

# Major Environmental Policies

April 2022

## 1. Implementation of Air Pollution Control Plan Achieves Remarkable Big Data Prospects in Environmental Monitoring

The program “Smart Internet of Things (IoT) - Intergenerational Environmental Management”, aimed at providing precise, high-quality environmental monitoring data as well as convenient, stable, and secure digital environmental services, has entered its second year of implementation. The EPA will continue to carry out measures such as optimizing the IoT system for environmental sensing, expanding smart applications of the environmental management network, and exploring technologies across different fields and industrial innovations. Efforts will also be taken to continue enhancing the capacities of air and water quality monitoring networks in order to provide the most immediate and precise data.

Environmental monitoring is the groundwork of environmental protection, and aims to understand environmental statuses and long-term environmental changes to serve as references for policy formulation. The EPA is in charge of information platforms for air and water quality monitoring, which are used to set up monitoring networks for air quality and rivers. This along with monitoring data of other departments contribute to a comprehensive environmental monitoring system in Taiwan.

With new-generation technologies, all monitoring spots are linked together to form a monitoring network that provides real-time environmental quality data that is useful for formulating national strategies for environmental controls. In addition, various databases of different departments are linked together to integrate all environmental information which are then connected to an overall environmental information monitoring network through various environmental information platforms.

The current environmental monitoring measures have two ultimate goals:

- Obtain precise, high-quality environmental monitoring information
- Provide convenient, stable, and secure digital environmental information services

Adopted strategies include:

1. Obtain precise, high-quality environmental monitoring information
2. Provide convenient, stable, and secure digital environmental information services
3. Set up a domestic environmental quality database with high-quality control
4. Provide services with advanced information and communication technologies
5. Extend governmental use of technologies by integrating administrative information systems
6. Develop and promote applied technologies based on environmental sensing IoT

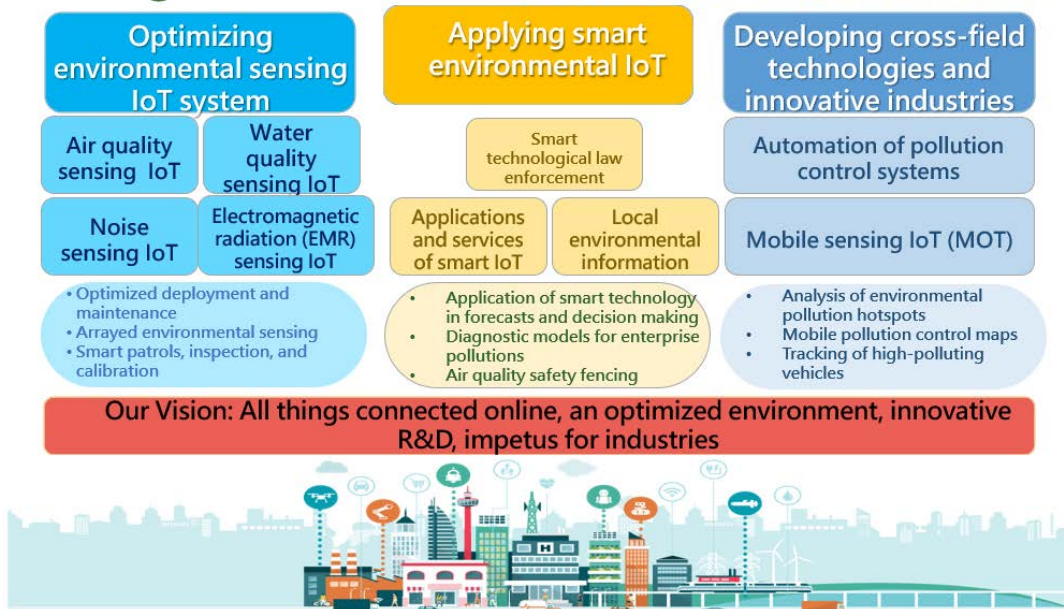
### Smart IoT - Intergenerational Environmental Management

As part of the Forward-looking Infrastructure Development Program (2021-2025), the “Smart Internet of Things (IoT) - Intergenerational Environmental Management” program has a budget of NT\$916 million. It involves three main areas: optimizing the environmental sensing IoT system; extending smart applications based on the environmental monitoring network, and; exploring technologies across different fields and industrial innovations.

