Major Environmental Policies
Ministry Of Environment, R. O. C (Taiwan)
https://www.moenv.gov.tw/

Climate Change

Draft Announced for Stage III Regulatory Goals to Increase Reduction Efforts and Expend Inventory

The MOENV just released the draft Stage III Periodic Regulatory Goals of Greenhouse Gas (GHG) Emissions and information on the public hearing on 30 December 2024 according to Article 10 of the Climate Change Response Act (the Climate Act hereinafter) (氣候變遷因應法). The draft increases Taiwan's 2030 GHG emission reduction goal from the nationally determined contribution (NDC) first announced in 2022, which is a 24±1% reduction compared to emissions of the base year (2005), to a 28±2% reduction compared to emissions of the base year (2005). It also proposes to have the electricity emission factor reach 0.319 kgCO_2e/kWh by 2030 (a 35% reduction compared to the status) and includes the periodic regulatory goals for the six major sectors, which are energy, manufacturing, residence and commerce, transportation, agriculture and environment. The MOENV said that the public hearing regarding the draft Stage III Periodic Regulatory Goals of Greenhouse Gas Emissions will be held at the multifunctional meeting room on second floor of the MOENV's rear wing at 2:00 p.m. on 7 February 2025 and streamed live online, hoping to start a science-based dialogue with society.

The MOENV pointed out that President Lai declared the escalation of climate actions on 24 October 2024 at the meeting of the National Climate Change Committee to enhance the edges of Taiwan's industries in the global competition, increase the pace to align with international NDCs, and review the 2030 goals to make major breakthroughs with greater ambition. Taiwan's new carbon reduction goals for 2032 and 2035 were also set at the meeting. MOENV proposed and submitted the draft of the Stage III Periodic Regulatory Goals of GHG Emissions according to relevant regulations to the Climate Change and Net-Zero Transition Task Force (hereinafter the Task Force) of the National Council for Sustainable Development under the Executive Yuan to establish coordination mechanism and cross-departmental discussions. The Task Force has already had eight cross-departmental meetings, two for decision making among heads of department, and three for their own since August 2024. Experts such as members of the National Climate Change Committee have been consulted to review several flagship projects on strengthening and escalating transitions

in the six major sectors. They are, for the energy sector, about acceleration (wind and solar power) and breakthrough (geothermal energy and small-scale hydropower) for renewable, energy storage technologies, methane pyrolysis, hydrogen (NH_3-containing) energy supply chain, and carbon capture, storage, and sequestration; for the manufacturing sector, about self-designated carbon reduction, in-depth energy conservation, and carbon reduction in state-run enterprises; and for the residential and commercial sector, about net-zero buildings and energy conservation. Not only so, but transition for the transportation sector also means transformation of vehicles, such as promoting electric and zero-carbon ones for commercial vehicles as well as sustainable aviation fuels (SAFs); and transition in the agricultural sector aims to deepen carbon reduction in the form of agricultural and ecological resilience, carbon sink, and low-carbon, sustainable agriculture. Finally, for the environmental sector, the MOENV has proposed a cross-departmental resource circulation flagship plan and launched the carbon pricing mechanism.

The MOENV stressed that, in comparison with the neighboring Asian countries, the new 2030 goal of "a 28±2% reduction compared to emissions of the base year", reset under the draft Stage III Periodic Regulatory Goals of GHG Emissions, is next only to Japan's 41% reduction by 2030 when calculated with the same base year (2005). Calculation of each country's individual annual reduction against peak emissions shows that Taiwan's 2030 goal as opposed to the emissions peak in 2007 displays reduction by as much as 34%-38%, close to that of Korea (-40%) and next only to that of Japan (-46%). Looking down the road, the government will stay aligned with the world by proposing the new national reduction goals through the National Climate Change Committee.

With the new reduction goal, the MOENV will expand the scope of those subjects to inventory and registration. Regulations regarding inventory, registration, and verification under the *Climate Act* mandate these targets to conduct only GHG emission inventory and registration, but not verification, and those subject to carbon fees are not included for the time being. Those who meet the announced conditions are to complete inventory and registration of their GHG emissions of the previous year by 30 April every year starting 2026. Those expected to be newly added under the expanded list subject to inventory include enterprises in information service, department stores, shopping malls, wholesale stores, railway, metro transportation, hospitality enterprises, and colleges of which the annual emissions reach 5,000 metric tons of CO_2e for a single premise and 10,000 metric tons of CO_2e for the entire enterprise Others include convenience store franchises, supermarkets and telecommunications enterprises with 100 or more storefronts; as well as enterprises in passengers and cargo transportation that operate 200 or more vehicles, medical centers, and small- and medium-sized manufacturers with emissions up to 10,000 metric tons of CO_2e for a single premise. It is expected to be newly listed with approximately 500 enterprises (with roughly 20,000 storefronts) as targets subject to inventory. Such measures expand inventory scope allow more enterprises to better understand correlations between energy use and carbon emission, identify high-emission sources, and enhance carbon reduction through energy efficiency.

Government agencies will join the line of carbon inventory efforts in addition to expansion of the inventory scope. First, completing its internal GHG emission inventory for 2023 in November 2024, the MOENV will promote internal carbon inventory within every agency by organizing workshops. while for the moment focusing on internal carbon inventory within government agencies starting 2025. The aim is to expand reduction efforts through collaboration between the public and private sectors and with all industries and sectors.

