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Major Environmental Policies

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

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Climate Change

Toward Net Zero: Climate Change Response Act Passed after 3 Readings

On 10 January 2023, the EPA-formulated draft revision of the *Greenhouse Gas Reduction and Management Act* (溫室氣體減量及管理法) was passed by the Legislative Yuan after three readings under the new name the *Climate Change Response Act* (氣候變遷因應法). The EPA particularly thanked the entire Legislative Yuan, including President Si-Kun You, the Social Welfare and Environmental Committee, and members from all parties for their support. While the Act itself serves as a basis for more resilient climate legislation, its passage clearly demonstrates Taiwan's resolve in the pursuit of net-zero emissions.

Legislation of net-zero emission by 2050 with clearly defined responsibilities and responsible authorities

In this amendment, net-zero emission by 2050 has been included in Article 4 as the national reduction goal clearly defined with laws and regulations. This is a reflection of the government's resolve, compared with the simple declaration in the past. Based on the current practices adopted globally, phased control targets will be set on a five-year basis to gradually achieve carbon reduction.

In light of the fact that reduction and climate change mitigation tasks involve numerous agencies, in Article 8 it clearly states that the Executive Yuan's National Council for Sustainable Development (NCSD) is in charge of coordinating, delegating, or integrating the national guidelines on climate change mitigation, as well as decision making regarding cross-departmental tasks. Moreover, the revision has listed all responsibilities and designated various agencies to be responsible for various coordination tasks.

Addition of a just transformation to include all involving parties

Many communities may be affected during implementation of reduction policies or measures. As a result, the revision has deemed that all central competent industry authorities are to, regarding respective responsibilities, consult communities affected by the transformation toward net zero under the principles of respecting human rights and labor forces. All involving ministries are to properly collect opinions via a civil participation mechanism and

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formulate action plans that aim for a just transformation. Additionally, new additions state that rights of indigenous peoples are to be upheld and incorporated as part of climate change mitigation policies and measures in a comprehensive and community-based manner.

Also, the revision has strengthened information disclosure and civil participation mechanism. For instance, while formulating phased reduction targets, ministries or agencies in charge of organizing public hearings are to announce information such as dates, locations, and methods on the internet, the Government Gazette, newspapers, or other appropriate media outlets 30 days before the hearings are held. And the annual reports on results of greenhouse gas reduction or climate change mitigation projects, compiled and edited by central competent industry authorities, municipalities, city and county governments, are all to be published for public disclosure.

Specific uses for carbon fees with diverse incentives in place

Carbon pricing is a significant reduction strategy, so the amendment has included collection of carbon fees from emission sources. These fees will go to specified uses, such as implementation of reduction projects, development of low-carbon and carbon-negative technologies and industries, subsidies and incentives for investment on reduction technologies in order to facilitate reduction and develop a low-carbon economy.

If achieving assigned reduction goals via measures like switching to low-carbon fuels, adopting carbon-negative emission technologies, increasing energy efficiency, using renewable energies, or improving production processes, targets for carbon fee collection are qualified to propose their own voluntary reduction programs for discounted fee rates. Meanwhile, enterprises are urged to adopt voluntary reduction measures so as to obtain reduction quotas that can be transferred, traded, or auctioned. The combination of diverse economic incentives and collection of carbon fees is certainly able to encourage enterprises to expedite their reduction speeds.

Increase of Taiwan's resilience via climate mitigation

Under the revision, there is now a specific chapter on mitigation, focusing on enhancing Taiwan's overall capacity of mitigation by building capacities and infrastructure, keeping up with the latest scientific research, and designing implementation framework. In particular, policy making is to align with scientific research. Therefore, the central competent authorities and central technological competent authorities are now in charge of research and development of climate change-related science and impact-mitigating technologies, as well as regularly publish relevant reports as references for government offices of all levels to plan out early warning mechanisms and conduct systemic monitoring. Another focus is to establish the framework for mitigation efforts. The central competent industry authorities are to formulate the action plans on mitigation responsibilities for different sectors, the central competent authorities the *National Climate Change Mitigation Action Plans* (國家氣候變遷調適行動計畫), and the local governments the *Climate Change Mitigation Implementation Program* (氣候變遷調適執行方案). The purpose is to strengthen and adjust mitigation strategies according to varying circumstances, and annual reports on mitigation results are to be compiled and published to ensure information disclosure and public participation.

