

Major Environmental Policies

August 2023

1. Feature Article: Ministry of Environment Established, Marking Taiwan's New Chapter toward Sustainable Development

Following the third reading and passage of the *Organization Act of the Ministry of Environment* (環境部組織法) by the Legislative Yuan, and its official promulgation by President Tsai Ing-wen on 24 May, the Executive Yuan's Environmental Protection Administration (the EPA) was formally restructured to become the Ministry of Environment (MOENV) on 22 June. The inauguration ceremony included the official appointment of Minister Shieu Fuh-sheng. Under the witness of distinguished guests, Premier Chen Chien-jen presented the appointment order and official seal to Minister Shieu. President Tsai, Premier Chen, USEPA Assistant Administrator Jane Nishida, and other esteemed guests joined Minister Shieu for the unveiling of the ministry's plaque, marking the completion of the inauguration. On the same day, the heads of the departments under the MOENV were also officially appointed and sworn-in, leading Taiwan into a new epoch of environmental protection with a focus on sustainable development.

The establishment of the MOENV was in response to critical concerns such as net-zero emissions by 2050, air quality improvement, resource circulation, and chemical substance management. The official strategy for better environmental quality has shifted from controlling pollutions to preventive management, integrating responsibilities and expanding operations. Major efforts will be made toward systematically address five major issues: climate change, resource circulation, chemical substance management, environmental quality management, and strengthened research of environmental science.

President Tsai: MOENV is tasked with three missions

President Tsai said that Minister Shieu was a scientist with administrative competence that takes proactive initiatives. With a background in materials engineering, he has devoted his past efforts to researching energy-efficient and circular materials. During his eight-year tenure as president of National Chung Hsing University, he not only established Taiwan's Academy of Circular Economy, but also set up a Sustainable Development Office and installed an energy-saving and carbon reduction system. He was the first to advocate for the vision of achieving net-zero emissions on campus by 2040. President Tsai emphasized that since taking office in 2016, her administration has been actively engaged in government organizational reform to enhance governance. The restructured MOENV will be tasked with three major objectives in the future. The first is coordination of climate change policies and establishment of a carbon pricing mechanism. The second one is to advance resource recycling management, achieving zero waste by shifting the focus from post-pollution controls to design and

planning at the beginning. And finally, the capacity for technological research and development, with the MOENV working with the National Science and Technology Council (NSTC) to utilize technology as a cornerstone for addressing climate change and environmental governance.

Premier Chen: A sustainable environment is essential for Taiwan's future

"Only with a sustainable environment can we have a sustainable Taiwan," said Premier Chen. He pointed out that the restructuring of the EPA would consolidate responsibilities across various departments in response to global efforts toward net-zero emissions. Following President Tsai's pledge of "net-zero emissions by 2050" two years ago, not only will the MOENV finish amending the *Climate Change Response Act* (氣候變遷因應法), but the recent establishment of Taiwan Carbon Solution Exchange (TCX) has demonstrated the ongoing progress in the carbon tax mechanism. Moreover, the Executive Yuan has a budget in the tens of billions planned out to initiate projects related to net-zero technologies across multiple government agencies. Premier Chen emphasized that every agency will play a significant role in environmental matters in the future. Only through inter-agency cooperation would Taiwan achieve the best outcomes for sustainable development and that future generations live in a resilient and comfortable Taiwan.

Minister Shieu: Full implementation of the transition pathway to ultimately achieve net-zero emissions by 2050

"Environmental sustainability is not only our mission, but also a severe global challenge we all face," stated MOENV Minister Shieu. The average monthly temperature in July this year marked the highest point in 100,000 years, as the world experienced extreme heat, heavy rainfalls, and incidents such as wildfires in Hawaii and drought in the Panama Canal. Extreme climate change phenomena are currently affecting every corner of the globe at an unprecedented speed. The transition from the EPA to the MOENV marked a significant milestone, and the MOENV will mobilize its entire staff and fully dedicate itself onward to mitigate these impacts.

Minister Shieu said the ministry's future endeavor and its ultimate goal will be net-zero emissions, as it steadfastly follows the pathway to net-zero emissions by 2050. The MOENV will continue to expand social dialogues and promote circular economy, zero emissions, as well as zero waste. This will enable Taiwan to undergo a successful transition in energy, industry, lifestyle, and society, and become resilient and sustainable.

Minister Shieu pointed out that the shift of the MOENV's mission from pollution control to proactive management presents a tremendous challenge. Nevertheless, research institutes across Taiwan boast abundant capabilities, so in the future the MOENV will collaborate closely with the academic community and the industrial sector. The establishment of the National Environmental Research Academy, a merger of the Environmental Analysis Laboratory and the Environmental Staff Training Institute, is part of the ministry's plan to have it as a think tank that conducts forward-looking research and assists in proactive management.