■ *Minister Peng Chih-Ming explains the draft Stage III Periodic Regulatory Goals of GHG Emissions*

■ *Director General Tsai Ling-Yi explains the preannouncement of expanded inventory and registration*

Amended Effluent Standards Announced

The MOENV released the amended Effluent Standards (放流水標準) on 18 December 2024 to maintain water body quality and promote pollutant reduction and control. This amendment has added or tightened controls on ammonium nitrogen, phosphorus, copper, and free available residual chlorine, lowered the loads of high-concentration phosphorus discharged into water bodies, and continued reducing copper concentration in certain river basins. All aims to improve water body quality and facilitate reutilization of wastewater (sewage).

The MOENV further explained that the pollution reduction efforts have seen substantial achievements since 13 types of industries including wafer foundry and semiconductor manufacturing were added for ammonium nitrogen control in the Effluent Standards in 2011. However, within enterprises discharging ammonium nitrogen not listed for control, leathermaking (manufacturing of finished wet-blue leather products), printed circuit board manufacturing, slaughtering, meat product manufacturing and markets, hospitals, and medical institutes still discharge wastewater in relatively high concentration of ammonium nitrogen, presenting a need to include them for control. Therefore, ammonium nitrogen control has been added regarding them in the revised *Effluent Standards.*

Considering that phosphorus is a nutrient salt, Taiwan's phosphorus control applies only to those with discharges into water quality/water volume protection areas for tap water to lessen impacts on water body ecosystems. Total phosphorus control is added in the Effluent Standards targeting wafer foundry and semiconductor manufacturing, photoelectric material and part manufacturing, and wastewater sewage systems of science parks, all of which discharge wastewater with high concentration of phosphorus and have potentials of reutilization. Such revision was made with reference to relevant controls abroad and in consideration that certain industries often discharge wastewater containing high concentration of phosphorus that affects water bodies or causes their eutrophication.

The MOENV pointed out that the copper control limits were tightened since 2017 for the effluent discharged from metal-related industries, science parks, industrial parks and petrochemical parks above a certain scale, which has produced results in pollution reduction. Considering the lower rate of copper meeting water body quality standards at certain river basins, the copper control limits have been added or tightened in the Effluent Standards for the abovementioned targets and metal industries that did not reach a certain scale to improve water body quality and encourage these enterprises to reutilize discharged copper.

Moreover, it is known that excessive adding chlorine in hospitals, medical institutes and public sewage systems leads to high levels of residual chlorine or generates byproducts from disinfection, therefore harming aquatic organisms. To prevent this, the revision of the Effluent Standards has added control

on free available residual chlorine, whose limit is not to exceed 2 mg/L. However, this requirement does not apply in circumstances concerning prevention and control of infectious diseases or special hygiene and disinfection.

The MOENV stressed that this amendment is based on international regulatory trends, results of domestic industrial wastewater research, impacts on water body and quality, domestic public concerns and feasibility of treatment technologies. Approximately 3,000 enterprises are to be affected, and a buffer period is set for them to make improvement. In the case of total phosphorus control, apart from the buffer periods given for limits in three separate stages, those which encounter technical difficulties or whose improvement involve construction projects are to propose effluent pollutant reduction management plans to postpone the date in which controls take effect. In addition, MOENV is currently proposing a plan for wastewater reutilization and low-carbon smart treatment to obtain subsidies for demonstration sites of green transition of wastewater treatment. Enterprises are interested in resource reutilization and low-carbon technologies, such as reutilization of copper and phosphorus in wastewater, introduction of AI management for precise dosage of agents, and energy generation via anaerobic digestion, and eligible may apply for subsidies to local competent authorities from 2025.

W*aste* **M***anagement*

MOENV Releases SRF White Book and Regulations to Tighten Controls

Three months after the release of the inspection results of 66 solid recovered fuel (SRF) enterprises throughout Taiwan in September 2024, the MOENV published the drafts of the Solid Recovered Fuel White Book（固體再生燃料（SRF）白皮書）and the Regulations Governing Controls of Reuse of Common Industrial Waste as Raw Materials for Solid Recovered Fuels（共通性事業廢棄物作為固體再生燃料原料再利用管理辦法）on 14 January 2025. The difference between the released drafts and preannouncement is the cancellation of Level 5 products, which are the highest in the contents of chlorine and mercury, for effective reduction of dioxin produced. The Resource Circulation Administration (RCA) indicated that the entire draft of the white book will be published online in early February. All opinions are welcomed by mid-March in hopes of finalizing the white book in April. The regulations will be released very soon to elevate their level of implementation and strengthen management of waste-to-energy conversion.

"This draft is the foundation for joint discussion. Those who are interested in this industry and those who have their doubts are all advised to read the draft before talking to us about the SRF management system," urged the MOENV Minister Peng Chih-Ming. The MOENV examined the current SRF production capacity in the white book and estimated that there is still room for growth in terms of material sources.

However, all enterprises are encouraged to follow the regulations in the follow-up material disposal and to upgrade their equipment so that they meet the quality standards. At the same time, the threshold will become higher for enterprises to enter the SRF industry once the new regulations are tightened.

I.The white book reveals SRF productivity capacity and markets while the regulations tighten the standards

“We put our actions where our mouths are. We have studied SRF management around the world,” pointed out Minister Peng. There is active promotion of technologies in the world that turn waste into energy. Non-hazardous but combustible wastes, such as plastics, rubber, paper, wood, fibers, animal/plant-based scraps and general wastes, are sorted, pulverized and mixed before becoming SRFs. In countries where SRF is promoted, such as EU, Japan and Korea, the materials are mostly waste plastics and rubber, as they make good SRF materials for their high heat value and combustion characteristics. Statistics of the International Energy Agency (IEA) indicate that SRF has become an important way to convert waste into energy and is widely used in papermills, cement plants and cogeneration plants as alternative for coal, and it also enhances energy efficiency.