Take for example air and water quality monitoring in the first area, optimizing the environmental sensing IoT system:

# Smart IoT: A new era of environmental management

Forward-Looking Infrastructure Development Program (2021-2025) with a total budget of NT\$916 million



## (1) Deployment and application of air pollution sensing

### 1. Deployment of air pollution sensors

The EPA applies the IoT for air pollution sensing, having worked with local governments and the Central Weather Bureau (CWB) to deploy approximately 10,000 sensors. Located in six municipalities and 16 cities and counties and covering 282 administrative areas and 111 major industrial and scientific parks across Taiwan, these sensors are able to detect the air pollution status of over 80,000 factories listed under control.

### 2. Assistance for and results of environmental inspections

With data such as pollutant types and pollution hotspots derived from the analysis of sensing data, the EPA is able to collect and compare permits, registrations, and other information on suspected targets to screen out potential polluting industries and enterprises. Evidence collection has advanced with scientific instruments, and special inspection projects are set up and carried out. From 2017 to March 2022, environmental law enforcement efforts led to 850 violations being reported after inspections, the issuance of NT\$178 million in fines, and the collection of NT\$280 million in air pollution control fees.

## (2) Deployment and applications of water quality sensing

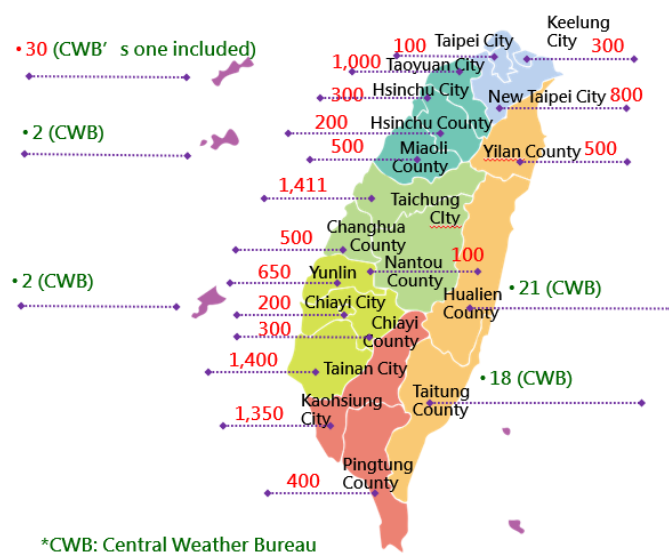
### 1. Deployment of water quality sensors

The EPA has been working with local governments on its water quality sensors project since 2020. As of March 2022, 17 county and city governments have participated, having together deployed 205 mobile water quality sensors and 360 hand-held ones. This allows the quality of water bodies to be monitored with real-time data sensors.

### 2. Results for water quality sensing applications

The EPA's Department of Environmental Monitoring and Information Management, the Soil and Groundwater Remediation Fund Management Board, and the Department of Water Quality Protection prevent farmland pollution using water sensors. The Irrigation Agency also cooperates, deploying water quality sensors in agricultural irrigation ditches in Kaohsiung City and Chunghwa County that enables analysis of abnormal water quality periods to help increase efficiency of inspections. With the combined efforts of the central and local governments, between 2020 and February 2022, environmental law enforcement found 26 violations and issued fines amounting to NT\$24.4 million.

- Approximately **10,000** sensors deployed
- Located in six municipalities and 16 cities and counties
- Covering **282** administrative areas and **111** major industrial and science parks across Taiwan
- The sensors are able to provide the air pollution status of over **80,000** factories listed under control



### Deployment of air pollution sensors

#### Establishment of a well-rounded air quality monitoring network

##### (1) Improvement of air quality monitoring network capacities

The EPA strives to enhance its capacity to monitor low-concentration pollutants by improving the instruments used in air quality monitoring stations. Better instruments for analyzing particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>), nitrogen oxides (NO<sub>x</sub>), sulfur dioxide (SO<sub>2</sub>), carbon monoxide (CO), and total hydrocarbons (THC) will improve the precision of measurements and provide air quality monitoring data of such high quality that 98% of it can be utilized.

Also, equipment at air quality monitoring stations is being redeployed according to cold and warm areas, for more stable temperature control and to save energy.

