



Major Environmental Policies

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

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International Cooperation

EPA Minister Shares Taiwan's Environmental Experience at Our Ocean Conference in Palau

The seventh Our Ocean Conference (OOC) took place in Palau on 13-14 April 2022, with EPA Minister Tzi-Chin Chang attending as an envoy assigned by President Tsai and giving a speech in the session "Tackling Marine Pollution." In addition to sharing Taiwan's environmental protection experience, Minister Chang suggested that other nations consider source reduction, circular economy, and the promotion of environmental education and citizen participation as ways to make the world's oceans cleaner.

Our Ocean Conference (OOC)

Founded in 2014 by John Kerry, who is the current U.S. Special Presidential Envoy for Climate, the first Our Ocean Conference (OOC) was held in Washington, DC. Hosts in following years have included Chile, the EU, Indonesia, Norway, and others. Every OOC has seen the attendance of several heads of state and vice leaders, as well as representatives of government authorities in charge of the environment, sustainability, or marine conservation.

The 7th OOC, titled Our Ocean, Our People, Our Prosperity, focused on six areas of action, including "Advancing Marine Protected Areas for Communities, Ecosystems, and Climate," "Tackling Marine Pollution," "Confronting the Ocean-Climate Crisis or Towards an Ocean Solution for Climate Change," "Creating Sustainable Blue Economies," "Advancing Sustainable Small-Scale Fisheries and Aquaculture," and "Achieving a Safe, Just and Secure Ocean".

The Republic of Palau and the

United States opened the 7th OOC on April 13, 2022, marking the first time this event was held in a small island developing state (SIDS).

Joint Taiwan-Palau efforts lead to EPA Minister's attendance at the OOC, a first by a government representative from Taiwan

The Ministry of Foreign Affairs (MOFA) pointed out that due to the Republic of Palau's highly valued close diplomatic ties with Taiwan, Palau President Surangel S. Whipps, Jr. had particularly invited

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President Tsai Ing-wen to visit his country and attend the seventh OOC, a major event that Palau has always attended.

In response to President Whipps' invitation, President Tsai appointed EPA Minister Tzi-Chin Chang to visit Palau and attend the event as an official representative of Taiwan. He was to share on the global stage Taiwan's contributions to the marine environment and sustainable development as a responsible member of the Pacific region.

President Whipps met with the Taiwan delegation led by Minister Chang, and stated that as Pacific island states, both Taiwan and Palau have always been highly devoted to marine preservation and sustainable development, and together they work on creating a bright future for the entire Pacific region. He especially stressed the close diplomatic ties between Taiwan and Palau, hoping to continuously strengthen such a friendship.

Minister Chang shares Taiwan's experience and achievements in tackling marine pollution

In the session "Tackling Marine Pollution," Minister Chang delivered a speech on relevant issues, which was a major breakthrough in the elevation of Taiwan's participation in international marine activities. His presence at this event raised Taiwan's status and image in global marine conservation efforts.

In his speech, Minister Chang pointed out that Taiwan, like Palau, is an island nation with beautiful coastlines and rich biodiversity.

Taiwan is also facing the problem of marine pollution. The solution is: cut waste at the source and prevent it from entering the ocean.

In 1997, Taiwan started a nationwide waste recycling program. Over the years, the recycling rate has gradually increased. Currently, the recycling rate is more than 60%, and the recycling rate for PET bottles has surpassed 90%. Most of the remaining waste is sent to incinerators to generate electricity. Despite these efforts, however, some wastes still end up on the land and in the ocean.

Inter-ministerial Council promotes "Salute to the Ocean" and pledges to invest US\$220 million

In 2020, the Taiwan EPA and other agencies launched a project called Salute to the Ocean. This project has committed a budget of more than US\$220 million between 2020 and 2023.

It allowed Taiwan's entire 1,988-kilometer coastline to be adopted by various organizations for cleanup, and a government-level integration and coordination platform was established by local governments to promote a number of source reduction measures. This project focuses on cutting down fishery wastes via controls at-source, intercepting garbage in rivers and improving the effectiveness of temporary storage sites and facilities for marine wastes to jointly maintain a clean coastal environment through inter-ministerial cooperation.

The Executive Yuan has established a mechanism of

"regular cleaning" by integrating nine central government agencies and cooperating with 19 coastal local governments. It led to cleaning over 48,000 metric tons of marine wastes in just 2021 alone. Minister Chang pointed out that efforts were intensified to set up waste interception points at important river confluences, resulting in intercepting 22,651 metric tons of garbage from 2020 to 2021. Also, another major source of marine waste is fishing nets and gear. The EPA is collaborating with local governments to push registration of fishing gear under owners' names, which, along with garbage interception, aims to reduce marine waste both at source and midstream.

