agenda 21 and the Rio Declaration on Environment and Development*, both of which fully display new ways of thinking and new directions for humankind in terms of sustainable development. In 2015, the UN announced the *2030 Agenda for Sustainable Development*, evaluating the results of global efforts in sustainable development as well as bringing forth goals for the coming 15 years. The 2030 Agenda expanded the previous three aspects of environment, economy, and society to what is called the 5Ps, which are planet, people, prosperity, peace, and partnership. It strives to protect the Earth's resources, eradicate poverty, facilitate prosperous and co-existing development, build a peaceful society, and establish global partnership. Meanwhile, the Sustainable Development Goals (SDGs) were proposed at the 2012 UN Conference on Sustainable Develop, also called Rio+20. The SDGs present a thinking of sustainable economy, advocating collaborations across different countries and ministries and responses adaptive to environmental changes. As a member of the global community, Taiwan endeavors to achieve sustainable development in order to adapt to the global environmental problems and keep up with international environmental strategies in a new era.

In conclusion, the *National Environmental Protection Plan* has been put in place because of the ideas above and as required by the *Additional Articles of the Constitution of the Republic of China* and the *Basic Environment Act,* and now serves as reference for all local governments in the formulation of their respective local environmental protection plans.

Strategies and goals

The *National Environmental Protection Plan*, approved by the Executive Yuan on 14

The five categories and 13 key environmental issues under the National Environmental Protection Plan

February 2020, centers around environmental resources and aligns with the United Nation's *2030 Agenda*. The formulation of the Plan took into consideration of both domestic and international trends and critical issues in environmental protection and then set up short-, mid-, and long-term strategies and goals. It covers 13 key environmental issues and five categories, which are climate actions, environmental quality, nature conservation, green economy, and sustainable partnership.

Each department proposes measures based on the Plan's strategies. There is a total of 374 measures in 2020, 343 in 2021, and 287 for the year 2022.

Compilation of environmental white papers and disclosure of implementation results

1.Collection of background baseline information about environmental issues
The implementation of the *National Environmental Protection Plan* is set from 2020 to 2030. To establish a database on environmental background information before the Plan took off, budget, key performance indices, and other data related to the chosen environmental issues in the previous four years (from 2016 to 2019) were compiled as benchmarks for the future evaluations of result changes and trends.

2. Implementation results disclosed in environmental white paper
The EPA conducts annual evaluations and compiles results of the *National Environmental Protection Plan* in its environmental white papers, which are published regularly to disclose the current status of each environmental indicator. The papers show that, by the end of 2021, the work on the environmental issues had reached the respective short-term goals and is now heading toward the mid-term ones. All current results will be the basis for building momentum to carry out the rest of the Plan.

Future task: Combining diversified forces toward environmental goals

The EPA has been endeavoring to bring government agencies, enterprises, organizations, and citizens together. Local governments are also urged to propose their environmental protection plans for all to jointly realize the vision of carbon and disaster reduction, clean air for easy breathing, public-friendly water environments, waste used as resources, zero forest loss, and coexistence with nature by 2030.

Waste Management

Steel Scrap Circular Economy Established through Complete Recycling

The iron and steel industry is an important part of Taiwan's industrial foundation. In addition to two integrated steel mills that import iron ore for steelmaking, there are 19 electric-arc furnace (EAF) steelmaking plants that recycle scrap iron and re-smelt it into raw steel. About 190,000 tons of EAF dust and about 1.42 million tons of slag are generated during EAF steelmaking. With the efforts of the EAF steelmakers and recycling organizations, a circular economy model for urban mining of steel materials has been created to handle the EAF dust and slag, achieving the goal of "complete recycling, zero waste of resources."

Landfilling was common in Taiwan in the '90s and illegal dumping often occurred. Then Taiwan's large-scale iron and steel enterprises formed Taiwan Steel Union Corporation which began researching and developing processing technologies for steel materials. To date, the corporation's processing capacity has reached an equilibrium for processing within the iron and steel industry. It has now begun to process the accumulated 170,000 metric tons of EAF dust that had been dumped over the years. Regarding the public's concern over the disposal of furnace slag, a breakthrough has also been made in its stabilization technologies, allowing the recycled products to meet the quality requirements of public constructions.