With climate change as a common challenge for all nations, on Earth Day 2022 (April 22) President Tsai Ing-wen declared that transformation to net-zero emission by 2050 is a goal not just for the entire world, but for Taiwan as well. Following that statement, Premier Su Tseng-chang has also appointed the EPA to proceed with needed revisions on the same day as well as during the NCSD's 33rd meeting on 30 August 2022. Passage of the revision is a clear display of the EPA's resolve on carbon reduction and answer to the international community's call for concrete and expedited reduction actions.

Future prospects

Now that the amendment has been passed, in the next six months relevant sub-laws will be proposed, such as amended operations for inventory and registration, management for audit and certification institutes, collection and rates of carbon fees, voluntary reduction programs, and trade mechanisms for voluntary reduction efforts. The EPA will soon discuss with all sectors and collect

opinions and ideas based on the principle of public participation upheld during this revision. Before any sub-laws are formulated, meetings will be organized for industries to fully understand what has been revised as well as plans for future operations and projects, further facilitating sustainable development as Taiwan embarks on the path toward net-zero emissions.

Environmental Education

First School Awarded Highest Honor after 10 Years of Taiwan-US Eco-School Initiative

On 21 December 2022, the EPA held the Taiwan-US Eco-School Awards Ceremony in Yilan, showcasing mutual achievements at the same time. During the ceremony, those receiving awards as Eco-Schools included eight schools certified with a Green Flag, 23 with a silver medal, and 67 with a bronze metal. Among the awardees, Hushan Experimental Elementary School in Tainan became the first to be certified with a Permanent Green Flag, the highest honor in this initiative, as the result of eight years of continued hard work from both students and faculty.

Background

The Taiwan EPA and the USEPA have since 2014 jointly launched the Taiwan-US Eco-School Partnership Program. In 2021, the Ministry of Education (MOE) began to participate as a collaborator, actively promoting this environmental education project in all schools and campuses across Taiwan and aiming toward sustainable development.

The ceremony was presided by an EPA Director General Tsung-Yung Liu who awarded respective schools with the Green Flags, silver metals, and bronze metals. The highest honor of the three, the Green Flag has a two-year validity and hence requires application for recertification every two years in order to retain such honor. Once a school receives its fourth Green Flag, it is deemed a permanent Green Flag holder as acknowledgement for its long-lasting efforts to consistently put sustainability into action.

Accomplishments

Hushan Experimental Elementary School obtained its fourth Green Flag this year and thus became the first Permanent Green Flag holder in Taiwan. With the idea of letting children take initiatives in learning at its core, the school works on fostering civic literacy and providing opportunities for kids to take charge to look after their living environment as well as conduct relevant initiatives and independent researches. And over the years its efforts in establishing

Schools awarded with the Green Flag

an eco-campus have influenced its faculty, students, their families, and surrounding communities, showing that it truly deserved such honor.

Other awardees included Dashan Elementary School in Miaoli and Chaocuo Waldorf Education Experimental Elementary School in Yunlin, both recognized with their first Green Flag. Students in Dashan Elementary School built special beehives to observe the relationship between the ecosystems of different species and their environments. They even promoted such action in the local communities, urging residents to practice environment-friendly organic farming. As for Chaocuo Waldorf Education Experimental Elementary School, students have effectively solved the problem of discarded rain boots at the end of every semester by organizing a marketplace for secondhand rain boots. Moreover, via collaboration with technology firms, they have incorporated technical farming into their own curriculum and also conducted long-term projects to monitor groundwater and land subsidence, both of which are issues of high concern in Yunlin.

Micang Elementary School in Bali, New Taipei City, received its second Green Flag for its consistent work on maintaining species' habitats on campus, promoting sustainable diets and consumption, and improving waste disposal. The school also promoted conservation of red-clawed crabs, a local species, by seeking out its habitat within the local community on the Bali left bank and subsequently creating a habitat map. Another two-time Green-Flag recipient is Daan Elementary School in Taoyuan, which tackles issues like habitat protection and water resource, improving environments and equipment of its eco-pond by joining forces with a local carp conservation group to solve the problem of fish and aquatic plants often dying in the pond. Students even went on to work with the Soil and Water Conservation Bureau (SWCB) of the Council of Agriculture to establish the campus as one of the SWCB's outposts, providing an excellent venue for environmental education for students, faculty and community residents.