In the restructuring, the Climate Change Administration (CCA) was set up to accelerate legislation and organization of tasks that respond to climate change, and the Resource Circulation Administration (RCA) to integrate management of industrial waste reuse as well as strengthen resource circulation. The Chemicals Administration (CA) was formed to expand and improve chemical substance management, while the Environmental Management Administration (EMA) is designed to enhance coordination of waste treatment facilities and environmental quality management. Finally, the National Environmental Research Academy (NERA) is established to bolster environmental research capabilities and elevate the expertise of its staff in the area of net-zero emissions. With the establishment of these agencies, the ministry aims to actively address global environmental issues and create opportunities in Taiwan's transition.

The inception of the ministry reflects the government's increased effectiveness in promoting green economy and sustainable development policies. With continuous environmental education and campaigns, the ministry strives to raise public awareness of environmental issues and work toward the goal of net-zero emissions by 2050 in order to leave a clean and healthy environment for future generations.

Minister Shieu's first official document upon assuming office was the appointment letter for the entire MOENV staff. It was transmitted electronically to all workers in the ministry, formally announcing the formation of a new team. On the same day, various directors and heads of the MOENV divisions were also appointed and took their oaths of office. They included the CCA Director Tsai Ling-i, the RCA Director Lai Ying-ying, the CA Director Hsieh Yein-rui, the EMA Director Yen Hsu-ming, and Acting Director Chang Shun-chin of the NERA.



President Tsai Ing-wen (fourth from left), Premier Chen Chien-jen (fourth from right), USEPA Assistant Administrator Jane Nishida (first from right), and other distinguished guests unveil the ministry's plaque with MOENV Minister Shieu.



Premier Chen presents appointment order and official seal to MOENV Minister Shieu

2. EPA Reflects on Past Achievements on Its 36th Anniversary

“Graduation is not the end, but a new beginning.” On 19 August the then-EPA celebrated its 36th anniversary in a “commencement” ahead of its transformation into the MOENV on 22 August. As the EPA approached the end of its long course, a special ceremony was held with the EPA’s first administrator, Eugene Chien, and the following heads, including Larry L.G. Chen, Chang Ju-en, Stephen Shu-Hung Shen, Wei Kuo-yen, and Tsai Hung-the, invited to commemorate this historic occasion. These former heads as well as many distinguished guests together witnessed and reflected upon the various milestones achieved by the EPA from its first to 36th year in the collective pursuit of protecting the environment.

All former heads served as valedictorians in the ceremony, starting with the first administrator Eugene Chien, who recalled that 36 years ago the sky over Taipei was not blue, the rivers had a dark color, and garbage was everywhere. The establishment of the EPA transformed Taiwan’s living environment, even though the outcomes of many actions carried out during his tenure were not immediately visible. Take the example of the Tamsui River, for which the EPA began remediation work in 1988, initially hoping to just eliminate foul odors. Today, the river runs clear and is suitable for dragon boat races. He also recalled that in the past it was challenging for him to represent Taiwan in the international community because of Taiwan’s low environmental quality, but now Taiwan is recognized as an outstanding performer in recycling on the global stage.

“We have graduated and come to an end, and we are proud,” said Minister Chang Tzu-chin as the last

minister “graduating” from the EPA on the eve of its restructuring. He emphasized that while the establishment of the MOENV may have been due to the demands in the times, it would not have been possible without the support of the Directorate-General of Budget, Accounting, and Statistics of the Executive Yuan and the unwavering dedication of the EPA staff. The cumulative achievements over the years have further demonstrated to the society the EPA's capability to step up and become the MOENV. Minister Chang expressed his hope that, with an excellent system and regulations, the future MOENV would be able to make a more significant contribution in the face of challenges such as climate change, resource recycling, environmental management, and controls of chemical substances.

“From smog to blue skies, from warriors fighting garbage to geniuses in waste disposal — these are all the fruits of everyone's incessant labor,” commented the Chief Secretary Yeh Chun-hung as he reflected with attendees on the EPA's journey of growth. Under the leadership of 16 ministers, the EPA undertook distinct missions in four stages of its history.

The EPA was established in 1987 in response to grassroots environmental initiatives like the Anti-DuPont protests in Lukang and the opposition to the Fifth Naphtha Cracker Project in Houjing. Administrators during the first phase led the EPA in tackling various challenges, including public nuisances, war on garbage, illegal waste disposal, air and river pollution. This period saw the formation of the Bureau of Environmental Inspection, the Recycling Fund Management Board, and the Environmental Police Force, along with legislation and enactment of the *Public Nuisance Dispute Mediation Act* (公害糾紛處理法), the *Environmental Impact Assessment Act* (環境影響評估法), the *Environmental Agent Control Act* (環境用藥管理法), and the *Soil and Groundwater Pollution Control Act* (土壤及地下水污染整治法). Not only so, the establishment of the Air Pollution Control Fund and the Recycling Fund laid a solid foundation for the EPA.