Reduction at the source, 20 years of promoting plastic restriction

To further reduce marine plastic, since 2002, Taiwan has been restricting the use of disposable plastic. Statistics show that 4.5 billion plastic bags, 100 million straws and 200 million pieces of disposable tableware are reduced every year. In the future, through regulatory controls, economic incentives and innovative business models, Taiwan will continue to guide businesses and the public to change the throw-away culture, review and expand the targets controlled by the plastic restriction regulations, further promoting plastic reduction.

In 2018, Taiwan banned the manufacture, import and sale of cosmetics that contained plastic microbeads. And in 2019, Taiwan began banning plastic straws at government agencies, schools, department stores and shopping



👉 Minister Chang delivering a speech in the OOC session “Tackling Marine Pollution” (Source: <https://ourocean2022.pw/>)

centers, and fast-food chains, and will continue to reduce the plastic consumption and comply with the UNEP’s agreement on plastic reduction planned for 2024.

Integrating marine waste into a circular economy, the world’s first government-sponsored marine debris recycled product label

To help Taiwan’s businesses integrate marine waste into a circular economy, the EPA introduced the Marine Debris Recycled Product label in 2021. This is the world’s first government-sponsored product label for recycled marine waste.

Taiwan’s industries have also come up with their own solutions to deal with marine waste. They have set a goal for plastic containers of nonfood items to be made with at least 25% of recycled materials by 2025. Companies such as Acer and LiteOn Technology use marine plastic wastes to make keyboards and other computer parts. And Minister Chang pointed out that even the OOC’s official shirt he was wearing was made

from marine waste – specifically, from PET bottles found in Palau by Taiwan’s Shinkong Synthetic Fibers Corp.

In addition to sharing Taiwan’s environmental protection experience, Minister Chang suggested that other nations consider source reduction, circular economy, and the promotion of environmental education and citizen participation as areas of cooperation. He said Taiwan would continue to cooperate with other nations so that oceans would become cleaner and the Earth protected.

Fourteen commitments made by Taiwan’s ocean-related authorities officially documented

To demonstrate to the world Taiwan’s determination and contributions to protecting the ocean through practical actions, the OAC has coordinated with all the agencies involved in ocean-related affairs. Together they proposed 14 commitments with a total budget of US\$383.81 million for the OOC’s six Action Areas, all of which have

been officially documented by the OOC.

The commitments of the Government of the Republic of China (Taiwan) are as follows:

I. Area of action: Maritime Security

1. Taiwan announces its commitment to implementing the Intelligent Navigation Safety Service and Development Plan.
2. With international partners, Taiwan has committed to continuously cracking down on maritime cross-border criminal activities.
3. Taiwan declares its commitment to fulfill the universal value of humanitarian aid and to strengthen its capacity regarding life-saving and rescue at sea.

II. Area of action: Sustainable Blue Economy

1. Taiwan has committed US\$300,000 to complete a single-page web application for coastal recreational activities.
2. Taiwan has pledged to pass the *Marine Industry Development Act* and enact the *Marine Economy and Industry Development Plan*.
3. Taiwan announces its commitment to continuously optimize facilities and service efficiency of commercial ports to create a favorable operating environment for the shipping industry.

III. Area of action: Sustainable Fisheries

1. Taiwan has committed to implementing a recreational fishing-friendly plan.
2. Taiwan has committed to adopting a program to reinforce the management of Taiwan’s

distant water fishing fleet and combat IUU fishing.

IV. Area of action: Marine Protected Areas

1. Taiwan has committed to the legislation of the *Marine Conservation Act*.
2. Taiwan has committed to promoting the Project for Marine Eco-Environment Protection in Taiwan.

V. Area of action: Marine Pollution

1. Taiwan has committed to promoting the gillnet marking and management program.
2. Taiwan has committed to implementing Saluting the Ocean Policy.

VI. Area of action: Climate Change

1. Taiwan announces its commitment to developing the Atmosphere-Ocean Coupled

Model.

2. Taiwan has committed to promoting its *Climate Change Adaptation Action Plan*.

Aiming to promote Taiwan's cooperation and exchanges with Palau and other like-minded nations

Minister Chang was interviewed by two major Palauan media outlets, the Island Times and Tia Belau, with whom he shared Taiwan's policies and achievements in marine waste disposal, environmental conservation and climate change. He expressed that Taiwan will keep facilitating cooperation and exchanges with Palau and other like-minded countries.