Currently, three main types of waste, namely EAF dust, oxidizing slag, and reducing slag, are generated during EAF steelmaking in Taiwan's iron and steel industry. These types of waste can now be

The iron and steel industry builds a circular economy model with zero waste

processed into precious resources. For every metric ton of steel billet produced, approximately 2% of EAF dust is generated. The dust contains mainly zinc, lead and cadmium. Through the high-temperature smelting technology of a rotary kiln, not only can valuable metal resources such as zinc and lead be extracted and recycled into products such as "crude zinc oxide," hazardous dioxin materials contained in the EAF dust are also removed during the high-temperature combustion process.

Currently, since the zinc content of the EAF dust processed by domestic enterprises reaches 56~62%, which is 5~6% higher than the zinc content of natural zinc ore, about 90% of the products are exported to zinc smelters or chemical plants in Japan, Thailand and Europe to be refined into 99.995% pure zinc ingots or zinc oxide powder and other refined products. The remaining 10% is sold to domestic chemical plants to be refined into >98% zinc-oxide powder that is used as a rubber additive for tires or shoes. As such, a 100% cyclical use rate of the recycled material has been reached, completing the life-cycle circulation of metallic zinc in Taiwan's circular economy of iron scrap. And a business opportunity to accept waste and charge both the upstream and downstream for waste and zinc oxide products has been formed. With as much as 85% of revenue coming from zinc oxide products and only 15% from accepting waste (including EAF dust), a business model of "turning waste into gold" has been successfully created.

In addition to EAF dust, furnace slag is generated during steelmaking. With content similar to building materials, furnace slag has always been anticipated to become a recycled building material. However, if the calcium and magnesium contained in it are not completely reacted during the stabilization process, swelling problem will occur and become a limiting factor for slag recycling.

To solve the swelling problem of furnace slag, recycling organizations in the EAF steelmaking industry have built fully automatic production lines with ultra-high pressure steam autoclaves for the stabilization of reducing slag. The process can quickly cook and stabilize, reducing slag over three to six hours and making it into recycled aggregates. The aggregates can then be mixed with construction materials that are specially made by plants of ready mixed concrete and made into controlled low-strength material (CLSM) and non-structural concrete. Additionally, a dedicated laboratory for swelling control has been set up to ensure the quality throughout the entire process, putting slag input materials, the stability of stabilized aggregates and the quality of final concrete products in check. It is to ensure that the recycled materials meet national standards and that the whole-process flow tracking and reporting, from the production source to products, are strictly implemented, effectively turning waste into resources that can be safely used by the public.

Taiwan is short on resources. Through the integration of the upstream and downstream of EAF steelmaking and technology innovation, upstream iron scrap is re-smelted into steel raw material to be reused, and downstream EAF dust and slag are manufactured into zinc oxide products by Taiwan Steel Union through high-temperature smelting and into recycled building materials by Taiwan Steel Resources Corporation through ultra-high pressure steam stabilization. A complete industrial resource recycling chain is thus formed, realizing the vision of urban mining.