The second phase, from 1990 to 2008, is marked with significant development with the establishment of the Soil and Groundwater Pollution Remediation Fund Management Board and the Carbon Reduction Management Office. The EPA also completed formulating the *Marine Pollution Control Act* (海洋污染防治法), the *Resource Recycling Act* (資源回收再利用法), and the *Basic Environmental Law*. As for the Environmental Impact Assessment (EIA) system, a legal dispute related to the EIA concerning Linne Incineration Plant resulted in a judicial recognition that EIA review conclusions were also administrative sanctions in their nature. This recognition has led to the subsequent increase in administrative remedies through litigation.

In the third phase, from 2008 to 2016, significant milestones were achieved with the enactment of the *Environmental Education Act* (環境教育法), the *Indoor Air Quality Act* (室內空氣品質管理法), and the *Greenhouse Gas Reduction and Management Act* (溫室氣體減量及管理法). In 2010, levying began for soil and groundwater pollution remediation fees, enabling the EPA to complete remediation for all farmland pollutions across Taiwan in 2022. Then the revision of the *Water Pollution Control Act* (水污染防治法) raised the maximum fine to NT\$20 million for discharges that failed to meet standards, introduced clauses on confiscation of illegal gains and also protection for whistleblowers. In addition, this amendment led the way in increasing penalties for exceeding the limits regarding substances

detrimental to health.

From 2016 to the present, several significant developments having taken place including the establishment of the Toxic and Chemical Substances Bureau, the Climate Change Office, the Resource Cycling Office, and an preparatory office for establishment of the CCA under the MOENV. The formation of a clear and efficient EIA review system has yielded positive results, particularly in the offshore wind power sector and investments from Taiwanese businesses returning from abroad. Not only have there been record-breaking improvements in air quality, but there have also been notable achievements in promoting reduction of plastic usage at six major sources and facilitating better recycling. Even now, the MOENV continues its endeavors with the ongoing revisions of the *Resource Recycling Promotion Act* (資源循環促進法), aiming to maximize resource cycling and minimize waste disposal, as well as the transition toward net-zero emissions by 2050.



The EPA celebrated its 36th anniversary in a “commencement” ahead of its transformation into the MOENV on 22 August

3. Categories and Emission Limits Revised for Air Pollutants from Stationary Sources

To deter unscrupulous operators from emitting harmful air pollutants, on 3 August the EPA announced the revised categories and emission limits of hazardous air pollutants from stationary sources. This amendment adds 18 new categories of hazardous air pollutants and their respective emission limits and tightens emission limits for one existing pollutant, bringing the total number of regulated pollutants to 23 in the hope of better protection of the public’s health. Emission limits for hazardous air pollutants from illegal exhaust pipes have also been newly added to further penalize illegal discharges.

In 2018, the *Air Pollution Control Act* (空氣污染防制法) was amended with the addition of Article 53. It states, "If public and private premises with stationary pollution sources that emit air pollutants

through exhaust pipes violate the standards for air pollutant emission limits which are determined pursuant to Article 20 Paragraph 2 and thereby cause human death or harm to health, they shall be punished by a maximum of seven years of imprisonment and may be fined a sum of no less than NT\$1 million and no more than NT\$15 million." Therefore, "standards for air pollutant emission limits" serve as the basis for determining whether businesses may be penalized as stipulated in this article.

This amendment categorizes emission limits into two types: emissions through "exhaust pipes" and those through "illegal exhaust pipes." This differentiation was made in response to recent inspections that revealed unscrupulous businesses resorting to alternative discharge activities, such as rerouting, to evade detection during inspections. Discharges through "illegal exhaust pipes" refer to exhausts from production processes, collected by gas-gathering equipment within facilities, that are released through facility ventilation holes, air vents, or unpermitted emission outlets instead of regular, approved exhaust pipes. The revision aims to impose strict penalties on such activities that deliberately pollute the air and pose a threat to the public's health.

The emission limit of an air pollutant is set by calculating emission concentration in exhaust pipes using the environmental risk index as a basis, in combination with an air dispersion model. An air pollutant's environmental risk after being emitted from exhaust pipes is quantified as 1×10^{-4} (0.0001 times) of the highest concentration of the pollutant on ground surfaces of peripheral boundary. This is the upper threshold that an individual is able to withstand under long-term exposure to any given air pollutant in the atmosphere throughout an individual's whole life, and human health is at risk if the concentration is above such a threshold. Additionally, a pollutant's emission limit through illegal exhaust pipes is set at 1% of that through legal exhaust pipes in consideration of the testing and sampling methods applicable to illegal exhaust pipes and the unavoidable dilution effects during the sampling process.