Eco-schools set up stalls to demonstrate their respective achievements

Three schools were awarded a Green Flag for the first time. They were Xinshi Elementary School in New Taipei City, Tainan Tzu-Chi Senior High School Elementary Department, and Evergreen Lily Elementary School in Pingtung County.

The kids in Xinshi Elementary School have composted food waste, turned branches left by tree thinning into award metals, and used different plant seeds collected on campus to design games as class materials. In Tainan, students at the Elementary Department of Tzu-Chi Senior High School are encouraged to protect the environment via various programs like Energy Conservation Monday, Water Conservation with One Chopstick, and Clean Plate Initiative. Last but not least, students of Evergreen Lily Elementary School are especially passionate about climate change issues as they were once victims of Typhoon Morakot. As a result, they strive to preserve the traditional wisdom and culture, which is deeply in tune with nature and ecosystems, to advocate respect for the environment, biodiversity conservation, and peaceful coexistence with the world as the key for sustainable development.

The award ceremony began with a performance by the first-time Green-Flag recipient Evergreen Lily Elementary School as students, dressed in traditional indigenous attire, sang from the soul. With stalls and corresponding posters set up at the venue, the awarded schools demonstrated their respective achievements and special features. Then in the afternoon, representatives from schools certified with the Green Flag for the first-time shared details of their journeys to becoming eco schools, which served as a great

opportunity to exchange and learn among schools. There was also a musical seminar, where the healing power of music helped participants to appreciate the environment, bringing a beautiful end to the event.

Director General Liu noted that Taiwan has been actively promoting eco-schools, a global environmental education initiative. Now there are a total of 590 schools in Taiwan participating in the eco-school initiative. Some 400 of them have become certified, including 16 Green Flags, 148 silver metals, and 242 bronze metals. This fully showcases how environmental education has been deeply incorporated on all campuses and even extended further into families and communities.

Future prospects

The EPA will continue to keep Taiwan's eco-schools aligned with the global trend while urging groups of diverse backgrounds to participate and integrating various resources so that more schools can join the eco-school program. Besides linking up the classroom with environmental measures, future efforts will aim to bring the concept of eco-schools beyond the campus and into different areas of society and encourage all to work toward building a sustainable future.

Waste Management

Circular Procurement Promoted via Rental Services for Sustainable Consumption

On 12 December 2022, the EPA held a press conference in POPOP Taipei to promote sustainable consumption and production in efforts to reduce the environmental impacts from consumption. Among invited attendees were domestic enterprises that provide excellent rental services. Besides the premiere of a promotion video on sustainable procurement, the "Guide on Sustainable Procurement" was preannounced during the event with Rifat, a well-known Turkish influencer, present as the ambassador to advocate sustainable procurement.

Past consumption and production followed the models of a linear economy, leading to resource depletion and carbon emission that has put the Earth under the heightened threat of climate change. Data released by the International Energy Agency (IEA) in 2022 shows that in 2021, global carbon emission reached 36.3 billion metric tons, setting a new historic high. Moreover, the UN's statistics demonstrate that global resource use has tripled since 1970 with a prediction that by 2060 it will be 1.5 times the present use. The world is now heading toward a shortage of natural resources.

The EPA has been advocating the idea of using instead of owning, and now there are available rental services provided by various enterprises. They range from utensils, clothing, electronic products, motorcycles and vehicles, to furniture, and adopt business models aiming for a circular economy. The circular procurement policy, stipulated this year, includes providing procurement guidelines and formulating mutual supply contracts. Government offices and schools in the public sector will take the lead to implement relevant measures and be the first to put in practice the business model that promotes using instead of owning, renting instead of buying. This way a supply chain for circular services can be gradually established with enforcement on environmental education to promote green consumption. With forces on the consumption end joining together, enterprises would be motivated to put modulization, easy disassembly, and easy maintenance into consideration at the stage of product design and also develop services like extended warranty and maintenance. It will extend products' service life and cut down resource assumption.

"My awareness and understanding of environmental protection began here in Taiwan," said Rifat, who was greatly impressed by garbage sorting here as Taiwanese participate in environmental protection, starting in their own homes. Also, he shared experiences on maintenance and rental of camera equipment, with which he has had the most personal connection on environmental protection. Friends often told him to purchase new equipment when old ones broke down, yet he preferred maintenance as he thought what

he has owned is sufficient and would not want to have more and then leave them used as well. With many rental platforms emerging in recent years, it is convenient and with less burden to rent equipment to satisfy his occasional needs for more advanced gear.