Meeting with USEPA Assistant Administrator Jane Nishida

The Taiwan-US Agreement on Environmental Technology

Collaboration has laid a solid foundation for exchanges and cooperation between the Taiwan EPA and the USEPA for nearly 30 years. Collaboration has gradually expanded from initially being bilateral to multilateral today. The Taiwan EPA has been working with the USEPA in building regional capacity on environmental education, mercury monitoring, e-waste management, and air quality under the framework of the International Environmental Partnership (IEP) program.

During the OOC in Palau, USEPA Assistant Administrator Jane Nishida visited Taiwan's Toward Zero Emission and Zero Waste Future Exhibition and afterwards suggested both the U.S. and Taiwan could further collaborate on issues such as marine pollution prevention and control, climate change impacts and a circular economy.



↑ USEPA Assistance Administrator Jane Nishida (third from the right) and Taiwan EPA Minister Chang (third from the left)

Climate Change

Change from *Greenhouse Gas Reduction and Management Act* to *Climate Change Response Act* Approved

On 21 April, the EPA-proposed draft revision of the *Greenhouse Gas Reduction and Management Act* (溫室氣體減量及管理法) was passed and sent by the Executive Yuan to the Legislative Yuan for approval. From 11-12 May 2022, the Act draft revision was thoroughly reviewed by the Joint Committees of Social Welfare and Environmental Hygiene, Economics, Finance Internal Administration, Transportation and Education and Culture in the Fifth Session of the 10th Legislative Yuan.

The revision aims to establish a climate-based legislative foundation to achieve net-zero emissions. Amendments include changing the name of the legislation to the *Climate Change Response Act* (氣候變遷因應法), all of which shows equal consideration and attention to both greenhouse gas reduction as well as climate change mitigation.

Key legislative foundation for transformation to achieve zero emissions by 2050

On 30 March 2022, Taiwan announced its official blueprint for carbon reduction, the “Pathway to Net-Zero Emissions by 2050”. An essential part of the effort toward net-zero emissions under the blueprint is to strengthen the climate-related legislative foundation. The long-term national goal for carbon reduction under the *Greenhouse Gas Reduction and Management Act* currently in place is to reduce carbon emissions to 50% of the 2005 level by the year 2050. The amendments set a new goal to reach zero carbon emissions by 2050, demonstrating Taiwan’s resolve in this effort. To achieve such a goal, government entities at all levels are to work with citizens, enterprises and organizations to reduce greenhouse gas emissions, develop carbon-negative technology and collaborate

globally.

Increased importance of climate governance with equal focus on both carbon reduction and climate change mitigation

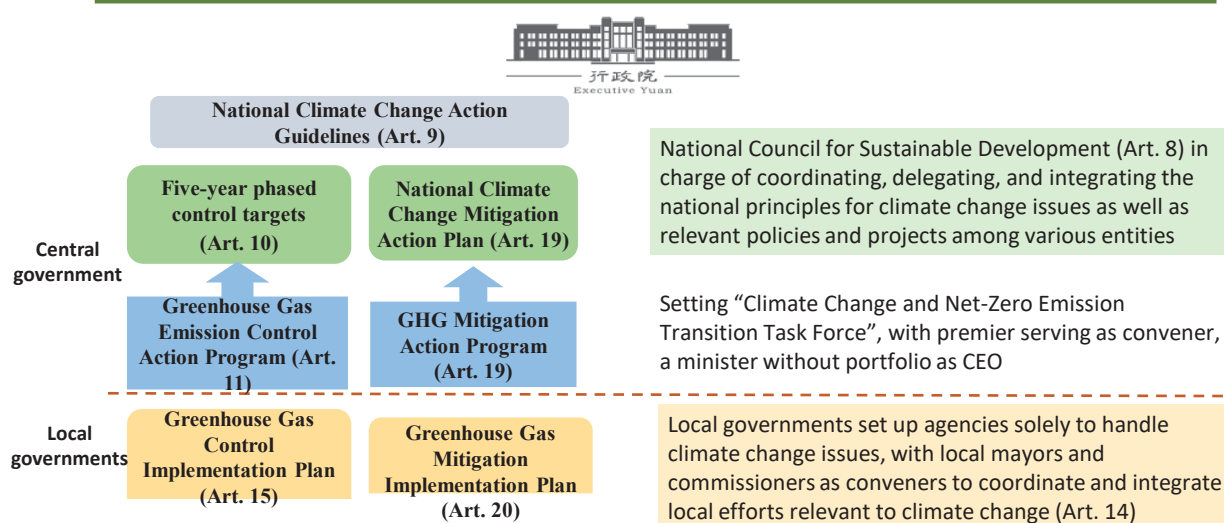
The revised act elevates climate-related governance to a higher official level. Henceforth, the National Council for Sustainable Development (NCSD) will be in charge of coordinating, delegating, and integrating the national principles for climate change issues as well as relevant policies and projects across different entities, with the premier serving as convener. Local governments are to set up agencies solely to handle climate change issues, with local mayors and commissioners as conveners to coordinate and integrate local efforts relevant to climate change. Moreover, the central competent authorities are to formulate National Climate Change Action Guidelines (國家因應氣候變遷行動綱領), set phased control targets and make National Climate Change Mitigation Action Plans (國家氣候變遷調適行動計畫). Central competent authorities for industry are to determine action plans for the sectors or fields under their supervision. Meanwhile, local governments are to formulate or amend implementation measures. The efforts of these three government levels are