To provide businesses with an appropriate and reasonable timeframe for improvement, revised emission limits for certain air pollutants from exhaust pipes will not come into effect until 1 July 2024. These include 19 air pollutants, items 5 to 23 listed in the revision's Table 2, such as trichloroethylene, mercury and its compounds, arsenic and its compounds, and nickel and its compounds. As for the remaining four air pollutants -- namely dioxin, vinyl chloride monomer, cadmium and its compounds, and lead and its compounds -- their emission limits, previously set and not adjusted in this revision, will become effective from the date of announcement. Furthermore, the amendment has newly added emission limits for discharges of 23 air pollutants, including dioxin, from exhaust pipes, and they will come into effect on the date of announcement. This is due to consideration that emission limits for illegal exhaust pipes are set to regulate unlawful emissions by unscrupulous businesses attempting to evade inspections and testing, and deter environmental crimes such as illegal discharges of hazardous air pollutants.

4. Taiwan's Emissions Increase Slightly in 2021, Well Below 2007 Peak

In 2021, Taiwan's total greenhouse gas emissions amounted to 297 million metric tons of carbon

dioxide equivalent (MtCO₂e), with net emissions of 275 MtCO₂e. The overall trend indicates that Taiwan's emissions peaked in 2007, with net emissions reaching 279.6 MtCO₂e. Emissions decreased to 263.2 MtCO₂e by 2020, but in 2021 increased by 4.56% compared to 2020, primarily driven by the energy and manufacturing industries. Following the post-pandemic economic recovery, there was a 4.4% rise in electricity demand, leading to an increase in greenhouse gas emissions.

According to the International Energy Agency's report on carbon dioxide emissions from fuel combustion, as the COVID-19 pandemic abated and economic recovery took place, in 2021 global CO₂ emissions from energy-related sources rebounded, growing by 6% compared to 2020. In comparison, Taiwan's emissions from fuel combustion in 2021 were relatively lower and increased by only 3.7%. Furthermore, Taiwan's economic growth rate in 2021 was 6.5% higher than that in 2020. In contrast, more advanced European countries and the US experienced lower economic growth rates than Taiwan during the same period, with an increase in emissions from fuel combustion exceeded that of Taiwan. Additionally, Taiwan's carbon emission intensity (i.e., carbon dioxide emissions per unit of GDP) has been on a downward trend year by year since 2003, indicating the effectiveness of Taiwan's recent efforts in transitioning toward a low-carbon economy.

The Bureau of Energy (EA) of the Ministry of Economic Affairs (MOEA) recently announced that 2022's electricity carbon emission factor has dropped to 0.495 kgCO₂/kwh. In August 2023, statistics and analysis of carbon dioxide emissions from fuel combustion in 2022 were released, providing an initial estimate of emissions from the energy sector's fuel combustion in 2022, amounting to 259.79 million metric tons of (Mt CO₂e). Assuming that non-fuel combustion emissions remain at the 2021 level, the net emissions in 2022 dropped to 266.1 Mt CO₂e, which represents a 3.3% reduction compared to 2021 and falling below the emissions level in the base year of 2005.

The MOENV emphasizes that Taiwan's second stage of carbon control aims to achieve a reduction of 10% by the target year of 2025 compared to the base year of 2005. Currently, all six major sectors and 22 local governments have had their reduction action plans approved, progressively facilitating initiatives such as energy transition, industrial low-carbon transformation, motor electrification of transportation, and subsidization for energy efficiency in residential and commercial sectors. More proactive climate actions are being carried out through 12 key strategies under *Taiwan's Pathway to Net-Zero Emissions*.

These actions include the TPASS, a new monthly commuter pass introduced by the Ministry of Transportation and Communications (MOTC) that aims to encourage the public to change its habits in transportation. Moreover, the *Climate Change Response Act*, announced and enacted in February 2023, strengthens coordination across different action plans and evaluation mechanism while also mandates local governments to set up their own offices specifically for climate change response. The act is newly equipped with economic incentives such as carbon fees, aiming to push targets of fee collection to actively reduce emissions since they are able to apply for discounted fee rates after meeting designated reduction goals with their voluntary reduction plans. The emission trading mechanism helps urge large enterprises to lead smaller ones to engage in active reductions, hence

encouraging more voluntary reduction efforts. And last but not least, the act works to lower emission increases via the offset mechanism for emission increases caused by newly set or modified emission sources. All the above practices are carried out progressively, bringing together the central and local governments, citizens, industries, and civic organizations to jointly cut down emissions under the common goal of carbon reduction.

5. Smart Governance via Environmental Sensing IoT Enhances Inspection Capacity

The EPA has been implementing the program for development and deployment of environmental quality Internet of Things (IoT) and its application in law enforcement as well as the Smart IoT -- Intergenerational Environmental Management program since 2017. These two programs are under the Digital Construction sector of the Forward-Looking Infrastructure Development Program. With the programs, the EPA utilizes relevant technology to set up an environmental sensing IoT network, works with local environmental bureaus to deploy sensors for air pollution and water quality for smart environmental governance. As the environment sensing IoT real-time information is provided to environmental inspection personnel in understanding environmental trends and also applying AI-powered big data analysis to enhance inspection capabilities, great results in inspection tasks have been produced.