Emphasizing the importance of individual actions, Rifat stated that Taiwan has limited land space and limited resources compared to the enormous amount of garbage generated on a daily basis. He encouraged everyone to strive for a better and more sustainable future and would work on spreading the awareness of sustainable procurement.

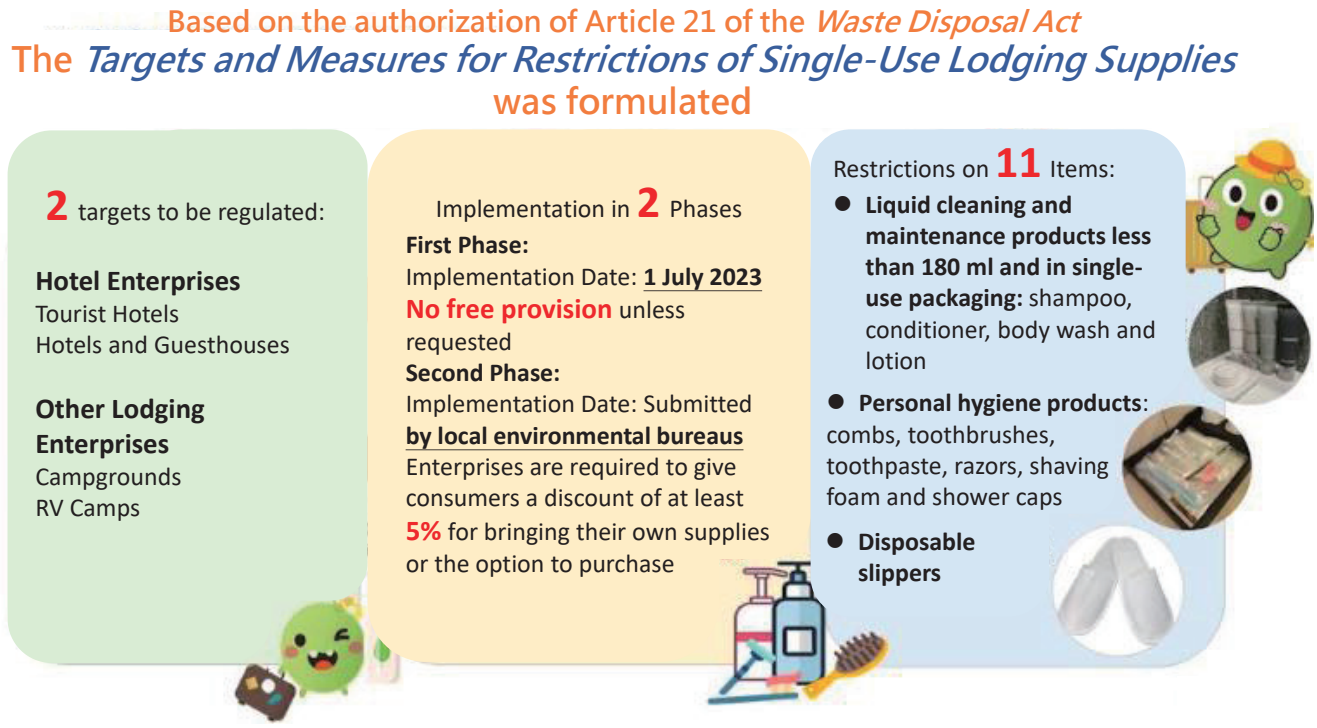
Furthermore, invitees at the press conference were enterprises under the three major categories providing rental options besides purchase, which are food and beverages, home appliances, and technology and electronics. Their rental services cover reusable food containers, beddings, household appliances, home furniture, electronic products, and lighting, etc. The EPA hoped to attract more product and service providers as well as consumers to participate in the promotion of sustainable consumption and production.

Recycling

Preannouncement of Restrictions on Single-Use Lodging Supplies

Following international trends to reduce plastic waste, the EPA preannounced the draft of the *Targets and Measures for Restrictions of Single-Use Lodging Supplies* (一次用旅宿用品限制使用對象及實施方式), which impose restrictions on single-use lodging supplies provided by hotels and other lodging enterprises. The contents of the preannouncement will be implemented in two phases starting from 1 July 2023. "No providing unless requested" will be implemented in the first phase while "discounts for people who bring their own supplies or the option to buy" in the second. Local environmental bureaus shall submit the second phase implementation dates for approval.