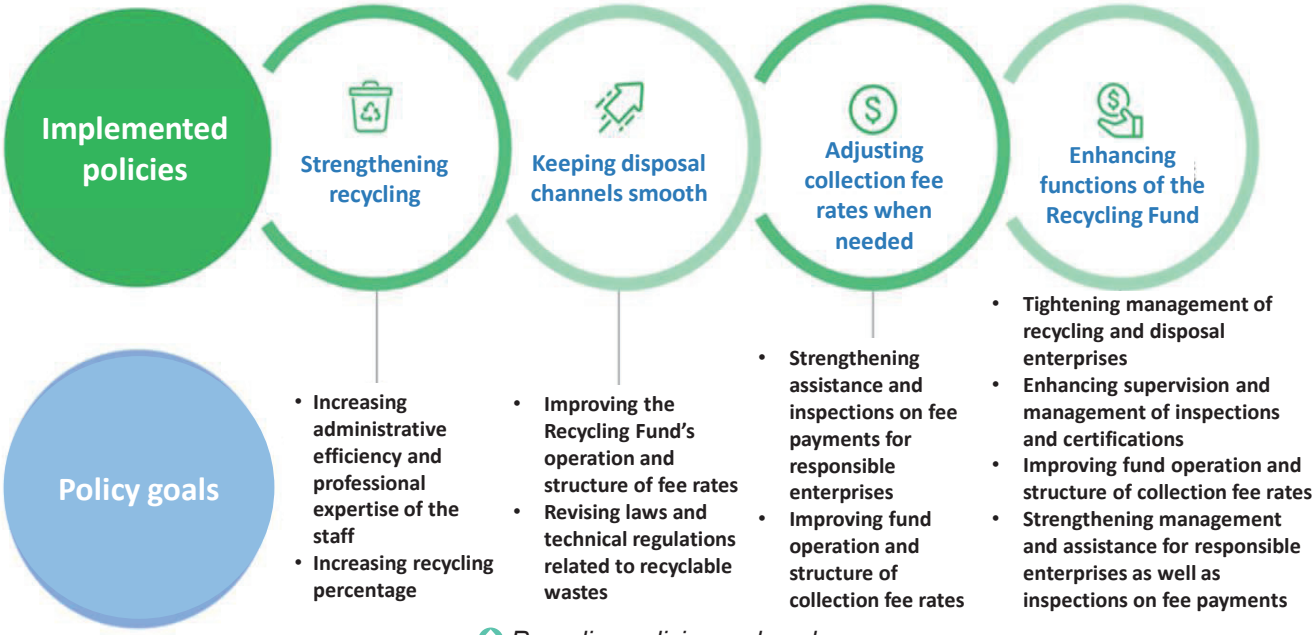
The EPA will continue to promote the recycling of different waste resources and enhance source reduction, waste diversion and processing technologies through revision of relevant regulations and strengthened management and assistance for the industry. It aims to turn waste formerly deemed worthless into resources, thereby avoiding resource exploitation and environmental damage. This way, a model of circular economy is built in which materials can be recycled and reused, facilitating Taiwan's advancement towards the goal of "resource circulation with zero waste," a key strategy to achieve net-zero carbon emissions by 2050.

Recycling

Enhancing and Utilizing the Recycling Fund to Its Full Effect

Taiwan's Four-In-One Recycling System has been in place for years and always been well received. The current recycling policies focus on perfecting the management of the recycling and disposal industry, audits, and certification, as well as facilitating agencies and organizations to recycle. In the future, the EPA will keep promoting recycling and working on rebranding so that recyclers can become communities' green partners and be more active in striving for thorough garbage sorting and zero waste. It is hoped that the vision of a circular society may ultimately be realized.

In recent years Taiwan has been highly praised in the international community for its systemized recycling policies adopted in waste disposal. Previously, the focus was mostly on incineration and landfills at the end of the disposal process. Now it has moved toward source reduction and recycling. Ever since the Recycling Fund Management Board (RFMB) combined community residents, recyclers, local governments' cleaning crews, and the Recycling Fund as participants jointly executing recycling, a positive recycling mechanism has been established. The current recycling policies cover four major areas:



Recycling policies and goals

The following are the focuses and results of relevant recycling policies:

(1) Enhancing recycling

1. Enhancing management and assistance for responsible enterprises

(1) Shortening registration and payment processes

Enterprises that are late with a large amount of overdue fees

or habitually late in payments are the EPA's priority targets to obtain what is owed. The overdue amount considered as large is now lowered from NT$300,000 to NT$100,000, and the urging period is shortened from three months to one month, all in hopes of speeding up the collection of overdue fees.

(2) Upholding the integrity of fee payments for responsible enterprises

Between January 2021 and February 2022, 2,814 enterprises were audited on their operational capacities and compulsory fees, which led to the discovery of unpaid recycling and disposal fees of NT$147,777,000.

(3) Designing mandatory QR codes for paper utensil manufacturers

To stop evasion of registering the operating volume of paper utensils and paying the recycling and disposal fees, the EPA has been promoting affixing QR codes on paper utensils to show their manufacturers to help identify articles of responsibility. On 10 December 2021, draft revisions in Articles 4-1 and 18 of the *Responsible Enterprise Regulated Recyclable Waste Management Regulations* (應回收廢棄物責任業者管理辦法) were preannounced. A meeting was convened about the revisions on 24 February 2022.