In 2022, 660 water quality sensors were deployed, and by 2023 the number of deployed sensors reached 766 units, accounting for nearly 80% of the original goal of 1,000 water quality sensors. From 2017 to July 2023, a total of 1,190 businesses have been penalized for air pollution violations with the help of sensors and IoT, resulting in fines exceeding NT\$230 million and recovery of approximately NT\$280 million in unpaid air pollution fees. From 2019 to July 2023, the water quality IoT network has aided in detecting 48 incidents of illegal discharge by unscrupulous businesses, resulting in fines totaling over NT\$36 million.

The EPA stated that 10,000 air pollution sensors had been deployed by 2020. On the other hand, 839 fixed, mobile, and handheld water quality sensors in total have been produced as their deployment is contingent upon flow directions of water bodies and pollution hotspots. The development of the water quality IoT network represents the first time that the EPA integrated development systems that combine sensor components, data storage, wireless transmission devices, and data applications and displays, which had also been validated as a feasible technology through on-site testing beforehand. Another demand is to meet the daily monitoring requirements of local environmental bureaus and river patrol teams. Therefore, the EPA has further developed mobile and handheld water quality sensors, based on the capability of system integration and chip sensor technology already used in fixed sensors. This development helps monitor pollution sources and potential pollution hotspots more effectively while addressing environmental education needs.

The EPA pointed out that none of the mobile and handheld water quality sensors are lost, damaged, or temporarily suspended from operation. They are deployed based on inspection requirements and

typically store data for a minimum of six months instead of providing continuous monitoring data as air pollution sensors do. If there is no longer a need for data collection at a specific location, adjustments to sensor placement are made accordingly. And unlike mobile sensors that upload data directly to a database, handheld sensors store data via Bluetooth in the cloud, and data is only generated when river patrol teams are actively conducting operations. Consequently, when these sensors are not in use, they naturally do not generate any data.

In the future, the MOENV will continue to work with the Irrigation Agency under the Ministry of Agriculture and 11 local environmental agencies, including those of Taoyuan City, Taichung City, and Yunlin County. The collaboration aims to monitor watersheds of water bodies with water quality sensors, optimize the water quality sensor database, and enhance spatiotemporal analysis and technologies identifying pollution hotspots. These efforts are geared toward maximizing the effectiveness of deployment and application of water quality sensors.

6. 2023 GEEP Meeting Commences in Northern Ireland

From 15 to 11 August, the 2023 Global Environmental Education Partnership Meeting was held in Belfast, Northern Ireland by the Global Environmental Education Partnership (GEEP) program, co-initiated by the EPA and the USEPA. Taiwan's delegation was led by Deputy Director Hsu Shu-chih of the EPA Department of Comprehensive Planning. It also included three representatives from ecological schools as well as Professors Chang Tzu-chau and Pai Tzu-i, both experts in this field. The conference brought together approximately 30 environmental education experts and scholars from the public sector and NGOs in various countries for exchanges and discussions.

Continuing from the 2022 conference, this meeting was jointly organized by the EPA, the USEPA, and the North American Association for Environmental Education (NAAEE). In addition to inviting experts to discuss the GEEP's future strategic goals and implementation methods, the conference had participants sharing experiences and operational status of regional environmental education centers. The expert advisors in attendance came from various countries, including the UK, India, Canada, Botswana, Nepal, the US, and Taiwan.

Deputy Director Hsu expressed during the conference that, with increasingly frequent exchanges and cooperation around the globe, Taiwan is committed to advancing environmental education by cultivating young international environmental talents and promoting ecological schools. It is hoped to create an environment where all living beings coexist and thrive through the influence of environmental education. She also expressed gratitude to the USEPA and international partners for their contributions. Since the initiation of the GEEP Program in 2014, the past decade has witnessed even more rapid climate change worldwide. Taiwan wishes to further promote environmental education with the GEEP to tackle challenges that may confront humanity in the future.

In order to strengthen regional cooperation networks, in 2019 the Asia-Pacific Regional Center (APRC) was established in Taiwan under the GEEP framework. Besides promoting regional environmental education, the APRC is responsible for building in the Asia-Pacific region an environmental education

exchange network dedicated to integrating information platforms for environmental education. In the conference, Professor Chang Tzu-chau, the APRC's project director, also talked about the center's current operation status and promoted the 2023 GEEP APRC International Exchange Workshop, inviting experts from around the world to participate in the event's live broadcast online.