The *Targets and Measures for Restrictions of Single-Use Lodging Supplies* was formulated by the EPA based on Article 21 of the *Waste Disposal Act* (廢棄物清理法). The regulations stipulate that hotel enterprises (including tourist hotels, hotels and guesthouses) and other lodging enterprises (such as campgrounds and RV camps) shall not provide, unless requested, free single-use lodging supplies



to consumers inside or outside of the rooms of the lodging during the first phase (starting from 1 July 2023). During the second phase, the enterprises shall provide consumers a discount of at least 5% for rooms that do not provide single-use lodging supplies, or enterprises shall display the prices of all single-use lodging supplies in operating sites or lodging rooms for consumers to purchase. Implementation dates shall be submitted by local governments to the EPA for approval and promulgation.

Restricted single-use lodging supplies include three types of items: liquid cleaning and maintenance products less than 180 ml and in single-use packaging, such as shampoo, conditioner, body wash and lotion; personal hygiene products such as combs, toothbrushes, toothpaste, razors, shaving foam and shower caps; and disposable slippers.

Single-use lodging supplies, including main items, containers or packaging, are often made of plastic materials. Disposing of them after just one use leads to a rapid waste of resources. To reduce plastic pollution, in the fifth United Nations Environment Assembly (UNEA-5), 154 countries pledged to formulate a legally binding global plastics treaty by 2024 to greatly reduce the use of single-use plastic products. In addition, plastic pollution and waste generated during travel is prone to enter oceans or land waters causing environmental and ecological harm. Hence, to solve the problem and reduce waste, the United Nations Environment Programme and World Tourism Organization launched the Global Tourism Plastics Initiative in 2020, inviting tourism industry chain enterprises, associations and NGOs to join and pledge to use environment-friendly products instead of single-use plastics for lodging supplies.

The EPA reminded the public again to cultivate the concept of “bring your own, use repeatedly, and use less” to put environmental protection actions such as plastics reduction and waste reduction into practice. It emphasized that self-supplying lodging supplies when traveling is both hygienic and environment-friendly.

Environmental Monitoring

2022 Shows Best Air Quality Monitoring Results

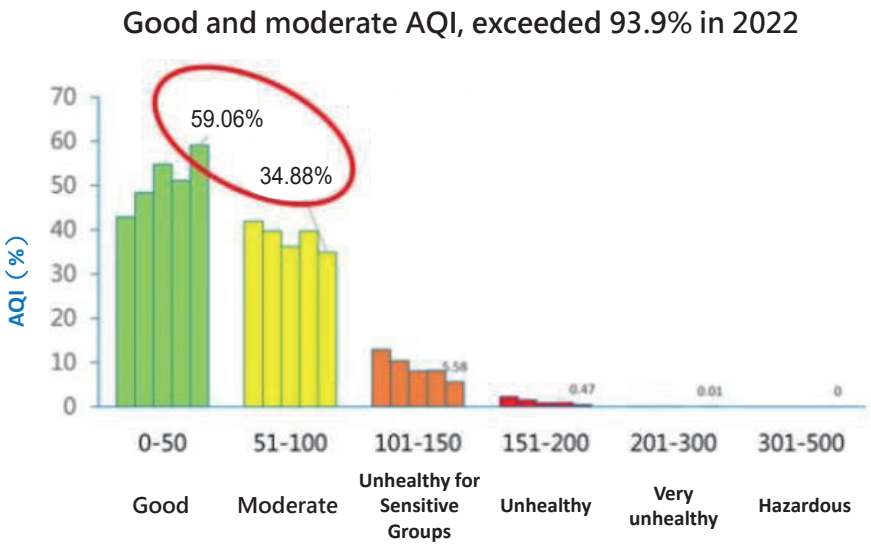
The 2022 air quality monitoring data compiled by the EPA shows a downward trend of concentrations of all air pollutants for the fifth consecutive year. The average number of days with Air Quality Index (AQI) of 100 or less, meaning in the categories of good and moderate AQI, exceeded 93.9% in 2022 (see chart), the best recorded so far. At the same time, the number of days with AQI above 100 (unhealthy categories) continued to drop.

Other than continual drop of the average ozone concentration, the number of station-days with unhealthy AQI has been lowering year after year. In 2022, station days with unhealthy AOI mostly occurred in September mainly because of transboundary ozone from outside of Taiwan. And from January to November 2022, the national $PM_{2.5}$ concentration was 12.5 μg/m^3 on average. It is estimated that the average annual concentration will be lower than 13 μg/m^3 for the first time, and it will also be the third consecutive year for it to reach the ultimate goal of an average annual concentration of 15 μg/m^3, as set by the Executive Yuan-approved Air Pollution Control Plan (2020 to 2023).