Taiwan has been implementing the SRF policy since 2019, forming quality specifications in 2020 and completing inspections in and aiding manufacturers and users throughout Taiwan in 2024. The future implementation focuses will be proposed after conducting analysis of the international development of SRF industry, looking into Taiwan’s SRF operation status, and reviewing policy implementation. The release of the (draft) SRF White Book explains to the public the operation station and policy directions regarding SRF industry in hopes to collect public opinions for improvement of SRF controls. For issues found during the inspections and assistance, control measures are enhanced by having the Regulations Governing Controls of the Reuse of Common Industrial Waste as Raw Materials for Solid Recovered Fuels” (referred to as the SRF Regulations hereinafter) established in response to the public expectation on the improvement of SRF controls.

“The policy priority is still source reduction, followed by proper recycling and circulation to minimize harvests of natural resources, and finally conversion of wastes to energy provided that combustible materials meet the quality specifications,” stressed MOENV Deputy Minister Shen Chih-Hsiu. Inventory documented in the SRF White Book reveals that 342,000 metric tons of materials were used by SRF manufacturers in 2024, and roughly 272,000 metric tons of potential SRF source materials have yet to be converted among all the hazardless and combustible industrial wastes. Currently, there are plans to make general waste into SRF, approximately 300,000 metric tons, in certain counties and cities. However, the complicated nature of materials from such sources and difficulty processing them will require enterprisers to upgrade their disposal capabilities to produce qualified SRFs, which meet the specified quality standards and are approved by user plants. The MOENV stressed that in the future it will continue to pay close attention to enterprises’ equipment installation and operations and collect successful experiences as references for other manufacturers to promote the total enhancement and sustainable development of the SRF industry.

For dioxin that is a public concern, six

requirements under the SRF Regulations and the Air Pollution Control Act **(空氣汙染防制法)** have designed the world's most rigorous standards at both the front and back ends of the SRF production. Deputy Minister Shen pointed out the three checks already in place, which are material selection, removal of hard plastics and PVCs by visual examination before production, and quality standards regarding chlorine content. To prevent generation of high dioxin after use of SRFs, the air pollution emission control standard is tightened to 0.1 ng-TEQ/Nm³, the tightest in the world. This is to encourage SRF users to invest in pollution control equipment and demand the manufacturing end to do their best.

For the new SRF Regulations, the MOENV has set stricter rules in material source control, manufacturing process, and quality standards. In terms of SRF manufacturing, the plan is to eliminate Level 5 for the contents of chlorine and mercury, leaving only four levels to lower the contents of chlorine and mercury and therefore improving product classification. A one-year buffer period is provided, given that there are still enterprises whose current contracts still cover Level 5 products. For use of SRF, currently different emission standards regarding heavy metals and dioxin apply to different enterprise types and scales. Both will be tightened and are to meet the requirements set for large incinerators. Take dioxin for example. Regardless of operation scale, all enterprises are require to meet only one flat standard at 0.1 ng-TEQ/Nm³, tighter than before and increase testing frequency to four times per year. In addition, reuse enterprises and SRF-using factories are required to install CCTV for transparency of product whereabouts and install equipment to reduce dioxin and particulate matters.

II.Conversion of waste into SRFs with better control system

Minister Peng urged enterprises already participating and those interested in this industry to read the white book and the SRF Regulations thoroughly. The hope is that enterprises “join in because of understanding” and work together for the conversion of wastes into energy and do not choose to “walk away for failing to meet standards”. He also mentioned that sources and capacity of SRF will change eventually with advancing technology. The MOENV will continue to improve the control system and allow sustainable development for compliant enterprises that meet all the requirements.

Minister Peng made it clear that the MOENV has no intension to throw a NT$10-billion Green Growth Fund into SRFs without careful consideration, saying “this is only a small industry with little production value. There are still a lot to do to encourage source reduction.” Deputy Minister Shen further added that inventory of current domestic material sources and usage capacity indicates that there are more than enough to supply domestic uses, so. There is no need to worry about “importing foreign garbage”, and current regulations also prevent importing foreign wastes for SRF production.

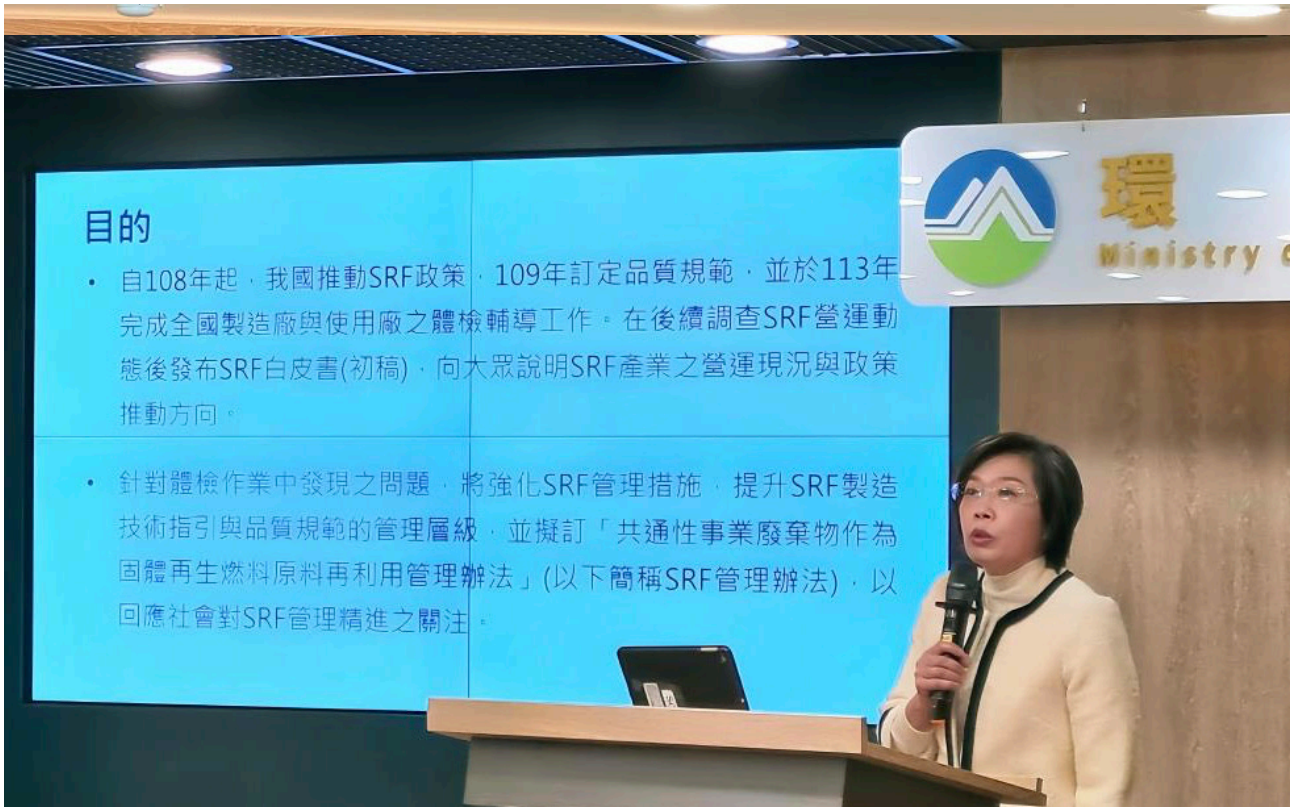
III.Opinions are collected from all sides to improve SRF control