2. Strengthening recycling and disposal channels

(1) Replacing old recycling vehicles

A contract has been in place to jointly purchase recycling vehicles, details of which include replacing 118 old vehicles with new ones in 2021 and building a recycling vehicle with innovative design in the same year. The EPA collaborated with the cleaning crew in Chonghe, New Taipei City, to put this vehicle in operation for a month. The trial showed that it helped increase garbage sorting efficiency and lessened crew members' workload. In 2022, recycling vehicles that have been in operation for 16 years or more are the first for replacement, generating positive results with greater convenience in recycling for the public.

(2) Ensuring implementation of recycling at the local level

The EPA promotes recycling by integrating community residents, recyclers, local cleaning crews, and the Recycling Fund. In 2021, a recycling rate of 58.86% was achieved, surpassing the set goal of 54%.

(3) Optimizing construction of recycling plants and related facilities

Some subsidies can be applied for the construction and optimization of storage sites and sorting plants. A total of 81 applications were filed between January 2020 and February 2022, 50 of which had experts and scholars evaluate their construction design. In the end, NT$546.32 million were appropriated to subsidize 32 projects, which will improve the facilities of storage sites with a total capacity of 16.8 metric tons. Over 4,300 cleaning crew members will enjoy better working environments, and storage sites for recycling can benefit from enhanced operational efficiency and better public image.

(4) Promoting recycling in communities and apartment complexes

To strengthen the Four-In-One Recycling Policies and create diverse recycling channels, the EPA began facilitating recycling in communities and apartment complexes in July 2021. By February 2022, a total of 150 recycling stations had been set up for demonstration across 1,620 communities and apartment complexes, putting compulsory sorting into practice and raising recycling results.

3. Care for individual recyclers

(1) The deadline to apply for a maximum subsidy of NT$5,000 per person for individual recyclers is extended to 31 December 2022 to soften the impact of the COVID-19 pandemic.

(2) Micro-insurance

To prevent disadvantaged individual recyclers from falling into financial hardship after an accident, the EPA subsidizes individual recyclers, who qualify for micro-insurance, up to NT$500/year for the premium of basic personal injury insurance with a maximum coverage of NT$300,000.

(3) Providing clean-up services to individual recyclers

There are teams in place that visit individual recyclers to help clean up and sanitize work environments and also provide recycling opportunities. The aim is to improve the image of these recyclers by cleaning up dirty environments caused by hoarded recyclables.

(4) In 2021, the EPA assisted 22,012 individual recyclers that had recycled 11,567 metric tons of recyclables, a 5.1% increase for the number of recyclers and a 27.1% increase for the amount recycled as compared to 2020. Additionally, in January 2022, the EPA assisted 1,763 people who had recycled 955 metric tons of recyclables.

4. Increasing recycling volume

(1) Setting an action plan and organizing events to promote cellphone recycling

An action plan was formulated in April 2021 to promote the recycling of waste cellphones. The top ten cellphone brands, as well as all stores of the five major telecommunication companies, were invited to participate in helping set up recycling goals, provide incentives, assist in deleting personal data on the devices, take in waste or old cellphones, and track the recycled phones in the disposal stream. In October, which the EPA designated a recycling month, prize draws were conducted to encourage the recycling of cellphones. As many as 6,608 recycling stands were set up and took in 42,000 waste cellphones.

(2) Promoting recycling of batteries

A. Raising subsidization rates for recycling lithium batteries

Secondary lithium cells include lithium ferrous phosphate (LFP) batteries, ternary polymer lithium batteries, and other secondary lithium batteries. Subsidization rates have increased for the first two categories. All these adjustments have been in effect since 1 July 2021 to increase recycling incentives.

B. Outfitting additional battery-recycling containers on recycling vehicles

A total of 3,481 recycling vehicles were equipped with such containers in 2021.