The EPA pointed out that 2022 had the best result of air quality improvement in recent years due to having had more rainy days than previous years, as rainwater is effective at pollutant removal. Not only so, both the central and local governments’ active implementation of the Air Pollution Control Plan (2020 to 2023) has also led to reduced concentrations of transboundary pollutants. Since 2016, air pollution has dropped by 30%, in which state-run enterprises have slashed 46% of their own air pollution, the percentage of gas-burning boilers has increased from 24% to 73% thanks to promotion for highly polluting boilers to switch to natural gas, and the efforts to phase out old vehicles. In 2022, more than 9,000 large, old diesel vehicles had been phased out, resulting in 40% of such vehicles phased out since 2017. Moreover, starting 2020, a total of 1.685 million old motorcycles have been phased out, accounting for 35% reduction of old motorcycles from

the road.

Regarding sources of fugitive pollution, airborne dust in Zhuoshui River has been reduced by over 90%, with dust incidents occurring only twice in 2022. Additionally, the EPA has enhanced overall controls and reviewed 111 sets of regulations since the announcement of the revised *Air Pollution Control Act* (空氣污染防制法) on 1 August 2018. In 2022, efforts continued in legislative amendments to strengthen response measures targeting seasonal air pollution, tighten emission standards for tape, cement, and other industries, and adjust the system of regular inspections. The EPA's other means to lower emissions of air pollution include providing access for developers to trade and offset emission credits, extending the period of subsidization, and applying high technology to law enforcement. All this is carried out in hopes of creating a win-win situation for both the economy and the environment, safeguarding air quality, and protecting public health.



Air Quality

Marine Air Quality Monitoring Cooperation between EPA and OAC

In 2022, the EPA cooperated with the Ocean Affairs Council to monitor the air quality over the ocean, extending the scope of Taiwan's air quality monitoring from land to sea. The primary monitoring results show that the low-sulfur vessel fuel policy implemented since 2020 has yielded good results. Sulfur dioxide concentration has been significantly reduced. It was also discovered that vessels that reduced speed when entering or leaving ports also led to reduced pollution emission. Relevant results will be gradually applied in the drafting and promotion of marine air pollution prevention policies.

Currently, standard air quality monitoring equipment has been installed on Coast Guard ships stationed at Tamsui in New Taipei, Taichung and Tainan and has been monitoring $PM_{2.5}$, sulfur dioxide and nitrogen dioxide since October 2022. Taking the Tamsui flotilla as an example, the average sulfur dioxide concentration measured onboard was 0.68 ppb, better than the 1.37 ppb measured at the nearby land-based Tamsui monitoring station. This shows that the better diffusion conditions at sea made air quality over the ocean better than that in land areas.

In addition, looking at the changes in sulfur dioxide concentration at four coastal land-based monitoring stations in Tamsui, Keelung, Mailiao and Xiaogang, the average was 1.93 ppb in 2021 and 1.52 ppb in 2022, which are better than the 3.5 ppb recorded in 2021 of neighboring Busan port in South Korea. In addition, they were also better than 3.51 ppb, the average concentration measured at the four stations in 2018, a 60% drop. The reason is likely due to measures implemented in Taiwan since 2019, including the promotion of "use of low-sulfur fuel only by vessels on international routes between international commercial ports" and the "tightening of restrictions on the composition of fuels used by mobile and stationary pollution sources." These measures comprehensively reduced the sulfur content of the fuels used by both vehicles on land and vessels at sea from 3.5% to 0.5%, resulting in significant environmental improvement after their implementation.

The general traveling speed of vessels is about 20 knots. But according to studies, the energy consumption and air pollution emission are at the lowest if the average speed of vessels is reduced to 12 knots. Hence, the EPA has been cooperating with port authorities in recent years to promote the reduction of vessel speeds when entering or leaving ports. However, according to data, vessels only reduced speed by 56% and 43% when entering or leaving ports, respectively, showing that there is still room for improvement. In addition, according to the monitoring results of this project, the concentration of nitrogen dioxide measured in October by the Tamsui flotilla at the port exit was 15.32 ppb, higher than the average 9.55 ppb measured five nautical miles off the shore. One of the reasons was that vessels did not reduce speed when entering or leaving the port. All this information will serve as reference for the EPA when formulating incentive or prevention measures to promote the reduction of vessel speeds when entering or leaving ports.