##### (2) Multiple channels provide air quality information services

In order to provide comprehensive air quality information to the public, the Taiwan Air Quality Monitoring Network (<http://airtw.epa.gov.tw/>) has been developed for the public to make inquiries about the latest changes in air quality. For gaseous pollutants, real-time monitoring forecasts for the next hour are available by the minute. The website reached 14.82 million visits between 2021 to March 2022. Also, the cellphone application Environment Info Push can be used to obtain the air quality index (AQI) forecast for the next 12 hours. Users can look up air quality information whenever they want and take better protective measures by setting alarms for different concentrations based on their own sensitivities to air pollutants. Over 580,000 people had downloaded the application as of March 2022. Additionally, text messages are sent out to people in surrounding regions in real-time if air quality monitoring stations detect concentrations of particulate matter that can lead to the AQI exceeding 200.

##### Future prospects

As for long-term goals, the EPA will continue developing the environmental monitoring and investigation system to ensure the effective operation, processing and management of environmental monitoring data. Efforts will also be taken to continue collaborating with other departments to share data in order to get the most complete picture of the overall environmental status, trends, and improvement results, to serve as references for policy formulation.

## **2. 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 6<sup>th</sup> 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 twelve 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.

### **3. Emergency Response Information Center Operates 24/7 as Model of Innovation and Application of Green Chemistry**

**To strengthen the nation's chemical substance control and promote green chemistry, the EPA invited members of the National Chemical Substance Management Board and officials from authorities in charge of controlling chemical substances to visit the Emergency Response Information Center (ERIC) of the Industrial Technology Research Institute (ITRI), which has received the Green Chemical Application and Innovation Award for two consecutive years. The tour not only aimed to promote green chemistry but also helped the visitors to understand the response system in times of disasters involving toxic and chemical substances.**

The Green Chemistry Application and Innovation Award was set up in 2018 to encourage all fields to be dedicated to green chemistry. Actual practices include research and development of alternatives with low-pollution and low-toxic manufacturing, reduced use of toxic and chemical substances, disaster prevention, and enhancement of disaster response capacities. Over the past two years, 29 enterprises have received the award. The two-time award-winner the ERIC has been honored for its efforts and contributions in green chemistry.

The ERIC is in charge of monitoring and consultation on dangerous chemical accidents under the commission of agencies like the Toxic and Chemical Substances Bureau (TCSB) and the Industrial Development Bureau (IDB). It provides the most immediate consultations on emergency response in real-time for disaster response units like environmental bureaus and fire departments. In recent years, even technologies like artificial intelligence, augmented reality, virtual reality, and mixed reality are utilized to set

up training scenarios that simulate possible disaster scenarios along with real smoke and water pressures. It greatly enhances training authenticity and increases personnel's response capabilities under different situations.

Other than the enhancement of equipment, technology, and staff training, the ERIC is dedicated to promoting applications of knowledge and resources for disaster prevention by working with the EPA, city and county environmental bureaus, and enterprises in technology and chemical industries to organize regular drills and tests. Over 28 courses and 10 scenarios will be designed for future promotion campaigns. Additionally, the ERIC provides chemical consultation services all year around, effectively enhancing the industries' and academia's capacities in chemical disaster prevention and response.

The EPA expressed that the tour not only promoted green chemistry, but also encouraged the visitors to understand the emergency response system and experience the simulation of the emergency response environment. The EPA will invite colleges and universities to visit the Green Chemical Application and Innovation Award winners to learn about green chemistry, root down the concept, and plant the seeds of green chemistry. Information on the A Green Chemical Application and Innovation Award can be found through the website of the TCSB (<https://topic.epa.gov.tw/gcai/mp-9.html>).



Experiencing the simulation of emergency response environment through virtual reality

#### **4. Creating the Best Public Restroom Experience**

**Statistics show that up till the end of 2021, 93% of over 47,000 public restrooms in the nation were rated excellent, a major accomplishment for both the public and private sectors. The cleanliness of public restrooms depends not only on the responsible agencies and cleaning crews, but also the public's willingness to leave a clean environment for the next user. The EPA will continue to endeavor to promote public restroom etiquette, including gratitude to those maintaining clean public restrooms as well as treating them as one's own bathrooms at home.**

To enhance the living and environmental quality for all, the EPA has been endeavoring to maintain a public restroom environment that is not wet, dirty, or smelly and provide a comfortable and safe experience in public restrooms via a rating and evaluation system. For more than 47,000 public restrooms listed for control, statistics show that as of the end of 2021, 93% were rated excellent, clear evidence of enhanced environments under the joint efforts of the public and private sectors.