also required to establish review mechanisms and have citizens participate. Also, in an effort to adapt to impacts of climate change and establish a resilient system, the amendments aim to increase mitigation capacities by keeping up to date with climate change science and risk assessment so as to better promote relevant mitigation work.

Expedited carbon reduction to enhance the global competitive edge of industries

Under this revision, relevant investigations and audits are to be managed by category in order to help industries examine their carbon emissions and increase auditing capacities. The goal is to comply with requirements concerning information on carbon emissions of supply chains. Efficiency standards are newly added for industries to follow in order to lower carbon emissions from production processes and thus enhance their competitive edge. For vehicle manufacturers and importers as well as structures and facilities of new buildings, there are also new emission standards and regulations for reducing emissions. Newly set or modified emission sources up to a certain scale are mandated to reduce their environmental impacts via offsets based on a percentage of the

Strengthening climate governance with equal emphasis on carbon reduction and climate change mitigation



increased emissions they bring. Additionally, the revised act strives to stabilize carbon trading in line with the trend of carbon pricing. Enterprises and governments of all levels, either on their own or with others, are to propose voluntary reduction programs to carry out reduction measures accordingly. It will allow emitters to acquire reduction quotas and manage the uses, transfers, and trades concerning these quotas. Besides the above, relevant regulations are set to keep up with the world's ongoing development of post-carbon capture utilization and storage technologies. The goal is to help develop carbon-negative technologies, while managing factors that have an impact on the environment.

Collection of carbon fees for specific uses

Carbon pricing encourages emission reduction through economic incentives and is therefore widely recognized as one of the important reduction strategies. The revised act sets up a system to collect carbon fees

from domestic emission sources, which are then solely used to assist, subsidize, and reward carbon reduction endeavors and conduct relevant technological research that will facilitate reduction efforts and develop a low-carbon economy. As for the global economy and trade, with careful assessment, Taiwan will launch a carbon border adjustment mechanism on imported goods if necessary. Enterprises importing products listed under control are required to register the amount of carbon emissions associated with such imports and trade reduction quotas based on differences of emissions.

Public participation to build momentum for emission reduction

Climate change issues span numerous fields and cannot be appropriately addressed without everyone's participation. The revised act strengthens information disclosure and expands public participation mechanisms, mandating governments of all levels to invite all stakeholders

when formulating programs or plans concerning carbon reduction or climate change response. Then implementation results are to be disclosed. These programs and plans are also required to integrate comprehensive, community-based mitigation policies and measures. Meanwhile, the management mechanism and labeling system for product carbon footprints are strengthened to extend responsibilities of producers, motivating enterprises to produce and encouraging people to choose low-carbon products. Furthermore, the revised act enhances systems for nurturing needed talents and to develop relevant technologies, as well as introduces just transition into reduction and mitigation work.

The *Climate Change Response Act* has been reviewed by the Legislative Yuan and will enter the follow-up legal process. The EPA will continue to implement and plan various sub-laws to strengthen and complete the "climate-related legislative foundation" toward net-zero emissions.

Climate Change

Taiwan's Strategy Remains to Achieve Net-Zero Emissions by 2050 with Strengthened Social Dialogue

On 4 April 2022, the Working Group III of the UN Intergovernmental Panel on Climate Change (IPCC), released its 6th Assessment Report (AR6). It states that the world should immediately undergo profound emission reduction to limit global warming to 1.5°C as well as proposes strategies and prospects for major emission reduction by 2050. On 30 March, the EPA, the National Development Council, the Ministry of Economic Affairs (MOEA), and relevant agencies announced the “Pathway to Net-Zero Emissions by 2050”, whose 12 critical strategic plans align with the IPCC’s AR6. The EPA will use the plan as a basis for launching social dialogues in its next stage of policy formulation.