Given the public concern surrounding the SRF policy, the RCA has set up the following website (https://wooo.tw/3BzkWM5) for information disclosure on presentations and graphics in the press conference, the white book abstract and SRF policy feedback forms. The complete draft of the white book will be released in early February.

Opinions will be collected from all sides before mid-March, and answers responding to these opinions will be included in the white book as an appendix. It is hopeful, via public participation, to help improve SRF controls, maximize values of reutilizing combustible waste, and lead to a win-win development of economy and environment.

■ *Minister Peng Chih-Ming says the MOENV will enhance SRF controls in an advanced, strict, transparent and comprehensive manner.*

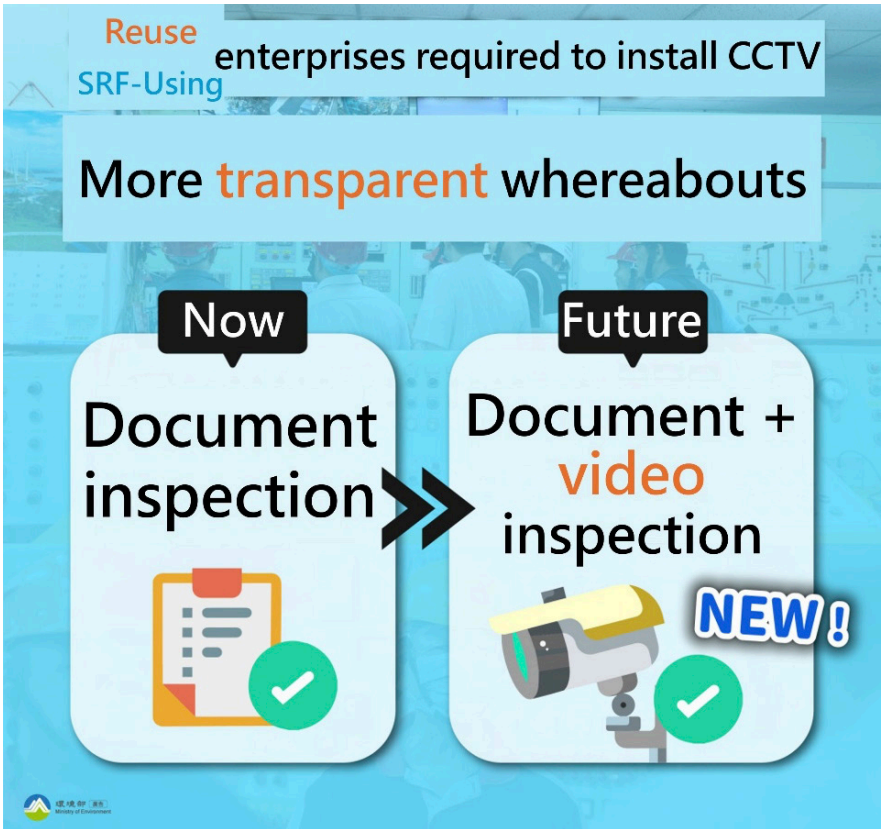
■ *Deputy Minister Shen Chih-Hsiu explains that the priority of resource circulation starts with source reduction, followed by recycling and, finally, conversion of waste into energy with combustibility as a prerequisite.*



■ *RCA Director General Lai Ying-Ying indicates that the SRF Regulations focus on tightening source material controls via removal of hard PVC, establishment of third-party verification system and installation of CCTV for viewing by competent authorities.*

■ *SRF White Book - Level 5 eliminated for product types based on chlorine and mercury contents for better product classification*

■ *SRF White Book - More rigorous emission standards for heavy metal and dioxin as those of large incinerators*



■ *RF White Book - Reuse and SRF-using enterprises are required to install CCTV for more transparent product whereabouts*

■ *SRF White Book - Better pollution control equipment for better facilities*

Air Quality

2024 air quality monitoring released for precision governance of air pollution

MOENV produced the 2024 air quality monitoring results and found decreasing trends in concentration of all pollutants for the last five years. The number of station-days with air quality index (AQI) at good or moderate (AQI ≦ 100) accounted for 94% in 2024. The number of station-days with unhealthy AQI (AQI>100, orange alert or above) continued to drop. At the end of 2024, the average concentration was 12.7 μg/m^3 for the fine particulate matters ($PM_{2.5}$) nationwide, showing improvement from 13.7 μg/m in the previous year. This could not be achieved without the joint efforts between central and local governments on carrying out various air pollution control strategies. On top of that, both the number of rainy days as well as rainfall increased in the second half of 2024, and the percentage of weak winds decreased, both of which helped with removal and spreading of the particulate matters.