C. A campaign to promote the recycling of waste cells was held from 8-21 September 2021 with additional rewards. A total of 4,476 metric tons of batteries were recycled in 2021, 403 metric tons (9.9%) more than the recycled amount in 2020.

(3) Adjusting subsidization rates for lighting sources to maintain the recycling system

Subsidization rates have been raised for recycling conventional and LED lighting sources, effective 1 July 2021, so as to maintain the overall lighting source disposal capacity and ensure the smooth operation of disposal channels. The average monthly capacity of recycling and disposing of lighting sources was 36 metric tons between January and June 2021 and grew to approximately 70 metric tons after July, an increase of 94%.

(4) Facilitating recycling of old clothes

The EPA endeavors to push recycling and reuse of old clothing items to extend their life cycles. The *Guide for the Public to Recycle Used Clothing* was announced on 8 November 2021 and dispensed to local environmental bureaus for promotion. On 26 January 2022, the EPA put out a news release on its Facebook page about the Guide and instructions regarding recycling old clothing.

On 30 December 2021, the Taiwan Textile Research Institute (TTRI) was approved for subsidies to implement its project on the development and certification of quantitative testing technology and operation models for waste textiles. Under the project, the TTRI develops technologies that automatically screen old clothing materials as well as automatic sorting equipment. It also conducts R&D on end disposal technology, all to facilitate circulation of old clothes and increase the reuse rate.

5. Promoting the Marine Debris Recycled Product Label (MDRPL)

(1) Assisting enterprises in applying for MDRPL

Since the *Operating Guidelines for the Promotion of the Marine Debris Recycled Product Label* (海洋廢棄物循環產品標章推動作業要點) was announced on 9 April 2021, the EPA has been actively helping enterprises gain certification and handling applications for the label.

(2) Organizing events to grant labels and demonstrate program results

A ceremony was held on 27 December 2021 to certify four enterprises with the MDRPL on their 13 products. The transformation from marine wastes to material-grade plastic pellets and regular consumer products for daily use is a significant journey and a great example in environmental education. It plays a significant role in drawing attention to relevant industries.

(2) Caring for cleaning crews and optimizing work environments

1. Following up on the president's directive to ensure occupational safety for cleaning crew members, the EPA announced a specific set of guidelines on 4 June 2020, involving a committee to promote occupational safety and sanitation for the nation's cleaning crews. The Occupational Safety and Health Administration and the Institute of Labor, Occupational Safety and Health (both under the Minister of Labor), local environmental bureaus, and representatives from cleaning labor associations were invited to serve as committee members. Since 27 October 2020, a quarterly meeting has been held to discuss issues on enhancing occupational safety and sanitation for cleaning crew members.
2. A program has been carried out since 2021 to improve local environmental bureaus' inadequate occupational safety and sanitation management by providing needed help. Results include organizing 74 seminars on relevant issues and training 141 supervisors and management staff, which has led to all cleaning crews becoming more attentive to safety on the job. The EPA also conducted 25 onsite visits to provide needed assistance, with occupational safety experts coming along to help crew members with what can be improved. The program will continue in 2022 to ensure that local environmental authorities properly abide by the *Occupational Safety and Health Act* (職業安全衛生法).

(3) Future prospects

Besides the smooth operation of the Recycling Fund and enhancement of recycling efficiency, future tasks will strengthen the management of enterprises responsible for recyclable wastes and source control. For recycling and disposal, the EPA will improve recycling enterprise management, audits, and certification, as well as expand recycling within agencies and organizations. As for the application of recyclables in construction, there will be trials on the reuse of waste glass and tires on asphalt road construction projects to display reutilization technologies and their benefits. Moreover, one of the areas the RFMB will focus on is the system in which vehicle owners are required to take their waste vehicles to legal recycling enterprises for recycling before terminating the vehicle registrations at the local motor vehicle offices. This measure will effectively lower environmental and safety problems.