The IPCC’s Working Group I released the report, “Climate Change 2021: the Physical Science Basis”, on 9 August 2021, and its Working Group II released the report “Climate Change 2022: Impacts, Adaptation, and Vulnerability” on 28 February 2022. Then the next report, “Climate Change 2022: Mitigation of Climate Change”, came out on 4 April 2022. It points out that the decade from 2010 to 2019 had the highest accumulated emissions of anthropogenic greenhouse gases. Only with immediate and deep carbon reduction can humans achieve the goal of limiting global warming to 1.5°C. Changes in societal and economic behaviors are a feasible way to ensure reduction of global carbon emissions in the future. The following are report excerpts that cover revolutionary measures in all aspects that will lead to emission reduction:

1. The energy sector has to go through active transformation by lowering use of fossil fuels, developing and applying negative-carbon technologies, widely carrying out measures to achieve electric-motorization, enhancing energy efficiency, and utilizing alternative fuels like hydrogen energy and sustainable biofuels. For the industrial sector, the key lies in the more efficient, applied, and circular use of materials with minimal waste generation. Still, the goal to achieve net-zero emission poses considerable challenges.
2. Transformations in energy and resource use are a necessary part of changes to people’s daily routines, such as switching to walking, cycling, electric-motorized transportation, less air travel, and adaptable residences. On strategies concerning cities and urban areas, sustainable production and consumption are to be introduced in the planning of goods and services. The government can promote electric-motorization to lower emissions and also increase carbon absorption by creating green zones, ponds and planting trees, which all align well with the sustainable development goals (SDGs).
3. The transportation sector needs to reduce the demand for energy services and increase utilization of low-carbon technologies. One technology with highly promising potential is electric vehicles, which also should be coupled with breakthroughs in battery and energy storage technology. Alternatives such as hydrogen energy and sustainable biofuels ought to be considered for air and sea transportation. Furthermore, the construction sector has very high potential to reach net-zero emissions by 2050. The focus over the next ten years will be on urban renewal and expediting the introduction of critical mitigation technologies.
4. Intensifying investment to combat climate change can speed progress toward all climate goals. Current investment is clearly insufficient compared with what is necessary to reach 2030 goals. Every developed country will need to provide resources, increase public and private sector investments, and assist developing nations. Enhanced international financial collaboration is a key driver for achieving lower carbon emissions and fair transformation, which are essential to solving problems such as unfair channels for financing as well as to lower costs and risks due to climate change impacts. Investments and policies play an important role in driving innovation in low-carbon technologies, and every country

should assess the potential benefits, barriers, and risks that they face. Governments should strive to formulate and integrate policies to encourage innovation of systems that will help make breakthroughs and proliferate low-emission technologies worldwide.

5. Moreover, AR6 elaborates upon various keys to mitigation, such as technological transformation to achieve low-carbon emissions, policies, regulations, and economic measures such as carbon pricing. Technological transformations include management of energy needs, energy and material efficiency, circular flow of materials, reduction technologies, and changes in production – all

of which work alongside the removal of carbon dioxide.

Taiwan's "Pathways to Net-Zero Emissions by 2050" was released on 30 March in response to the global trend toward net-zero emissions, pressure on supply chains to lower emissions and the negative impact of extreme weather events. It covers transformation in the four main areas of energy, industry, daily life and society. The Pathways are founded upon the two administrative pillars of "research and development into technology" and "climate laws and regulations", and are supplemented by 12 key strategies for formulating and implementing action plans that take into account the increasing importance of the four transformation areas, towards

the goal of transition to net-zero emissions.

The EPA noted that Taiwan's strategies and plans for net-zero emissions are closely aligned with the UN's latest climate mitigation report. Public dialogues for the next phase will be launched with strategies mentioned in the UN's report, Taiwan's "Pathways to Net-Zero Emissions By 2050", based on the 12 key strategies. Inviting opinions from society will help everyone find a path to consensus among various viewpoints and help cope with and solve these difficult issues. The aim is to lay down the most solid foundation for Taiwan's overall development and use the transition to net-zero emissions as the main driver for innovation in the whole country.

Waste Management

Recycling and Reutilization of Plastics Among Industries

In recent years, the world has been increasingly focused on waste plastic disposal with many proposals concerning recycling. The EPA aims to facilitate various industries' practices in plastic recycling and reuse and reduce disposal via incineration. Assistance has been provided to industries, including key players like ASE Technology and TSMC, to reexamine the nature and types of waste plastics and put recyclable plastics back into industries for reutilization. This will lead to a high ratio of waste plastic reuse and eventually a circular economy.

Setting up the Office of Resource Circulation to achieve complete resource circulation

Recently, countries around the globe like nations in the EU, Japan, and Korea have proposed resource- and recycling-related policies one after another. There is an even more urgent need for Taiwan to fully recycle and utilize resources and materials, as 76% of resources needed in Taiwan are imported. In light of that, on 1 July 2021, the EPA set up the Office of Resource Circulation to specifically

focus on the overall planning and management of resources. Categorized into four groups -- biological materials, organic chemical materials, metal and chemical substances, and inorganic recycled aggregates -- all materials and resources are incorporated for thorough management throughout their life cycles. The Office is fully committed to turning all wastes into usable energy and resources to optimize reutilization and minimize waste disposal, achieving total resource circulation.