In addition, the delegation took advantage of the trip to visit Keep Northern Ireland Beautiful (KNIB), an organization promoting environmental education in Northern Ireland, and, during the visit, shared achievements of Taiwan's ecological schools. The three delegates representing Taiwan's ecological schools were Principal Hsu Ching-hung of Dashan Elementary School in Miaoli County, Director of Student Affairs Yen Hsiu-wen of Tzu Chi High School Elementary Department in Tainan City, and Director Ho Chia-hui of Sinpu Elementary School in Taoyuan City. The visit to KNIB allowed for mutual learning of international experiences and aimed to create future opportunities for more exchanges between ecological schools at home and abroad.



Taiwan's delegates with NAAEE Executive Director Judy Braus (third from the right) and KNIB Chief Executive Ian Humphreys at Queen's University Belfast

7. Promoting Solid Recovered Fuel to Achieve Zero Waste through Resource Circulation

On 2 August 2023, the EPA invited experts, scholars, local environmental bureaus and enterprises to exchange and share key aspects of the management, production and use of Solid Recovered Fuel (SRF). These include insights into local governments' implementation and industry best practices. The discussion was aimed to engage with the stakeholders and focused on how to improve

management. It was also to prepare for the future policy direction of converting combustible waste resources into energy.

As part of the key strategy of "Zero Waste through Resource Circulation" for Taiwan's transition to net-zero emissions by 2050, the EPA has been promoting the conversion of combustible waste resource into fuel since 2019. As of the end of 2022, there were 28 companies engaged in the production of SRF and 14 companies engaged in its use. The annual consumption of SRF had been steadily increasing, reaching 180,000 metric tons in 2022, up from 60,000 metric tons in 2019. Moving forward, the EPA will continue to collaborate with local governments to enhance inspection and management efforts, and to ensure strict oversight of SRF manufacturing facilities, including their production technology, quality, and flow management, so as to maintain the smooth operation of industries involved in conversion of combustible waste resources into fuel.

The conference focused on strengthening the management and expanding the benefits of converting combustible waste resource into fuel. This included requiring SRF manufacturing facilities to install necessary equipment, confirming user needs in advance, and using appropriate equipment to receive and process waste materials. It also entails regular sampling and testing of the finished product. The finished product should be directly sold to SRF users who adhere to the standards, and the authorities should review the management of both fuel production and utilization in series and conduct on-site inspections. Additionally, practical examples of applying the methodology for calculating carbon reduction benefits through "the substitution of coal with SRF in boilers and combustion devices to generate thermal energy" were also discussed during the conference.

In 2020, the *Guidelines and Quality Standards for Solid Recovered Fuel Manufacturing Technology* (固體再生燃料製造技術指引與品質規範) was formulated to primarily create a management system and standards for SRF, providing guidelines for both industry operators and reviewing authorities to follow. To enhance this management system, the quality standards were further revised in January 2023, mandating that SRF manufacturing facilities should have essential equipment such as sorting, shredding, and mixing machinery. At the same time, the EPA continued to assist SRF manufacturing facilities to enhance their manufacturing technology and quality.

In response to the international trends of coal reduction and efforts toward net-zero carbon emissions, more and more domestic enterprises in Taiwan, including large boiler operators and the cement kiln industry, are planning to adopt SRF as an alternative to coal. This will place a stronger demand on the management of SRF. The EPA has formulated the *Management Regulations for Solid Recovered Fuel* (固體再生燃料相關管理方式), which integrates regulations pertaining to the application, reporting and management of the production, manufacturing, and use of SRF, as well as SRF's ash residue treatment or recycling stages. In the future, the EPA will introduce additional management regulations regarding SRF quality verification, the responsibility of users for confirmation, regulatory agency inspections, and import and export procedures. These regulations are aimed at providing clear guidelines for enterprises to follow.

8. Taiwan-US Environmental Cooperation: 30 Years of Partnership for Sustainability

An agreement on Taiwan-US environmental technology cooperation was signed in 1993. To celebrate 30 years of bilateral cooperation, the EPA held a retrospective and forward-looking event on 21 August at Huashan 1914 Creative Park, and invited past and current partners to participate. The event highlighted the stages and changes in Taiwan-US exchange and cooperation, providing insights into the evolution of environmental challenges so that participants were able to discover the power of partnership and collaboration.

In her opening address, Taiwan EPA Deputy Minister Wang Ya-fen first expressed gratitude to Assistant Administrator Jane Nishida of the US EPA for her steadfast support of the Taiwan-US environmental cooperation. Deputy Minister Wang also extended her thanks to all the organizations and personnel who participated in this cooperation over the past 30 years, including government agencies such as the Ministry of Foreign Affairs, the Ministry of Education, the Bureau of Standards, Metrology and Inspection, the Ocean Conservation Administration, the Health Promotion Administration, as well as academic institutions and civil organizations that had jointly promoted cooperation within the framework of the agreement. In addition, she welcomed partner countries in attendance to join the international environmental partnership network and collectively dedicate efforts to address complex environmental issues.