The MOENV has started the Phase II Air Pollution Control Plan since 2024 as a continuation of previous action plans and the Phase I Air Pollution Control Plan for air quality improvement. A strategy of measures on multiple fronts is adopted. They include tightened control on factories from fuel composition to emission standards, replacement of more than 50% of old large diesel vehicles, optimized road network for electric vehicles to increased use, integration of air pollution and emissions reduction effects via a matching platform for vehicle replacement, offshore wind power projects, and three new ways to burn joss paper to practice religious beliefs and achieve environmental protection. All of these are implemented to accelerate the improvement of air quality and protect people's health.

The MOENV indicated that the next step is to enhance the mutual benefits of both net-zero reduction and air pollution reduction. Strategies in planning are hazardous air pollutant controls, increased use of electric buses, and restrictions on volatile organic compounds in consumer products. All these also will result in lowering $PM_{2.5}$ and ozone (O^3) to build a healthy and sustainable living environment for the citizens.

The MOENV explained further that tighter protection standards will be adopted with the AQI's concentration thresholds adjusted on 1 January 2025 according to the Air Quality Standards **(空氣品質標準)** amended on 30 September 2024. In addition, for the air quality forecast for offshore islands, the one-day forecast will become 3 days starting from 1 January 2025 to initiate early pollution response and ensure people's daily health.

■ *Deputy Minister Shen Chih-Hsiu giving his speech*

■ *Deputy Director General Hu Ming-Hui of Department of Monitoring and Information briefs on the air quality monitoring results of 2024*

■ *Director General Chang Shuen-Chin of Department of Atmospheric Environment briefs on the air pollution precision governance project*

■ *Press conference on 26 December 2024*

National Development Fund Approves NT$10 billion As MOENV's Green Growth Fund

The MOENV has come up with the Green Growth and Net-Zero Industries Enhancement Plan to accelerate green growth and reach the goal of net-zero transition by 2050. The plan was approved by the National Development Fund (NDF), Executive Yuan on 29 November 2024, with NT$10 billion granted as the Green Growth Fund. In the next decade, the MOENV will strengthen investments in emerging net-zero sustainable industries, introduce private capital to invest, accelerate the development of emerging net-zero industries in Taiwan, and create more green job opportunities to stimulate new momentum for Taiwan's green growth.

The MOENV mentioned that under the 2050 net-zero goal the government-led green investments have become an international trend. For example, Japan has set a budget of two trillion yens to establish the Green Innovation Fund, and the US has promulgated the Inflation Reduction Act. To achieve the goal of "green growth and 2050 net-zero transition" in the President's National Project of Hope, the five strategies of net-zero transition are expected to drive the emerging net-zero sustainable industries. On top of that, Taiwan will soon start collecting carbon fees, and industries are in desperate need of carbon reduction. As the integrator and promoter of net-zero climate, the MOENV has started working on green growth investment projects in September 2024 and formulated the Green Growth and Net-Zero Industries Enhancement Plan by collecting opinions from interested investors, such as government agencies, experts, scholars, and Taiwan Venture Capital Association. Today, the plan was approved by the NDF.

The MOENV explained that the plan is to use the NDF-approved funds and work with investors to invest together on domestic enterprises engaged in relevant emerging net-zero and sustainable efforts or foreign firms that have major business activities in Taiwan. However, these do not include publicly listed or OTC companies. The investment priorities go to resource circulation, development of sustainable and forward-looking energy technologies, technological energy storage, enhanced energy conservation, improvement of energy efficiency, caron capture and reuse, development of negative carbon technologies, digital technologies, and development of low-carbon (reduction) technologies and climate change adaptation technologies. No more than NT$150 million shall be invested in a single enterprise, no single investment shall not exceed NT$100 million, and the public equity shall not exceed 49% of the paid-in capital of the invested enterprise.

The MOENV pointed out that net-zero transition requires innovative technologies. Through the application of innovative technologies, the Green Growth Fund will join force with private capitals to accelerate carbon reduction and improve resilience while creating employment

opportunities. The MOENV will proceed to finalize regulations regarding investment preparations, set trust funds, and establish the project office based on the plan approved today, and hold seminars to review and select investors. It is expected to receive investment applications from the second quarter in 2025, which will mark an important step in Taiwan's green growth.

***E**nvironmental **M**onitoring*

National Sustainable Development Awards Recognize Ministry of Environment's Success with Intelligent Monitoring

The Ministry of Environment (MOENV) successfully established a comprehensive air quality monitoring network based on the three strategies of "integrate air quality monitoring services", "grassroots local monitoring technologies" and "international monitoring system" set forth in the "Protect National Sustainable Environment – Establish Taiwan's Intelligent Air Quality Monitoring" project. MOENV's efforts were recognized by the 2024 National Sustainable Development Awards in the government agency category and received the Civil Service Outstanding Contribution Award (group category), demonstrating the Ministry's important achievements in sustainable development.