Private enterprises like CPC Corporation and President Chain Store Corporation have shouldered their corporate social responsibilities, despite the impacts of the COVID-19 pandemic, with increased cleaning and sanitation work in their public space and restrooms. While people get to enjoy the convenience and

security of these restrooms, these places have also become social gathering spots because of the improved restrooms. To acknowledge such quality-enhancing practices, the EPA will hold competitions this year to honor those that perform well in order to urge enterprises to improve their service quality and build a better corporate image.

Recent visits to public restrooms and national polls have revealed that the public's major complaints are mainly about restrooms in traditional markets and parks. As a result, the EPA will subsidize maintenance and renovations to improve the environment of these restrooms. An exit strategy is also in place, which will be activated for public restrooms that are old, rarely used, or keep failing to maintain their quality so as to reduce dirty spots and management agencies' workload.

By setting examples for private enterprises to follow, the EPA plans first to subsidize improvement tasks for public restrooms in local governments' charge that have not attained an excellence rating. Enterprisers in private sectors are urged to provide quality public restrooms as another form of customer service, and the public is asked to treat public restrooms with respect and gratitude and leave a well-maintained one for the next user.



**Taitung Indigenous Cultural and Creative Industries Park integrates local culture into public restroom (2021)**

## **5. Changhua Coastal Industrial Park Treatment Facility BOT Project Passes First-stage EIA**

The EPA recently announced the review conclusion of the Environmental Impact Statement of the *Resource Reutilization and Treatment Center BOT Project in Changhua Coastal Industrial Park, Industrial Development Bureau, the Ministry of Economic Affairs (MOEA)*, determining that the second-stage EIA was not required. The approval was given because this project was to make waste (sludge) treatment (for reuse) available to an Industrial Development Bureau (IDB) wastewater treatment facility and was in line with the development master plan and compatible with related projects in the surrounding areas.

The EPA explained that after considering the opinions of the EIA review committee, experts and scholars, and the responses from the developer, and after the evaluation on the possible impacts of this project on the living, natural, and social environments, as well as the economy, culture and ecology, a professional judgment was made that no circumstances as those listed in Article 8 of the *Environmental Impact*

*Assessment Act* and in Article 19, Paragraph 1, subparagraph 2 of the *Environmental Impact Assessment Enforcement Rules* were found, and that the environment impact statement sufficiently provided the information required for the review and assessment. Hence the second-stage EIA was not required. Comments were summarized as follows:

This project aimed to solve sludge disposal problems faced by an IDB wastewater treatment plant, insufficiency of general industrial waste treatment facilities and problems such as illegal dumping of wastes, and to achieve the goal of waste reduction and recycling. The project was assessed to be in line with the development master plan, and no significant conflict or incompatibility was found with related projects in the surroundings.

The EIA statement for this project detailed investigation, predictions, analyses or assessment on "air quality", "noise and vibration", "hydrology and water quality", "soil", "topography, geology, earthquakes and faults", "waste", "land ecology", "aquatic ecology", "landscape and recreation resource environment", "socioeconomic environment", "traffic environment", "cultural environment", "health risk assessment", "environmental sanitation" and other areas during construction and operation. Measures were proposed to prevent and mitigate possible impacts in affected areas.

After a comprehensive assessment, the development project has been found to:

- (1) cause no significant adverse effects on environmental resources and environmental characteristics during construction and operation.
- (2) cause no significant adverse effects on the habitat of protected or rare and valuable species of animals and plants
- (3) cause mild ecological impacts on the waters and sea areas during construction and operation.
- (4) cause no infringement on local environmental quality standards or surpass the tolerance level
- (5) cause no significant adverse impacts on the migration, rights and interests of the vast number of local residents or the traditional way of life of ethnic minorities.
- (6) cause no significantly adverse effects on the health or safety of the population.
- (7) cause no significantly adverse effects on the environment of other countries.
- (8) be an environmental protection project, and cause no significant impacts deemed by other competent authorities.

Conclusion: This project has passed the EIA review, and the developer shall implement what is contained in the EIA statement and the review conclusions accordingly.