In addition, ten agencies -- including offices set up by the Renewable Resource Recycling and Reuse Promotion Committee to handle the recycling of different materials, the Ministry of Economic Affairs, the National Science and Technology Council, and the Council of Agriculture--are joining hands to promote resource recycling.

Establishing a resource recycling chain in all aspects of everyday life and various industries

Facing issues like limited fossil

resources, over-use of plastics, and large volumes of garbage, the UN is drafting an agreement on plastics. Global organizations like the MacArthur Foundation are proposing plans for waste reduction, material replacement, and recycling. The EPA already has policies in place to reduce plastics in everyday lives of people and recycle packaging materials in retail stores. Now its endeavors are being extended to cover industries. Other than demonstrating the current recycling results in various industries, the EPA will establish a resource recycling chain by further connecting upstream, midstream, and downstream industries and enhancing resource circulation efficiency via technology research and regulatory updates.

The EPA has been examining common waste plastics generated by different industries. In the case of the technology industry, many items were once not reused at all except for power-generation via incineration. Now recycling and reuse enterprises are able to identify materials and assess their recyclability. A model can be set up to take in recyclable materials so that more materials can be reutilized. With innovative recycling and reuse technologies, reuse capabilities for plastics are increased by inventories and collection and sorting systems adopted by industries for plastic wastes.

Innovating and developing reuse technologies for plastic wastes

Taiwan possesses mature technologies for plastic recycling and continues to develop innovative products and technologies. For

instance, Horng En Plastics has introduced the recycling of marine waste to increase benefits for the environment, while Da Fon Environmental Technology helps production sources to reduce waste and reutilize post-consumer recycled plastics (PCRs) right on the site. Chien An has developed technology to separate aluminum-plastic composite materials, and Ampack produces customized products with recycled plastic packaging materials from production sources. All of the above contribute to optimization of existing plastic circulation routes.

Approximately 28% of the 240,000 metric tons of plastic waste annually generated by domestic enterprises are reutilized. To increase the reuse percentage of plastics, the EPA is actively taking resource circulation models used for residents' daily living and expanding their use in various industries and endeavors to establish a plastic recycling and reuse network among industries. In this way, industries can transform themselves and solve difficult plastic waste problems through the introduction of circulation models.

ASE Technology sets up recycling center and TSMC reutilizes 8,000 metric tons of waste plastics

TSMC (Taiwan Semiconductor Manufacturing Company Ltd.) is an example of the technology industry taking innovative measures. With its material packaging guidebook to regulate suppliers concerning the use of materials, TSMC has recycling and reuse enterprises stationed in their factories to help sort wastes, combining innovative technologies to develop more

than 20 products from recycled materials. Such efforts led to the reutilization of 8,000 metric tons of waste plastics in 2021, with a reutilization ratio of 66%. Meanwhile, ASE Technology (Advanced Semiconductor Engineering, Inc.) has set up a recycling center, which collects waste plastics generated by all factories. These plastics are then sorted into many items for reuse based on their material characteristics and nature. The result was the reutilization of 4,300 metric tons of waste plastics in 2021 with a reutilization ratio of 68%.

Replicating successful circulation models among industries via waste reduction at both production and disposal ends

In recent years, many industries have been working on waste reduction throughout their production chains in order to achieve sustainable development and meet their corporate social responsibilities (CSR). The EPA notes that waste reduction requires effort at both the production and disposal ends. In other words, less use of materials will reduce the amount of waste at the production end, and proper sorting will increase reuse at the disposal end. Via efforts at both ends, industries can reexamine the categories and natures of their waste plastics before adjusting reuse channels to lessen the workloads of incinerators. In the future, successful circulation models can be replicated in different industries to help increase recycling capacities and benefits and allow more resources to be appropriately utilized.

Recycling

Ban on Manufacture, Import and Sale of Food Packaging Containing PVC Takes Effect 1 July 2023

The EPA has announced that manufacturing, importing, and selling polyvinylchloride (PVC) food containers will be limited from 1 July 2023. Targeted items include flat packaging, containers announced as recyclables, and non-flat disposable tableware. Such limits aim to reduce the harmful risks that PVCs pose to the environment and human health.