An MOENV spokesperson stated, "It started with 19 monitoring stations in 1976 and now we have an AI-enabled comprehensive monitoring network to protect citizens' health with technology." Taiwan has reached several major milestones in the field of environmental monitoring in recent years. It was recognized by the 2024 Smart 20 Awards given by the Allied Smart Cities. It was established by the Asia Pacific AERONET Calibration and Training Center (APAC) in November 2023, the first in Asia and certified by NASA. Five countries, including Japan and Korea, have brought their equipment to Taiwan for calibration.

Regarding smart monitoring, the MOENV deployed 10,000 air quality sensors across Taiwan to conduct AI-enabled monitoring of air quality throughout Taiwan 24/7, facilitating the continuous improvement of air quality in Taiwan. This system has helped investigators with precise law enforcement, as several major violations have been discovered for total penalties of NT$310 million and retrieval of NT$420 million of air pollution control fees. To keep the public informed of the latest air quality conditions, the MOENV developed the "Environment Info Push" app, which has been downloaded 670,000 times. The app has become highly reputed among citizens, providing air quality information in real time, as well as alerts to warn people to take necessary protective measures when air quality conditions are forecast to worsen.

The Executive Yuan announced the establishment of the Chief Sustainability Officer (CSO) Alliance to promote and

accelerate progress toward the 2050 net-zero emission target. The Alliance is headed by the Vice Premier as the central government's CSO, with the Minister of Environment as the chief secretary leading central agencies, local governments and state-owned enterprises toward "green growth and net-zero transition". The CSO is tasked with five responsibilities, namely integrating sustainability affairs across agencies, improving sustainable governance, facilitating cultural reformation and innovative thinking, intensifying partnerships between the government and the private sector, and putting the Climate Change Response Act into practice. Priorities for government agencies are internal carbon inventories, energy efficiency diagnoses, making all official vehicles electric, recognizing buildings for their energy efficiency and increasing green procurement.

The MOENV will continue to work on CSO Alliance policies, improve intelligent monitoring technologies and join forces with all agencies to build a more sustainable living environment. Monitoring results have shown that 93.8% of the air quality index (AQI) readings are fair or good, indicating how far Taiwan has advanced in environmental sustainability.

"The National Sustainable Development Award is an honor and a force that drives us forward". MOENV will continue to improve monitoring technologies, expand international cooperation and move toward the goal of 2050 net-zero emissions. The Ministry will keep working hard for the sustainable development of Taiwan through innovative applications of intelligent technology to build a better living environment.

■ *Minister of Environment Peng Chi-Ming (right) and Director General Hsieh Ping-Hui of the Department of Monitoring and Information (left) accepted a Sustainability Award on behalf of the MOENV.*

■ *Recipients of the 2024 National Sustainable Development Awards*

***W**aste **R**eduction*

Ministry of Environment and Tourism Administration Join Forces to Reduce Waste as Hospitality Industry Enters Year 1 of Plastic Reduction

On 24 December 2024, the Ministry of Environment (MOENV) held a press conference on "Year 1 for Plastic Reduction and Sustainability in the Hospitality Industry", encouraging all hospitality businesses to reduce the use of single-use products starting in January 2025. A subsidy is provided to help these businesses gradually reduce the use of bottled water with the aim of reducing waste from sources, improving the environment and reducing CO_2 emissions.

I.New regulations take full effect in 2025

Hotels, B&Bs and other hospitality businesses are prohibited from actively providing personal hygiene products. The new regulations require all hotels to provide liquid body care products, such as shampoo, conditioner, body wash and lotion, in large bottles instead of small ones under 180 ml. At the same time, six personal hygiene products -- hair brushes, toothbrushes, toothpaste, razors, shaving cream and shower caps -- shall not be provided unless requested by consumers; in other words, customers are encouraged to bring their own.

Minister of Environment Peng Chi-Ming stressed that this policy is a reply to the global call for CO_2 and plastic reduction and conforms to the idea of sustainable development applied at the Paris Olympics. Hotels chosen for government personnel on their official trips will be requested to meet these green concepts.

Local environmental protection bureaus have organized more than 50 promotional workshops for 2,500 businesses to help them with the transition, and to encourage consumers to prepare their own self-care products during the announced buffer period. These bureaus have been working

hard in multiple ways to organize events and campaigns, such as local cultural festivals and large events, giving consumers a better idea of the plastic reduction policy. With matching efforts, the MOENV advertised via Facebook, radio, bus stops, train stations, Taiwan High Speed Rail, and the Taipei Mass Rapid Transit system, as well as short films on taxi fleets and stands at international tourism shows. They hoped the policy announcements would reach as many consumers and hotels as possible.
With these efforts, it is estimated that 460 million small packets of hospitality products will be reduced every year, equivalent to approximately 2,100 metric tons of product and 2,500 metric tons of CO_2 emissions per year.

II.Bottled water subsidy to help hotels with their transition

The MOENV will provide a subsidy to help hotels reduce the use of plastic water bottles. Hotels that reach the reduction goal are eligible for a subsidy of NT$30,000 per entity from their local environment protection bureau, for up to 5 entities per county/city. This is expected to reduce the use of plastic bottles. The hotels are encouraged to adopt alternatives for bottled water and provide new, environment-friendly drinking water services.

Director General Lai Ying-Ying of the Resource Circulation Administration, MOENV, said these policies will help hotel businesses reduce plastic waste and contribute to sustainable tourism. This is consistent with people's expectations for increased environmental protection awareness and is expected to help drive the green transition in Taiwan's hospitality industry and create a more diversified culture of environmental protection.

III.Response and outlook

General Manager Huang Hsin-Chuan of Lion Travel, a leader in the tourism industry, says the policy has his full support. He shared his experiences promoting sustainable tourism, and said he hopes that all tour guides will help spread the idea. These measures will also support consumers who voluntarily engage in responsible travel. For example, Lion Travel has stopped providing bottled water on their tour buses since 2022. Restaurants and hotels are also asked to provide drinking water dispensers. Mr. Huang pointed out that these new regulations and subsidy programs will help businesses transition to a business model that meets the requirements of sustainable development. There will be challenges at the beginning, but in the long run, a policy like this will give Taiwan's tourism industry a more competitive position in the market and draw the attention of environment-minded domestic and international tourists.