Taiwan is a maritime country with living environments prone to both land-based and marine pollution sources. Understanding the air quality in marine areas will help policy makers form more effective prevention strategies targeted at various pollution sources. It is hoped that the cross-field cooperation will continue, leading to an improvement in environmental quality.

The EPA cooperates with the OAC to monitor the air quality over the ocean

Ecolabeling

Enterprises Set Examples of Green Office Transformation

In response to "net-zero green living," a key strategy for achieving net-zero transition, the EPA is promoting green offices. A total of 6,821 enterprises have participated in the initiative, reducing approximately 300,000 metric tons of carbon emission in 2022 alone, equivalent to an annual carbon absorption of 775 Daan Forest Parks. Recently, 33 more exemplary enterprises have also declared their commitment to promoting green offices, leading the trend of green office transformation.

At the EPA's invitation, on 2 February, enterprises that have responded to the call for the green office initiative, enterprises and groups that have won the National Enterprise Environmental Protection Awards, and enterprises that met the RE100 standard got together. A total of 33 enterprises, including Nanhua University and CTCI Corporation, as well as city and county environmental protection bureaus, attended the event to declare their commitment to implementing green offices and expressing their determination to strive for net-zero transition by 2050.

EPA Deputy Minister Chih-Hsiu Shen stated that the green office initiative is an important milestone in promoting net-zero green living. Initially, 35 green office measures under five indicators, namely, "saving energy and resources," "source reduction," "green procurement," "environmental beautification," and "advocacy and promotion" were to be implemented by participants that voluntarily responded to the call. Subsequently, a

green office reference manual will be developed, compiling demonstration cases as reference for all sectors. In the future, green label standards for office spaces will be established, and related verification standards for a green office will be completed, which will be aligned with international standards, to guide domestic offices to change their past office behaviors and create a green and friendly office environment.

With actions such as using air-conditioning units with eco-labels, replacing more than half of light fixtures with LED lights, using water-saving devices and equipment in the office area, and conducting video conferences, the participating enterprises saved 330 million kilowatt-hours of electricity (equivalent to the annual power consumption of 78,000 households), 153,000 metric tons of water (equivalent to the daily water consumption of 540,000 people), and 34,000 metric tons of gasoline, reducing approximately 300,000 metric tons of carbon dioxide emissions in 2022.

"It's actually quite easy to go green in the office," said Deputy Minister Shen as he encouraged enterprises to adopt environmentally friendly practices, such as purchasing energy-saving and water-saving equipment that carry eco-labels, leasing instead of buying, cutting down on the provision of single-use tableware and cups, and showing colleagues how to develop environmentally friendly habits. He also shared the experience of the EPA's cooperation with private citizen power plants. The EPA building is able to generate 148,000 kWh of electricity annually, which is 14% of its total electricity consumption in a year after solar panels were installed on its rooftop. As long as an office has a roof area of over 40 ping and receives at least two hours of sunlight a day, it can participate, and the EPA has set up a platform to assist with matchmaking.

EPA Deputy Minister Chih-Hsiu Shen with enterprises and groups attended the event to declare their commitment to implementing green offices

Chemicals

Stricter Restrictions on Organotin Use to Stop Fake Agrochemicals

The EPA has revised the *Regulated Toxic Chemical Substances and Matters Concerning Their Handling and Management* (列管毒性化學物質及其運作管理事項) in order to tighten handling and management of organotin compounds. It is part of the joint efforts between the EPA and the Council of Agriculture (COA) to stop fake agrochemicals. The revisions were done to prohibit the use of organotin in the manufacture of biocides, anti-fouling paints, or anti-fouling system, following the global trend of controlling it. With the new toxicity classification of organotin compounds tightened, existing enterprises will be given a buffer implementation period of six months to a year and a half in phases so as to comply with the regulations related to accident prevention and emergency response.

In 2022, an underground agrochemical factory was discovered in Yunlin, where the owner used triphenyltin chloride, a toxic chemical substance, to make a fake agrochemical known as “White Paste.” Yunlin County Environmental Bureau found out that between 2019 and 2021, the owner had brought into the country 33.5 metric tons of triphenyltin chloride and did not report its operating records in accordance with the *Toxic and Concerned Chemical Substances Control Act*

(毒性及關注化學物質管理法). Besides issuing fines and voiding its approval documents for operating toxic chemical substances, the environmental bureau handed the owner over to the prosecutor's office for further investigation on the grounds of false registration and possible falsification documents.