## **6. Near 90% Satisfaction Rate Marks Anniversary of Acoustic Camera Deployment for Law Enforcement**

**The EPA started implementing acoustic cameras for law enforcement on New Year's Day, 2021, and as of the end of January 2022, 86 sets of equipment had been installed. During that period, there were 1,216 cases where fines were issued to vehicles determined to have clearly exceeded the noise limit during use, and 5,114 cases were notified for inspection. Acoustic cameras have been effective in curbing noisy vehicles, and were welcomed by roadside residents. The policy satisfaction rate was nearly 90%.**

Both the EPA and local governments have been receiving letters from the public every month requesting the installation of acoustic cameras in hopes that they can be included as standard monitoring equipment on the roads near their residence. In response to the requests, the EPA proposed integrated mid- to long-term plans to install 306 sets of the equipment across Taiwan by 2027 with as much as NT\$100 million in subsidies from the central government.



Different control standards are set for different speed limits. The noise control standard is set at 86 decibels on road sections with a speed limit of 50 km/h or less and 90 decibels on road sections with a speed limit of 50 to 70 km/h. The EPA stated that not only noisy vehicles were deterred by acoustic cameras, illegally modified or improperly driven vehicles could also be reported and notified for inspection.

The EPA stated that since the launch of technological law enforcement, local governments have been actively following the policy to install and use acoustic cameras. The EPA periodically invites local governments to share and review their experience to continuously improve their law-enforcement skills with acoustic cameras. Such efforts resulted in 1,216 reports nationwide. There were also a total of 30 appeals, of which 60% were rejected and only two of them succeeded in revocation. This shows that the technological law enforcement in the past year was effective to deter noisy vehicles.

At present, 20 counties and cities in Taiwan have launched technological law enforcement, and planning is underway in Penghu County. The EPA has compiled six features of the local technological law enforcement in the year 2021:

1. Most penalties: New Taipei City, with 19 installations and a total of 353 tickets issued, which accounts for 30% of the total number of penalties issued, ranking first in the country;
2. Most warnings: Taichung City, with a total of 333 acoustic camera warning sign placements, is the city with the widest distribution of warning signs in the country; up to 238 violations were reported through mobile detection.
3. Strongest crackdowns in the mountain route: Tainan City. Vigorous enforcement with acoustic cameras in Provincial Highways 172 and 175 resulted in the reporting of 109 cases, returning peace and quiet to the residents of mountainous regions;
4. Most diversified applications: Miaoli County, aside from apprehending vehicles exceeding the noise limit, conducted inspections on the exhaust of modified vehicles, cracking down on emission pollution at the same time.
5. Strongest deterrence: Taipei City. The number of public complaints in 2021 decreased by 42% compared with that of 2020;
6. Most cases per equipment: In Changhua County, the average number of reports per equipment reached 50, the highest in Taiwan.

The EPA stressed that relevant subsidies from the *Forward-Looking Infrastructure Development Program* and public construction funding were successfully obtained in 2021, enabling local environmental protection bureaus to purchase equipment for technological law enforcement. Estimated demand was 306 sets by 2027 based on the national overall planning.

## **7. Air Pollution Fee Collection Regulations Amended to Strengthen Management of Reported Data**

The EPA announced the revised *Air Pollution Control Fee Collection Regulations* (空氣污染防制費收費辦法) on 24 March 2022. The revision had two focuses. First, a reporting threshold was set regarding air pollution fee, exempting about 2,000 listed premises from reporting. This will result in reduction of around 70,000 reports that have to be reviewed annually by the EPA, saving about NT\$30 million in

costs. In addition, the number of installments for the payment of owed fees has been increased to 36. Second, in order to strengthen control, the maximum air pollution fee as determined by data verification can be adopted to deter enterprises from falsifying data with the intent of paying less air pollution fee.

## Revisions of Air Pollution Control Fee Collection Regulations

	Current problems	Revisions
1	Creating reporting options	The air pollution fee based on inspection results or emission coefficients, either one of the largest value can be used.
	Improving raw CEMS data for inspection and reporting controls	Regulations concerning the verification of data from CEMS have been added. Violation patterns and recalculation are also specified.
2	Maximum period over which to collect evaded air pollution fees not specified	Over the five years prior to the quarter when enterprises are notified by competent authorities can be used to determine the payable amount.
3	Small pollution sources (exemption from air pollution fees) account for about 50%, which consumes the reviewing cost	The threshold to report emissions of nitrogen oxides, sulfur oxides, volatile organic compounds and particular matter was stipulated to be over 10 kg per quarter.
4	Owed fees too high to afford	The number of installments for the payment of owed fees has been increased to 36