Deputy Director General Lin Hsin-Jen of the Tourism Administration stressed that green tourism has been a key point for the government when promoting Taiwan's tourism industry to the world. Green tourism has been accepted widely in the western world and is now taking root in Asia after years of promotion. The Tourism Administration will work together with society on green tourism and incorporate environmental protection concepts as a feature of Taiwan's tourism industry. A subsidy program will assist hotels requesting environmental protection labels to show their sustainability certification. It will encourage tourism businesses to adopt sustainable tourism and make Taiwan a world-leading green travel destination.

The plastic reduction regulations and bottled water subsidy program launched by the MOENV for the hospitality industry set a cornerstone for Taiwan's green tourism. The cooperation of government and industry will not only drive environmental protection forward but also set the foundation for future sustainable tourism. It is expected that the launch of these policies will help Taiwan's hospitality industry contribute more to environmental protection and CO2 reduction, while demonstrating to the world what Taiwan has done and achieved for environmental protection.

■ *All participants vow to reduce plastic use in the hospitality industry, including MOENV Minister Peng Chi-Ming (3rd from left), Director General Lai Ying-Ying of the Resource Circulation Administration (2nd from left), Chief Li Yi-Hua (1st on left), Deputy Director General Lin Hsin-Jen of Tourism Administration (3rd from right), General Manager Huang Hsin-Chuan of Lion Travel (2nd from right) and Special Assistant Yang, Tung-Hsiao of Hwaseng Bottled Water (1st on right).*

■ *The MOENV announced in the press conference for "Year 1 of Plastic Reduction for the Hospitality Industry – Green Promise in Travel" that hotels and B&Bs shall not provide personal hygiene products unless requested, starting from 1 Jan 2025.*

***E**nvironmental **P**ersonnel **C**ertification*

Ministry of Environment Starts Issuing "Dedicated Environmental Protection Specialist E-certificate"

A dedicated environmental qualification certificate that has been issued for years as a hardcopy will have a new electronic version starting in 2025, as a part of the government's policy of digital transition and digitalization of certificates. Mr. Tsung-Yung Liu, President of the National Environmental Research Academy (NERA), noted the new e-certificate features many advantages. It is difficult to forge, simple to administer, and quick to certify and issue, all of which lower certification fees and reduce the carbon footprint of the certification process.

The new e-certificate includes a digital stamp of the Ministry of Environment (MOENV) that is difficult to duplicate. It is relatively easy to forge a simple hand-written signature on an electronic document or by presenting the signature as a graphic, and it is difficult to discern if the signature is truly that of the holder. In addition, there is the risk of physical documents being lost or stolen. To deal with these potential security weaknesses, a digital signature must be provided along with a certificate by an institute approved by the competent authority in compliance with the Electronic Signature Act, making the e-certificate more difficult to be tampered with. Upon receiving an email from the NERA informing you that the e-certificate is available for downloading, the e-certificate receiver may log on to the NERA website through a personal computer or mobile device, free from time and location restrictions. The certificate is free to access anytime, anywhere without worrying about losing it.

Advances in network technology offer better transparency and convenience of verifying e-certificates. For example, if a firm is examining a job seeker's qualifications as a dedicated environmental protection specialist, verification of an e-certificate and its contents can be done by simply scanning the QR code on the certificate, whereupon the validity of the certificate will be displayed, obviating the need to call the competent authority and increasing efficiency.

NERA President Liu pointed out that the electronic version of the certificate is very different than its hardcopy version, from its production to the authentication of the certificate itself. The average administrative processing time is not only shortened from seven days to just one day, but also much quicker to approve the certification. After passing the end-of-training exam and as soon as an applicant receives an approval email, the new dedicated environmental protection specialist may download the e-certificate him/herself. There is no need to wait for physical delivery of a certificate.
In addition, the fee for the e-certificate of dedicated environmental protection specialist is only NT$500, as opposed to NT$1,000 for a hardcopy certificate. However, the NERA points out that anyone who receives an e-certificate may also request a hardcopy, as some may wish to display their personal achievement of passing the environmental protection certification test with a physical certificate. Therefore, both the electronic and hard copy versions of the certificate are made available to whoever has a need.

Approximately 10,000 people take the training every year to become a dedicated environmental protection specialist, with an 80% pass rate. A large supply of paper is needed to issue roughly 8,000 hardcopy certificates every year. This e-certificate launched by the NERA has a lower carbon footprint because it not only saves paper but also reduces CO_2 from the production and delivery of paper certificates. On top of that, it is much easier to request or access a certificate online through a cell phone or personal computer, reducing unnecessary travel through traffic and as well as waiting time.

■ *An e-certificate for dedicated professional environmental protection specialist*

International Cooperation

MOENV Joins Force with NASA to Enhance Monitoring in Asia and Improve Regional Air Quality

1.MOENV Joins Force with NASA to Enhance Monitoring in Asia and Improve Regional Air Quality

The MOENV invited NASA, Bangladesh, Indonesia, Korea, Malaysia, the Philippines, Singapore, Thailand and Vietnam for the 2024 7 South East Asian Studies (7-SEAS) and KPEx Workshop" on 12 and 13 November 2024. Other than presentations of the results of 3D air quality experiments between NASA and Taiwan in Kaohsiung and Pingtung in February and March 2024, the participating countries talked about the 7-SEAS, the synchronized international urban air quality experiment that is about to take place from 2025 to 2026. It is hoped that this experiment helps jointly combat air pollution by shedding some light on the air quality in major cities across Asia and issues of transboundary air pollution transmission and understanding causes and changes of regional air pollutions.