Chemicals

First Emergency Response Training Center for Toxic Substances in East Asia Celebrates First Anniversary

Last year, the EPA and the Ministry of Education jointly established the Southern Emergency Response Training Center of Toxic Substances (hereinafter referred to as the Southern Training Center) at National Kaohsiung University of Science and Technology. This year, the center obtained certification from Texas A&M Engineering Extension Service (TEEX) in the USA, thus becoming the East Asian region's first internationally recognized emergency response training center for toxic substance incidents. In the future, it will serve as an international training center for East Asia. EPA Minister Tzi-Chin Chang was given a special invitation to attend the center's first anniversary celebration held on 3 August 2022.

The Southern Training Center is Taiwan's first training center for toxic substance emergency response. Its purpose is to train professional emergency response personnel to deal with toxic chemical incidents, thereby enhancing emergency response capacities of enterprises. This year, it obtained certification from TEEX to become the first internationally recognized training center for toxic substance emergency response in East Asia. In the future, it will also serve as an international training center in East Asia.

Looking at domestic and international accident-handling experiences, the most effective way to prevent and mitigate toxic substance disasters is to strengthen the emergency response capabilities of enterprises so that they can effectively limit the scale of disasters right from the start. Involving trainees in practical

exercises and simulated operations at professional training sites is one of the most effective ways to improve emergency response training.

Recently, the Southern Training Center has also been actively advancing towards becoming an international training organization. In addition to being the first learning center cooperating with TEEX in East Asia, it will also grant trainees who receive professional emergency response training in the center dual qualifications, including a TEEX certificate in accordance with the US NFPA 472/1072 standard.

The EPA stated that there are approximately 3,743 operators that handle chemical substances of toxicity and concern in Taiwan. According to regulations, they must register their certified professional emergency response personnel starting from 1 January 2024. Currently, there are four certified training organizations in Taiwan that can provide disaster prevention and rescue personnel training to operators to enhance their disaster response capabilities and overall emergency response awareness.

Climate Change

Guidelines Announced to Assist Enterprises in Inventory of Greenhouse Gas Emissions

Recently, the EPA announced the *Guidelines for Greenhouse Gas Emission Inventory* (溫室氣體排放量盤查作業指引) . The purpose is to help enterprises cope with future regulations regarding emissions by properly carrying out the most basic task in this field, which is to take inventory of their own carbon emissions. Based on different needs, enterprises are provided with necessary measures to understand their own emissions and obtain data as reference to reducing emissions.

To date, 5,200 enterprises in over 130 countries have proposed goals and timetables to achieve net-zero emissions in response to climate change. As a result, the Guidelines were revised by the EPA to assist domestic industries to cope with requirements from global supply chains. While the version enacted in 2015 targeted large-scale emission sources, the latest version adds measures that aim to assist small and medium-sized enterprises to conduct inventory on their own.

Since July, the EPA began to work with local governments and held many meetings in different regions to explain the Guidelines. Ministry of Economic Affairs statistics show that over 100,000 small and medium-sized manufacturing enterprises in Taiwan will be required by both domestic and foreign supply chains to conduct inventory of their emissions. Meanwhile, residential, commercial, and service industries account for 10% of domestic carbon emission. As a result, the EPA will help large-scale department stores and retailers take inventory of their emissions in areas like power usage, shipping and logistics, waste disposal, etc, so that inventory data can be used as reference for carbon reduction and power conservation.

In response to growing needs for diverse audits of more emission sources, revision is currently underway to categorize audit organizations into different levels. It is expected to be completed within this year. After the sub-laws are formulated next year, audit organizations will be ready to provide audit services and help small and medium-sized enterprises take emission inventory. The following are major points concerning the latest Guidelines:

Chapter 1: Inventory of greenhouse gas emissions

Introducing emission inventory, the reasons for inventory, targets required to undertake inventory, relevant regulations, the basic procedures, and the audit results that are required to be verified, registered or disclosed.

Chapter 2: How inventory is conducted

Users can begin to conduct inventory based on individual needs. Since needed data and information are provided by different departments in a company, enterprises are recommended to hold a commencement meeting first led by senior management to ensure a smooth operation. Targeting small and medium-sized enterprises, this chapter introduces setting inventory scales, emission sources (the scope) that are to be included, and how to utilize tools on the EPA

or MOEA's websites to calculate emission volumes. Since small and medium-sized enterprises required to take emission inventory are mostly in manufacturing and service industries, the examples in the chapter come from manufacturing, financial, and chain retail industries.