\*CEMS: continuous emission monitoring system

The EPA expressed that the main purpose of this amendment is to address problems and disputes encountered by local environmental protection bureaus and enterprises in implementing the regulations. Control measures relevant to the collection of air pollution control fee have been amended to make the provisions more reasonable and pragmatic. Regarding the air pollution control fee report of stationary pollution sources, a threshold for reporting emissions was added to reduce administrative load. The threshold to report emissions of nitrogen oxides, sulfur oxides, volatile organic compounds and particular matter was stipulated to be over 10 kg per quarter.

Regarding the provisions for the payment of owed fee in installments, when the amount owed is more than \$20 million, the number of installments can be extended to 36 to alleviate enterprises' burden of paying owed air pollution fee. In addition, regulations concerning the verification of data obtained through online connection from continuous emission monitoring systems installed in smokestacks have been added to prevent public and private premises from falsifying continuous monitoring data to pay less air pollution fee. An inspection mechanism has been added for environmental authorities to verify compliance of the original data in cases of incompliances, and to determine air pollution fee based on inspection results or emission coefficients. In such cases, the largest value can be used to determine the air pollution fee.

Further, a maximum period over which data can be backtracked to recalculate or collect evaded air pollution fees has been added in an effort to settle disputes between competent authorities and public or private premises. If incompliances are found, data over the five years prior to the quarter before the time when enterprises are notified by competent authorities to submit data for verification can be used to determine the payable amount.

## **8. Reducing Fertilizer Pollution with Biological Control Technologies to Safeguard Water Quality**

To reduce nutrient pollution in water bodies, the EPA has developed homegrown biological control technologies, such as microbial agents, biochar and bio-fertilizers, which are effective in fixing nitrogen, dissolving phosphorus, improving soil environment and increasing nutrient uptake efficiencies of plants. Farmers participating in the program have come forward to share the results, showing that the technologies not only can reduce the loss of nitrogen and phosphorus nutrients by 20-70%, but can also save 16% to 41% of fertilizer expenses. As a result, production can be increased by 7% to 24%, and a triple-win scenario of improving water quality, the economy and agricultural products' quality can be accomplished.

The EPA pointed out that the world is facing the pollution of water sources caused by excess nitrogen and phosphorus in the soil, a result of over fertilization. Aiming to protect water quality, the EPA has been carrying out measures such as on-site treatment, constructed wetland, grass belts and grass ditches to prevent pollution from affecting water sources. And now its measures are focusing on the source of the problem by promoting changes in fertilization methods, use of biological control technologies or other measures related to rational use of fertilizer in the agriculture industry. These measures will help to reduce the use of fertilizer, improve the nutrient uptake efficiency of plants, and decrease pollution.

The EPA indicated that the use of biological control technologies to promote eco-friendly agriculture is now an international trend as countries in Europe, North America and Asia have successively introduced relevant policies. Combined with the measures of the Council of Agriculture to promote rational use of fertilizer, the use of biological control technologies can greatly reduce nutrient pollution in water bodies while improving the quality of farm products and creating enjoyable water environments.

In an effort to reduce the impact of agricultural fertilizers on the water quality in the catchment areas of reservoirs, the EPA has selected the catchment areas of Feitsui Reservoir and Shihmen Reservoir as targets for future promotion. Measures promoted in these areas, where the tea plantations in Pinglin and Shiding Districts of New Taipei City and peach farms in Fuhsing District of Taoyuan City are located, are expected to help reduce about 850 metric tons of fertilizer utilization, or 15% of the current usage, making farming more eco-friendly.

The EPA stated that due to excessive fertilization in some farming activities, nitrogen and phosphorus nutrients that cannot be absorbed by crops often enter water bodies and cause pollution. Studies have shown that in conventional fertilization, only 20% to 50% of the fertilizer is absorbed by crops, and the remaining excess chemical fertilizer infiltrates and pollutes water bodies, affecting the normal uses of river water.

From 2019 to 2021, the EPA conducted farmland experimentation and promotion of biological control technologies with National Taiwan University, using microbial agents, biochar and biological fertilizers to reduce the use of fertilizers. Scholars culled microbial agents from Taiwan's domestic soil and water sources and gave them to farmers to use in trials. They then searched the most effective ways of using these agents from repeated trials and continued record keeping.