The phasing out of food packaging containing PVCs has become a global trend, with countries such as South Korea and New Zealand having announced measures to gradually phase out this type of packaging. Stabilizers added to PVC-containing products pose potential threats to human health. Also, PVCs are susceptible to corrosion by oil, which can easily cause leakage of plasticizers into food and lead to exposure to environmental hormones and carcinogenic risks from PVCs. Finally, the burning of discarded PVCs releases dioxins and heavy metals. A small percentage of

these enter the air via incinerator chimneys, while the rest stay in incinerator fly ash and bottom ash, also potentially causing environmental contamination.

To reduce pollution caused by PVC-containing products at source, the EPA has formulated relevant controls based on Article 21 of the *Waste Disposal Act* (廢棄物清理法). From 1 July 2023, prohibitions will be effective on the manufacture, import, and sale of PVC-containing products including flat packaging, containers announced as recyclables, and non-flat disposal tableware containing a

number of food items. These items include food products, animal food products, animal feed, dairy products, seasonings, vinegar, salt, edible oils, beverages, packaged drinking water, alcohols, medicinal alcohols, and solutions for oral internal use that contain amino acids or multiple kinds of vitamins. However, products manufactured or imported before the effective date are not subject to the ban. Currently, all enterprises have alternative containers made from other materials. The EPA expects this control measure to reduce food packaging containing PVCs by 79 metric tons every year.

Water Quality

Efforts to Remove Garbage from Rivers Yield Good Results

Efforts to remove garbage from rivers by Taiwan's 22 city and county governments, the 10 River Management Offices of the Water Resources Agency of the Ministry of Economic Affairs, and the 17 Management Offices of the Irrigation Agency of the Council of Agriculture (COA) yielded good results in 2021. A total of 12,865 instances of garbage removal and 11,265 inspections were carried out by all agencies resulting in a total of 9,650 metric tons of garbage removed. Bags of garbage and plastics made up the bulk of human-generated garbage and accounted for 299 metric tons.

As the guardian of river water quality and environments, since 2018 the EPA has been urging ministries and relevant agencies of local governments to conduct garbage interception and removal from rivers to prevent garbage from flowing into the ocean. Removal management mechanisms were established to systematically clear and manage garbage from rivers.

Annual garbage removal audit plans were also carried out to enhance the efficiency of removal. Aspects that are audited include garbage removal operations, inspection operations, and river cleaning activities.

In the annual audit of 2021, a total of 12 agencies received high distinction awards and 10

agencies received excellence awards. Among those receiving high distinction awards were Taipei City, Tainan City, Hsinchu City, Changhua County, Kinmen County, Pingtung County, Hualien County, Taitung County, the Second, Third and Fourth River Management Offices of the WRA, and the Hsinchu Management Office of the Irrigation Agency, COA.

At present, manual removal or interception nets are employed by the majority of counties and cities in removal operations while interception ropes, boats and mechanized equipment are also used as auxiliary tools. The ecological diversity and the wide range of water environments in Taiwan make cross-ministerial cooperation necessary in maintaining cleanliness of rivers. Also for that purpose, the EPA summons county and

city governments, the WRA, and the Irrigation Agency to annual meetings every year to constantly upgrade management mechanisms. This year, the EPA planned to conduct audits, achievement sharing and award events, as well as the annual meeting to share and discuss results gathered from the past year. The management mindsets of the participants were further strengthened through sharing experiences across agencies,

exchanges between groups and on-site visits.

The EPA calls for all citizens to adopt a green lifestyle in which the recycling and reprocessing of garbage can reduce the garbage that flows into rivers and the ocean, and urges the public to reduce the use of single-use products so as to reduce waste and make river environments more pleasant.

Soil and Groundwater

Soil and Groundwater Remediation Technology Certification Will Help Environmental Enterprises Enter International Market

To carry forward the achievements of soil and groundwater pollution remediation of the past 20 years, the EPA launched in 2021 the soil and groundwater pollution investigation and remediation technology certification system, with plans to implement a three-stage certification scheme consisting of Delisted Site Remediation Technology Certification, Remediation Technology Effectiveness Certification, and Environmental Technology Verification.

The EPA explained that it is often difficult for parties responsible for pollution to select appropriate remediation technologies and strategies to counter soil and groundwater pollution incidents. The first step in the EPA's implementation of the soil and groundwater pollution investigation and remediation certification system is to choose companies with outstanding remediation technology and good remediation project management, and that had operated in pollution sites delisted within the last five years. They would then be awarded with delisted site remediation technology certificates in both Chinese and English. A summary of relevant information, such as cases of successful remediation, general company information and

remediation processes would be placed on a website for the public to reference. With the issuance of these certificates, the compilation of domestic cases detailing different types of sites and environmental conditions will enable the public to conduct quick inquiries and consultations. The certificates will also serve as proof of work performance for remediation companies to promote their services.