Chapter 3: EPA-announced inventory procedures for large-scale emission sources required to undergo inventory and registration

Enterprises of this type have been conducting inventories of carbon emissions for years and hence are familiar with the procedures.

The EPA noted that enterprises could reference the *Guidelines for Greenhouse Gas Emission Inventory* when conducting inventories themselves. For those required to conduct inventories by the EPA, by the Financial Supervisory Commission (under the Sustainable Development Pathway), or by their supply chains, the investigation results have to be verified by audit organizations. The Guidelines are now on the EPA's Industrial Greenhouse Gas Emission Information Platform, and the EPA will soon hold meetings to explain everything about the inventory in order to assist manufacturers as well as residential, commercial, and service industries.

Climate Change

Hsinchu County and Hsinchu Science Park First to Purchase Offset Credits as Platform Launched for Replacing Old Motorcycles with Electric Ones

Replacement of every old motorcycle with an electric one will result in an emission reduction of 2.3 metric tons of CO_2e. Thus, in 2022 the EPA began to provide practical rewards for such replacements. On 30 May, the EPA announced that Hsinchu Science Park Bureau (HSPB) and Hsinchu County Environmental Bureau became the first purchasers of offset credits. A proposal was then made to the EPA's Scrap Vehicle Platform on 10 June to match offers of offset credits.

EPA's Scrap Vehicle Platform launched on 10 June 2022

The platform not only allows people to replace their old motorcycles with new electric ones all in one go but also provides opportunities to purchase reduction benefits as offset credits generated from these replacements. Those qualified to purchase are developers that have passed environmental impact assessments (EIAs) and proposed their own greenhouse gas offset procurement plans. It involves municipal, county, and city governments willing to offer credits to those within their jurisdictions who need to offset increased emissions from development activities.

The HSPB has planned to purchase offset credits based on replacing 100,000 old motorcycles over two years, paying NT$1,500/motorcycle. Meanwhile, Hsinchu County Environmental Bureau has proposed to purchase credits for replacing 400 motorcycles, paying NT$2,000/motorcycle. The scheme is still restricted to newly purchased electric motorcycles whose registrations are in Hsinchu County. The combined procurement is equivalent to an emission reduction of 230,920 metric tons of carbon, and motorcycle owners who participate in the program receive additional incentives besides contributing to carbon reduction. Such a model is an example of collaboration between the private and public sectors, creating a win-win situation for all and also encouraging the public to adopt a

low-carbon lifestyle via behavioral changes.

EPA Deputy Minister Chih-Hsiu Shen pointed out that Taiwan's pledge to achieve 2050 Net-Zero Emissions, requires the participation of every citizen via lifestyle transformation. As transportation accounts for 13% of Taiwan's total carbon emissions, one of the critical moves to achieve zero emissions is to replace the 14 million fuel-burning motorcycles and 8 million fuel-burning cars with electric models. The first vehicles as the top replacement priority are the over 300 million old fuel-burning motorcycles on the roads. As for cars, the government is currently working on installing user-friendly charging facilities.

According to relevant regulations, replacing an old motorcycle with an electric one results in reducing emissions by 2.3 metric tons of CO_2e, the credits from which can be transferred to developers or local governments to offset increased emissions. The Hsinchu Science Park has proposed its procurement plan specifically for the second expansion stage of the 2-nm chip factory of Taiwan Semiconductor Manufacturing Co. (TSMC) in Baoshan, Hsinchu, and TSMC will foot the bill for all carbon credit purchases under the plan. Aside from being the first to join in to purchase reduction benefits from motorcycle replacements, the Hsinchu Science Park has been striving ahead in water and energy conservation, green energy, and green transportation.

Now that the EPA signed the contracts with the HSPB and the Hsinchu County Environmental Bureau, respectively, the two agencies are contractually obliged to wire the payments to an EPA-designated account. Afterwards, the scrap vehicle platform will officially launch its matching function. Other than applying to terminate old motorcycle registrations and for the recycling reward of $2,300, qualified applicants can also choose to sell the reduction benefits from the replacement of their old motorcycles to the HSPB. Furthermore, if the new electric motorcycles are registered in Hsinchu County, owners can sell the benefits to the HSPB or the County Environmental Bureau. Once the platform confirms that all information is accurate, within one month, motorcycle owners will receive NT$1,500 or NT$2,000 for making the replacements.