The MOENV indicated that the 7-SEAS project is an international atmospheric environment monitoring activity designed and carried out jointly by NASA, Southeast Asian countries and Taiwan. The primary purpose is to investigate long-distance, transboundary transmissions of pollutants generated by burning agricultural wastes in Southeast Asia, and their interactions with the atmospheric environments, radiations and climates. As the continuation of long-lasting cooperation in the past, the 7-SEAS project has started a new chapter of urban air quality study based on this solid foundation.

The MOENV pointed out that Taiwan's experiment in Kaohsiung and Pingtung combined with NASA's Asian air quality plan on flights to break down the characteristics of 3D distribution and transmissions of local air pollutions and discuss the formation and distribution mechanism of secondary pollutions. Analytic models were introduced for integration and verification to improve the ability of air pollution controls and assessment. All ground-based, vertical and flight monitoring results were integrated to calibrate satellite observation, which has extremely extensive benefits for the needs and applications of international environmental monitoring. The 3D air quality experiment in Kaohsiung and Pingtung has facilitated cooperation between industries and academia for the development of multiple domestic-produced air quality sensing and monitoring systems to stay consistent with measurement data collected by NASA's flights. It has led to successful analysis of vertical changes in air pollution and provided an important scientific basis for strategy development with potentials of great commercial values. Efforts are currently in place to expand the research to the Southeast Asian market.

In his speech, Dr. Hal Maring, 7-SEAS project manager from the NASA headquarter, expressed his gratitude to the representatives from the participating countries and praised Taiwan's work on integrating 3D monitoring and research capacities in the experiments conducted in spring 2024, recognizing Taiwan's technologies and contribution in environment monitoring. The workshop covered atmospheric monitoring, meteorological observation, atmospheric chemistry and long-distance transmission as well. Through discussions with global scholars and experts in this event and future international cooperation, the MOENV hoped to improve regional and urban air quality , demonstrate Taiwan's monitoring capabilities, and increase Taiwan's visibility in the world.

■ *Participants of the 2024 7-SEAS and KPEx Workshop*

■ *Minister Peng Chih-Ming presents a model of monitoring station to NASA representative*

***E**nvironmental **C**ooperation*

Ministry of Environment Signs MOU with TSMC to Promote Carbon Capture

Minister Peng Chi-Ming, head of the Ministry of Environment (MOENV), attended the "Ceremony marking commercial Cooperation with the Taichung Center for Zero-Waste Manufacturing" on 1 November 2024 and signed a "Memorandum of Understanding (MOU) on Carbon Capture and Utilization" with Senior Vice President of Taiwan Semiconductor Manufacturing Company Ltd. (TSMC), Lora Ho. This MOU signifies deep cooperation between TSMC and the MOENV on carbon capture, CO_2 emission reduction, green technical innovation, and working together toward the long-term goal of net-zero emissions. This MOU marks the commitment of TSMC and MOENV to pay attention to global climate change and reduction of greenhouse gas emissions. Their cooperation will focus on the development and demonstration of applied technology, feasibility assessments of general waste treatment facilities, regulatory adaptations under the *Climate Change Response Act, and promotion of successful experiences.*

The “Taichung Center for Zero-Waste Manufacturing”, a 4.54-hectare environmental facility within the park aimed at improving the circulation of resources, was created jointly by the Central Taiwan Science Park Bureau and five firms in the park, led by TSMC. It provides facilities to advance waste reduction and a circular economy, with plans to establish facilities to recycle organic solvents used in electronics manufacturing. It is estimated that 86,000 metric tons of organic solvents will be processed every year to recover high-value chemical products.

To demonstrate the development of carbon capture technology, the MOENV is helping government-operated incineration plants to secure third-party certification or apply for recognition of voluntary reduction projects, even though none of these incineration plants is listed as a target designated for carbon fee collection and greenhouse gas reduction. The MOENV is also funding equipment upgrades and improvements at these incinerators. In addition, the ministry is giving guidance on energy saving actions, and replacement of old machinery and equipment. The aim is to maintain steady operations and recover heat from incineration for power generation, to lower the use of fossil fuel. An MOU has been reached to introduce carbon capture technology at government-operated incineration plants. Once realized, the CO_2 captured will be sequestered in liquid form and transported to those who can use carbon or sent to storage facilities in order to maintain carbon neutrality.

Senior Vice President Lora Ho of TSMC expressed her excitement about the MOU. She stressed that TSMC has been working on sustainable corporate operations and this cooperation not only combines technological development and policy promotion but also goes toward fulfilling the responsibility of both the MOENV and TSMC to address climate change. Environment Minister Peng added that the MOENV is the competent authority in Taiwan responsible for promoting environmental protection and sustainable development. It oversees developing and executing Taiwan’s environmental protection policies and promoting solid actions to respond to the impacts of climate change.

Meanwhile, the other MOU partner, TSMC, leads the world in semiconductor manufacturing. The company has been very actively engaged in environmental protection and sustainable development and is dedicated to doing its part to reach the national target of net-zero emissions by 2050. This cooperation brings the MOENV and TSMC together to provide robust support for national carbon reduction policies and accelerate the innovation and application of CO_2 reduction technology, to fulfill the visions of net-zero emission by 2050 and circular economy. It is hoped that more firms and businesses will jump on board to create a well-oiled ecosystem of resource circulation.

■ *The MOENV and TSMC signed an MOU to work jointly on developing and using carbon capture technology.*

■ *Minister Peng of the MOENV signed a carbon capture and utilization MOU with TSMC.*