As part of the joint efforts to prevent harmful use and abuse of organotin compounds, the EPA has studied international control efforts, looked into its domestic handling, and consulted experts and scholars. Limits concerning ten organotin compounds, such as tributyltin oxide bis(tributyltin) oxide and triphenyltin chloride, are further adjusted. To strengthen controls of organotin, their use is now banned in the manufacturing of biocides, anti-fouling paints, or anti-fouling systems. Moreover, the EPA has updated information on these substances by adding the Chemical Abstracts Service Number (CAS No.) of triphenyl-α-naphthyltin, tripropyltin fluoride, tritolyltin bromide and tritriphenylstannyl-methane, and adjusted the toxicity classifications of organotin compounds like tributyltin oxide bis(tributyltin) oxide and triphenyltin hydroxide.

Meetings were held in October 2022 since the announcement of the amendments, and enterprisers are given a buffer implementation period of six months to a year and a half in phases. This is done as adjustment of toxicity classification of organotin compounds affects regulations on transportation of these substances, detection and alarm equipment, and placement of professional response technicians, and changes of licenses. Not only so, in line with a full asbestos ban in Taiwan, registrations and approval documents for all uses of organotin compounds, except for research, experiment and education, have all expired in their validities, hence relevant regulations were revised as well.

Soil and Groundwater

ASEAN Forum on Sustainable Soil and Groundwater Creates Collaboration among Industry, Government and Academia

On 6 January 2023, the EPA held the Association of Southeast Asian Nations (ASEAN) Forum on Sustainable Soil and Groundwater with talks on Taiwan and ASEAN nations' environmental policies concerning soil and groundwater as well as experiences of environmental governance in order to generate innovative ideas. Foreign invitees included officials from the Ministry of Environment, Pollution Control and Environmental Degradation in East Java Province, Indonesia, as well as Indonesian and Vietnamese scholars. Attendees from Taiwan included representatives from local environmental authorities, soil and groundwater industries, and academia, as well as foreign and local graduate students studying in Taiwan. Furthermore, the Forum served as an award ceremony, honoring those who have successfully conducted research on sustainable and innovative soil and groundwater remediation.

In his opening speech, the then EPA Deputy Minister Hung-Te Tsai noted that Taiwan's well-rounded *Soil and Groundwater Pollution Remediation Act* (土壤及地下水污染整治法) has allowed itself to collect pollution remediation fund, just like how the Superfund was founded and is operated in the US, in order to effectively carry out remediation and prevention work for soil and groundwater pollution. With climate and environments similar to those in Southeast Asian countries, Taiwan has under its belt 20 years of experiences in investigations, remediation technologies, and experiences in soil and groundwater pollutions, which can be shared with ASEAN countries. Every year there are continuous efforts to keep up with the latest global trends, exchange experiences, and enhance technological capacities through seminars and forums to interact with experts in relevant fields from the USEPA and Asia-Pacific nations. It not only helps lessen pollution' impacts and enhance environmental quality but also lays a solid foundation to expand Taiwan-led bilateral or multilateral collaborations.

The forum mainly discussed

ASEAN Forum on Sustainable Soil and Groundwater

soil and groundwater issues in Indonesia and Vietnam. Taiwan's legislation of the *Soil and Groundwater Pollution Remediation Act,* management strategies, technological development, and aligning with the world have all helped tremendously in its understanding of the ASEAN partners. And the industries, government, and academia have joined forces to assist Taiwan's relevant industries to expand their foothold in ASEAN nations.

Furthermore, a competition for research on sustainable and innovative soil and groundwater remediation was organized, with ASEAN students studying in Taiwan, to foster ASEAN talents in this field. Among the 22 competing teams, a total of ten passed the preliminary and secondary evaluation, and at the end five of them came out winning and were awarded NT$90,000. The goal to stimulate new ideas via competition so that these students can tackle environmental issues in their home countries with action will eventually lead to sustainable soil and groundwater development.

At the end, the EPA emphasized that, as sustainable soil and groundwater is a global environmental concern, it hopes to establish a partnership of soil and groundwater protection with ASEAN nations to jointly improve the environments and living quality for all people.

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