Deputy Minister Wang expressed that a lasting friendship, one that shoulders responsibilities together, requires goodwill, trust, and commitment. She believed that after the establishment of the Ministry of Environment, Taiwan-US environmental cooperation would continue to deepen and both sides would work hand-in-hand to make more breakthroughs and accomplishments in the fields of environmental technology, environmental governance, and sustainable development, as more milestones are created into the future.

In her speech, US EPA Assistant Administrator Jane Nishida shared the background and details of the 30-year cooperation. She expressed admiration for Taiwan's contributions, leadership, and the achievements of the collaborative partners. She emphasized that as 30 years of cooperation and the achievements of the International Environmental Partnership (IEP) Program are celebrated, what is even more important is the firm partnership between Taiwan and the United States. She believed that this partnership not only makes Taiwan's role in global environmental leadership more distinct but also enables the implementation of deeper collaboration in critical environmental sustainability issues such as climate change, climate resilience, environmental health, and youth engagement, as the two nations jointly work toward a better and more sustainable Earth.

Through videos and exhibits, the event looked back on 30 years of significant environmental exchanges between Taiwan and the United States. It showcased the growth trajectory of the Taiwan EPA, evolving from a beginner who learned environmental technology and management policies to a regional contributor. This journey included the implementation of the IEP Program in 2014, which led to various projects such as the Taiwan-US Eco-Schools, Global Environmental Education Partners (GEEP), International E-Waste Management Network (IEMN), and Asia-Pacific Mercury Monitoring Network (APMMN). Officials and experts from various participating countries in these networks also expressed through video messages their gratitude for the Taiwan-US cooperation in creating regional environmental capacity.

9. Enterprises Urged to Reduce Emissions Ahead of Carbon Fee Collection in 2024

The *Climate Change Response Act* (氣候變遷因應法), which introduces a carbon fee collection

mechanism, was promulgated on 15 February 2023. According to the Climate Change Administration (CCA) of the Ministry of Environment, the carbon tax-related subsidiary laws are currently being discussed with industries, with an expected preannouncement at the end of 2023. The actual carbon fee rates will be determined in the first half of next year. The initial carbon fee collection will be based on the 2024 emissions of the entities subject to carbon fee, with the carbon fee calculated and payable in 2025. The aim of this plan is to encourage businesses to reduce their emissions in advance so as to lessen the burden of carbon fees.

The CCA has been formulating subsidiary laws related to the *Climate Change Response Act*. These include the announcement made on 31 May regarding the *Emission Sources Subject to Inventory, Registration and Inspection of Greenhouse Gas Emissions* (應盤查登錄及查驗溫室氣體排放量之排放源). From June to August, the CCA successively preannounced draft regulations of the *Management Regulations for the Inventory and Registration of Greenhouse Gas Emissions* (溫室氣體排放量盤查登錄管理辦法), the *Management Regulations for Greenhouse Gas Increase Offsets* (溫室氣體增量抵換管理辦法), the *Management Regulations for Voluntary Greenhouse Gas Reduction Projects* (溫室氣體自願減量專案管理辦法), and the *Management Regulations for Greenhouse Gas Certification and Inspection Organizations* (溫室氣體認證機構及查驗機構管理辦法). Public hearings and consultations have also been conducted for these four draft subsidiary laws.

The carbon fee-related subsidiary laws include regulations for carbon fee collection, the announcement of carbon fee collection targets and rates, the regulations for the review of designated emission reduction objectives and voluntary emission reduction plans, and the guidelines for the establishment of the carbon fee rate review committee. The draft regulations for these subsidiary laws are expected to be proposed by the end of this year. In the initial stage, the entities subject to carbon fee collection are expected to be the manufacturing enterprises and the power generation enterprises with annual emissions exceeding 25,000 metric tons. The CCA has not only actively engaged in drafting the aforementioned subsidiary laws but has also planned discussions with various industries to minimize the impact on them. It emphasized that carbon fee collection will have significant implications and will be carefully evaluated and discussed extensively with stakeholders before its implementation.

Regarding the timeline for carbon fee collection, the CCA stated that, as previously explained to the public, carbon fee collection will commence in 2024. The collection process is planned to base on the 2024 greenhouse gas emissions of the entities subject to carbon fee, with payment due in 2025. There are no delays anticipated in this timeline. The CCA emphasized that this timeline for carbon fee collection allows the entities subject to carbon fee to review their greenhouse gas emissions early and initiate carbon reduction efforts. Doing so, they would be able to reduce greenhouse gas emissions in 2024 and thereby mitigate the impact of the fee.