Six crops including *Lactuca sativa* (lettuce), *Brassica oleracea*, *Prunus salicina* (Chinese plum), bamboo shoots, pitaya, and *Allium tuberosum* (Chinese leek) were put to onsite trials in six farms including the National Taiwan University experimental farm. The results showed that the use of biological control technologies to replace 50% of fertilizer use caused the decrease of the total nitrogen and phosphorus

nutrient loss in run-off and infiltration together by 20% to 70%, compared with the full amount of fertilizer use. At the same time, the technologies saved around 16% to 41% of fertilizer expenses and increased the yield by 7% to 24%.

"I hope that friends who grow peaches on Lala Mountain will be willing to use them," said Chin Ming-Da, a farmer who grows peaches in Fuhsing District, Taoyuan City. He said that when he first started using the new method, he was very doubtful and afraid of losses, and only dared try them on roughly 2,000 square meters of land, which accounted for just 1/5 of the planting area. After prolonged observation and record keeping, he found that the yield and quality of his fruits had grown by 20%, and the revenues had also gone up by 20% to 30%. He is therefore pleased to recommend the practice to other peach farmers.

## **9. Rewards for Green Point Members for Bringing Own Cups Continued**

**Recently, the EPA organized the "Bring your reusable cup and redeem points for designated drinks" event, which was enthusiastically received by Green Point members. On the first day of launch, all the designated drinks were redeemed, reflecting the public's strong support for the policy of green consumption and bringing one's own cup. The EPA then decided to continue to promote the event and increase the number of drinks available for redemption to 6,000 per day in an attempt to encourage more people to adopt green lifestyles.**

To mark World Consumer Rights Day, the EPA launched a week-long "Bring your own cup and redeem points for designated drinks for free" event for Green Point members from March 15 to 21. The 3,000 cups of drinks available per day for redemption, the originally planned quota, were totally redeemed with green points on the first day of the event. To thank the public for such a strong support for the environmental event, the EPA decided to continue to reward Green Point members for bringing their own cups and increase the quota to 6,000 cups of drinks per day. Green Point App members could go to the app's participating retailers with their own reusable cups and redeem green points for designated drinks (made on-site only). An equivalent amount of green points will be rewarded to members after the event.

If a new member participated in the event with a referrals code, both the new member and the person who did the referral would acquire 2,000 points. Participants could also get green points by purchasing "green products," getting one point for every NT dollar spent. The higher-than-before quantity of drinks redeemed on the first day of the event showed the increasing public support for "bringing one's own cup."

## **10. Competition for 4th National Enterprise Environmental Protection Awards Launched**

**The selection process for the 4<sup>th</sup> National Enterprise Environmental Protection Awards, the highest environmental honor for domestic enterprises, has started. Applications will be accepted from 15 April to 16 May. Enterprises that are willing to participate should prepare and upload their registration materials to the "National Enterprises Environmental Protection Awards" website within the registration period.**

Last year (2021) President Tsai declared that transitioning to net zero by 2050 is a goal of Taiwan, and instructed government agencies to plan and promote it in a forward-looking and pragmatic way, hoping that enterprises and the government would work together to achieve the goal of net zero by 2050. Participating in the competition for the 4<sup>th</sup> National Enterprise Environmental Protection Awards will not

only allow enterprises to demonstrate their performances in environmental protection and carbon reduction promotion, but will also allow experts and scholars from different professional fields to examine their efforts and give them innovative suggestions. This will help enterprises improve their environmental protection and carbon reduction performances, enhance their international competitiveness, advance with the nation toward the goal of net zero by 2050, and create more green business opportunities.

Applicants for the competition for the 4<sup>th</sup> National Enterprise Environmental Protection Awards are divided into two groups: manufacturers and non-manufacturers. The categories consist of excellent, gold, silver, bronze, and nomination awards. The selection will be based on actions taken by an enterprise with respect to source reduction and waste reduction during production, corporate social responsibility, promotion of green supply chains, green procurement, energy and resource saving, pollution prevention and control, and participation in environment-related activities. Implementation of environmental policy is also included as a criterion to earn bonus points.

For selection requirements, please go to the National Enterprise Environmental Protection Awards website. (<http://aepa.epa.gov.tw/>)

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