For people still using old motorcycles, the EPA again urges them to replace them by purchasing a new electric one by applying on the Scrap Vehicle Platform (https://epamotor.epa.gov.tw/people/OneStepServiceIndex.aspx). This will greatly contribute to environmental protection and achieve a reduction of both air pollution and carbon emissions.

Chemicals

ESG Included for First Time in Scoring for Green Chemistry Application and Innovation Awards

The EPA is organizing the third Green Chemistry Application and Innovation Awards with registration open until 14 October 2022. In this year's competition, for the first time ESG (environmental, social, and governance) criteria have been included in award scoring to reflect the international trend toward sustainability. The EPA will soon hold five briefings to give more information on the competition. For more details, please refer to the Green Chemistry Application and Innovation Awards Website (https://topic.epa.gov.tw/gcai). All industries are invited to enter the competition.

In order to encourage all industries to reduce the use of toxic chemicals, implement hazard prevention management, strengthen emergency response capabilities, promote education in green chemistry, while continuing toward innovative research and development of low-polluting and low-toxicity alternative products through green chemistry, the EPA is organizing the third annual Green Chemistry Application and Innovation Awards.

The EPA stated that to encourage sustainable development of industries and to align with the internationally popular concept of sustainability and ESG-related issues, ESG-related actions have been specifically included as an item to be evaluated when judging the group category in this year's event. By participating, not only will industries be able to examine and display their relevant performance

from different green chemistry perspectives, they will also be encouraged to advance towards sustainability and improve their international competitiveness.

In this year's event, maximums of 15 and 10 winners will be selected for the group and individual categories, respectively. The group category is further divided into the five sub-categories of "green chemistry education," "green and safe alternatives," "chemical substance management," "disaster prevention and rescue," and "other." The individual category also has a "lifetime achievement" sub-category to recognize individuals who have been committed to the field of green chemistry throughout their lives. The winners will be awarded a trophy and be publicly recognized. For the individual category, winners will also be granted NT$50,000 or merchandise of equal value. Moreover, the award-winning deeds of all winners will be recorded in the *Deeds of Outstanding Achievement*, a booklet that records the actions of enterprises and individuals in the field of green chemistry, to serve as examples for all industries to learn from.

Air Quality

VOC Emission Standards for Adhesive Tape Industry Amended

The EPA revised and announced the *Volatile Organic Pollutants Control and Emission Standards for Adhesive Tape Manufacturers* (膠帶製造業揮發性有機物空氣污染管制及排放標準; hereinafter referred to as the Standards) on 22 June 2022, which was then enacted on 1 July 2022. The measures are expected to reduce emissions of volatile organic compounds (VOCs) by 523 metric tons per year, which is equivalent to reducing the annual VOC emissions of an average oil refinery (821 metric tons) by over 60%.

VOCs are the precursors of ozone and fine particulate matter and one of the main causes of odor pollution. Some VOCs are also hazardous air pollutants that may impact human health after long exposure. To encourage the adhesive tape industry to adopt water-based processes and to strengthen the overall control of VOCs, the EPA has revised the Standards.

The three focuses of the amendment encourage source reduction, strengthen gas collection, and tighten emission standards. More details are as follows:

1. A stipulation was added to exempt adhesive tape manufacturers that adopt water-based or solvent-free processes from these regulations once they submit supporting documents and have them approved by local competent authorities. To more clearly regulate the amount of VOCs used, the VOC content of raw materials has been included as a control threshold consideration. Manufacturers that use less than 25 metric tons of VOC-containing raw materials are also exempt from these regulations.
2. Regulations on gas collection installations were integrated. Additionally, if raw materials stored in storage tanks are on control lists, a closed gas collection installation connected to pollution-control equipment shall be installed.
3. To strengthen control of VOC emissions, regulations were tightened concerning the treatment efficiency of pollution-control equipment and emissions through single emission pipelines.

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