10. Amendment of Management Regulations of Environmental Education Facilities

More than ten years have passed since the promulgation of the *Regulations Governing the Certification and Management of Environmental Education Facilities* (環境教育設施場所認證及管理辦法) on 2 June 2011. To enable environmental education facilities to provide more comprehensive and professional services, information, and resources for environmental education, to adjust the certification and management procedures for these facilities to meet practical implementation needs, and to streamline administrative procedures, these regulations have been amended.

The key points of this amendment are as follows:

- 1) Various articles and provisions have been consolidated, explicitly requiring environmental education curriculum plans to be linked to environmental protection. The grace period for environmental education personnel to obtain certification has been removed, and to ensure that environmental educators remain aligned with practical practices when performing duties, a new provision has been added stating that such personnel should provide evidence of having participated in relevant workshops within one year prior to their appointment.
- 2) Amendments have been made to certification review regulations to align with practical operational requirements.
- 3) A correction procedure has been defined, with a review timeframe not exceeding six months.
- 4) The involvement of relevant agencies, experts, and scholars in certification reviews has been expanded, and it is stipulated that review committees may be established and initial review meetings convened.
- 5) If the original certification has expired and a decision to approve an extension has not been made, those who have applied for an extension within the prescribed timeframe may continue their operations based on the original certification content. Those who have not applied for an extension should reapply for certification after the expiration date. Additionally, amendments have been made to the documentation requirements and review procedures for extensions.
- 6) It was added that training for environmental educators may be organized when necessary, and environmental education facilities must not obstruct their training.
- 7) Depending on the type of documents to be modified, it is specified that a pre-modification or post-modification procedure should be conducted.
- 8) The requirement to submit annual achievement reports has been revised to quarterly reports of implementation results via online transmission.
- 9) A review timeframe has been added. Specific conditions related to academic or professional evaluation organizations have been removed. In line with the streamlining of annual achievement reports, new regulations regarding the review of self-assessment reports have been introduced.
- 10) A new provision stipulates that environmental education facilities no longer engaged in environmental education activities must apply for the revocation of their certification.

11. Keeping an Eye on Global Plastics Treaty to Update Plastic Reduction Policies

The EPA has been promoting plastic restriction policies since 2002, enforcing regulations in stages to restrict the use of plastic bags for shopping, disposable tableware, single-use plastic beverage cups, and plastic straws. The United Nations is expected to introduce the progress and specific content for the *Global Plastics Treaty* in 2024. In the future, the Resource Circulation Administration will refer to this treaty for the promotion of its policies. In addition to plastic restriction and reduction, it will focus on low-carbon, zero-waste and reuse promotion, and communication and consultation with environmental organizations through the collaborative platform meetings to gradually advance these initiatives.

Since 2002, domestic efforts to reduce plastic use in Taiwan have been ongoing, targeting items such as plastic bags, beverage cups, plastic straws, and disposable tableware. These measures aim to guide manufacturers to use alternative materials, to assist retailers to restrict the use of single-use plastic products, and to encourage consumers to avoid disposable items or to carry their own reusable containers.

In recent years, Taiwan has stepped up its efforts to reduce plastic use in various areas. In 2022, regulations were introduced to require chain convenience stores and fast-food restaurants to have 5% of their outlets offer reusable cups and to offer NT\$5 discounts to customers who bring their own beverage cups. In 2023, several regulations were promulgated, including the *Targets and Implementation Methods for Restriction of Single-Use Lodging Supplies* (一次用旅宿用品限制使用對象及實施方式), the *Targets and Implementation Methods for Restriction of Internet Shopping Packaging* (網際網路購物包裝限制使用對象及實施方式), and the *Guidelines for Reducing Online Shopping Packaging 2.0* (網購包裝減量指引2.0), which stipulate that internet shopping packaging materials must not contain polyvinyl chloride (PVC) and must meet the criteria for the proportion of recycled paper or plastic material used. Additionally, plastic packaging trays and clamshell containers were designated as recyclable waste to strengthen plastic recycling. These diverse measures have been implemented through legal means, guiding enterprises to voluntarily reduce plastics at source, and through enhancing the recycling system to facilitate resource utilization.

In the future, the Ministry of Environment will continue to promote a variety of initiatives and measures. In conjunction with the enactment of the *Resource Circulation Promotion Act*, it will adopt measures such as pricing, material restrictions, encouraging self-supplying, promoting circular services, and restrictions on the use of certain materials. Additionally, it will plan comprehensive reduction strategies for different contexts. Combining this with corporate ESG (Environmental, Social, and Governance) considerations, the ministry will initially seek voluntary cooperation from businesses or promote measures through exemplary companies. This approach of gradual expansion of promotion aims to be pragmatic and systematic. In the past, the EPA has held collaborative platform meetings with environmental organizations to discuss measures and practices for promoting plastic reduction policies. In the future, the ministry will continue to strengthen these collaborative efforts, adhering to

the principles of resource circulation and closely monitoring the progress and specific content of the *Global Plastics Treaty* as it reviews and adjusts plastic reduction policies.

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