The EPA stated that in 2022 it would continue to implement the Soil and Groundwater Pollution Investigation and Remediation Technology Effectiveness Certification, beginning with self-declarations by remediation companies of remediation technology effectiveness, followed

by the issuance of technology certificates upon review and approval by experts. The scope and effect of applicable conditions will be listed on the front so that the functions, limitations, and effects of domestic technologies can be accurately evaluated and the technologies quality-checked to ensure that the public can obtain good technical services.

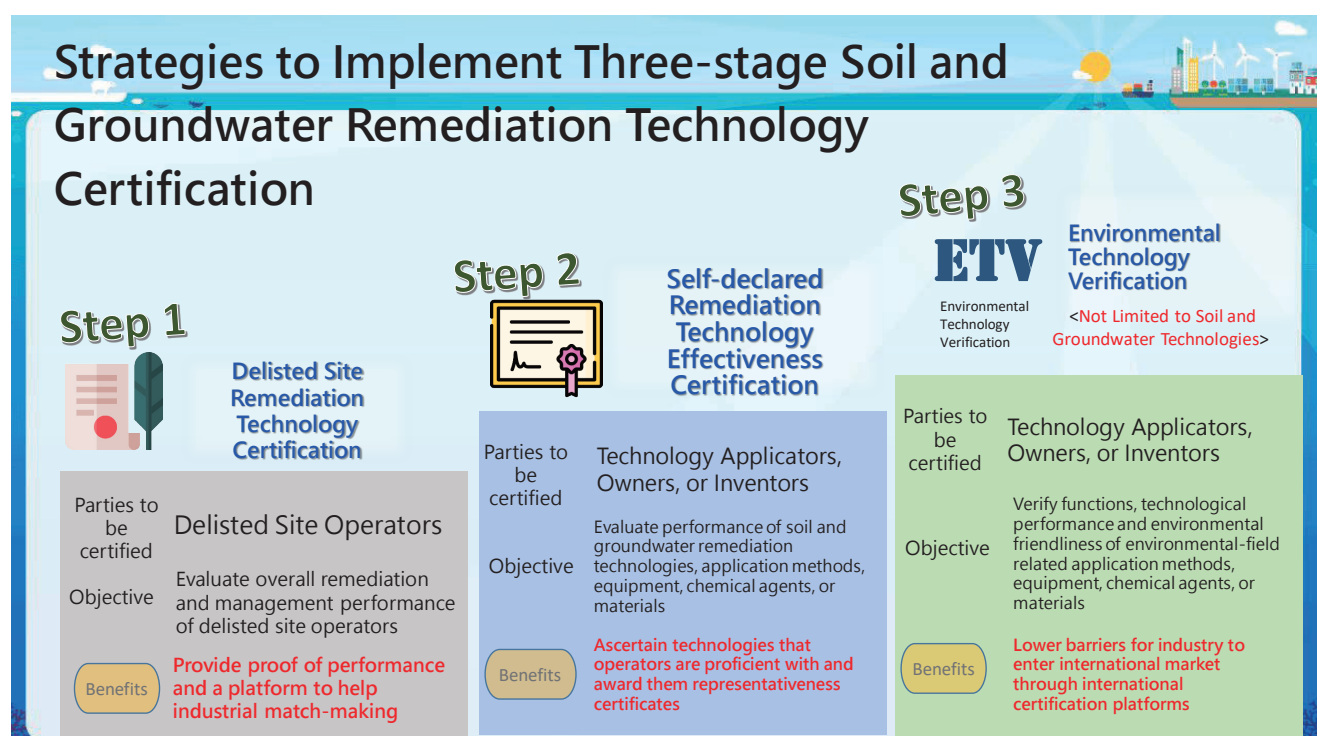
To assist domestic remediation companies and the environmental protection industry to enter the international market, the EPA will establish the environmental technology verification system based on the ISO 14034 Environmental Technology Verification standard. Starting from soil and groundwater remediation technologies and

covering other environmental protection technologies developed domestically over the years, the performance, innovativeness, and environmental friendliness of these technologies will be systematically evaluated. Then through mutual certification by international organizations, the system could help form a “national team” representing the domestic

environmental protection industry that will help Taiwan’s innovations enter the international market and help solve environmental problems worldwide.

The EPA emphasized that implementing the three-stage soil and groundwater pollution investigation and remediation technology certification system

will accelerate the remediation of domestic polluted sites, establish technological models and provide guidance for the upgrade, improvement, and eventually internationalization of domestic technologies. Visit the Soil and Groundwater Pollution Remediation Funds website (<https://sgw.epa.gov.tw/Public/misc/service>) for more information.



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