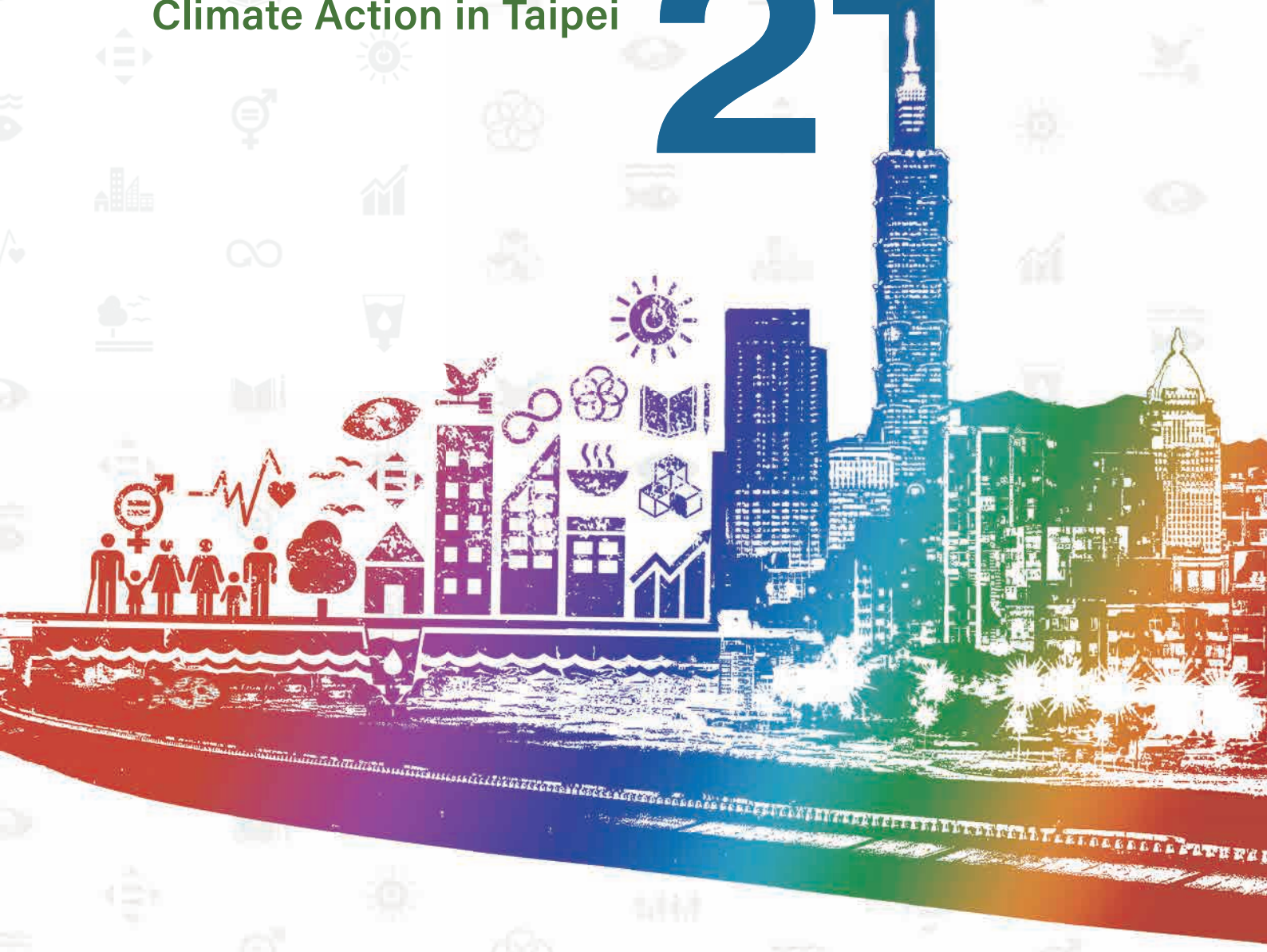
2021

Global Perspective · Taipei Action

Climate Action in Taipei



TAIPEI 臺北

Taipei City Voluntary Local Review

2021.09

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Table of Contents

Mayor Ko's Preface

2021 is a critical year for the world as the COVID-19 pandemic became more severe than last year due to mutations in viruses, but it is also a decisive year while the latest UN IPCC Sixth Assessment Report (AR6) on climate change has indicated that global temperature rises of 1.5°C may be breached by 2040, issuing a "red alert" for sustainable development of humanity. Despite the possibility to coexist and live with the virus amidst the new normal, we need to accelerate our pace of climate action.

To curb global warming and avert a climate catastrophe, achieving net-zero greenhouse gas emissions by 2050 has entered mainstream thinking, becoming a globally recognized consensus. While Taipei City shows courage in taking its responsibilities for global carbon reduction efforts, the City has also announced its vision to pursue net-zero emissions by 2050 on Earth Day this year, pledging to ensure climate security with the rest of the world.

In this global trend, climate-related issues are closely intertwined with sustainable development, marking 2021 the third consecutive year for Taipei City to compile its SDG Voluntary Local Review (VLR). In line with the City's visionary goals for net-zero emission, the 2021 VLR Report focuses specifically on addressing SDG 13 Climate Action and examines the City's sustainable results of climate action. In a state of climate emergency, Taipei City took measures by building resilient infrastructure, protecting water resources and biodiversity from the environmental aspect as well as creating accessible transit environment through incorporating green transportation. From the economic aspect, the City has been driven by circular economy along with smart technology, thus promoting shared transportation and smart campuses, creating an environment for innovation investment and digital industrial transformation. For social aspect of climate change, the City has made efforts in delivering social justice by caring and protecting the disadvantaged groups, including the implementation of gender equality in the workplace, and secured access to public resources for indigenous group.

The results of the City's various climate actions form a starting point and foundation for Taipei City to achieve further urban transformation in the future. Moving forward, the City will continue to rely on public-private partnership to reach the vision of net-zero emissions. As such, the City Government will continuously advocate civic participation, foster climate dialogue with all parties, and building consensus. We will jointly make efforts towards the vision of a "Livable, Sustainable, and Zero-Carbon Taipei" together.

Mayor of Taipei City

Wen-Je Ko

Photo by Freepik.com

Executive Summary

Executive Summary

Picture provided by
Public Works Department, Taipei City Government.

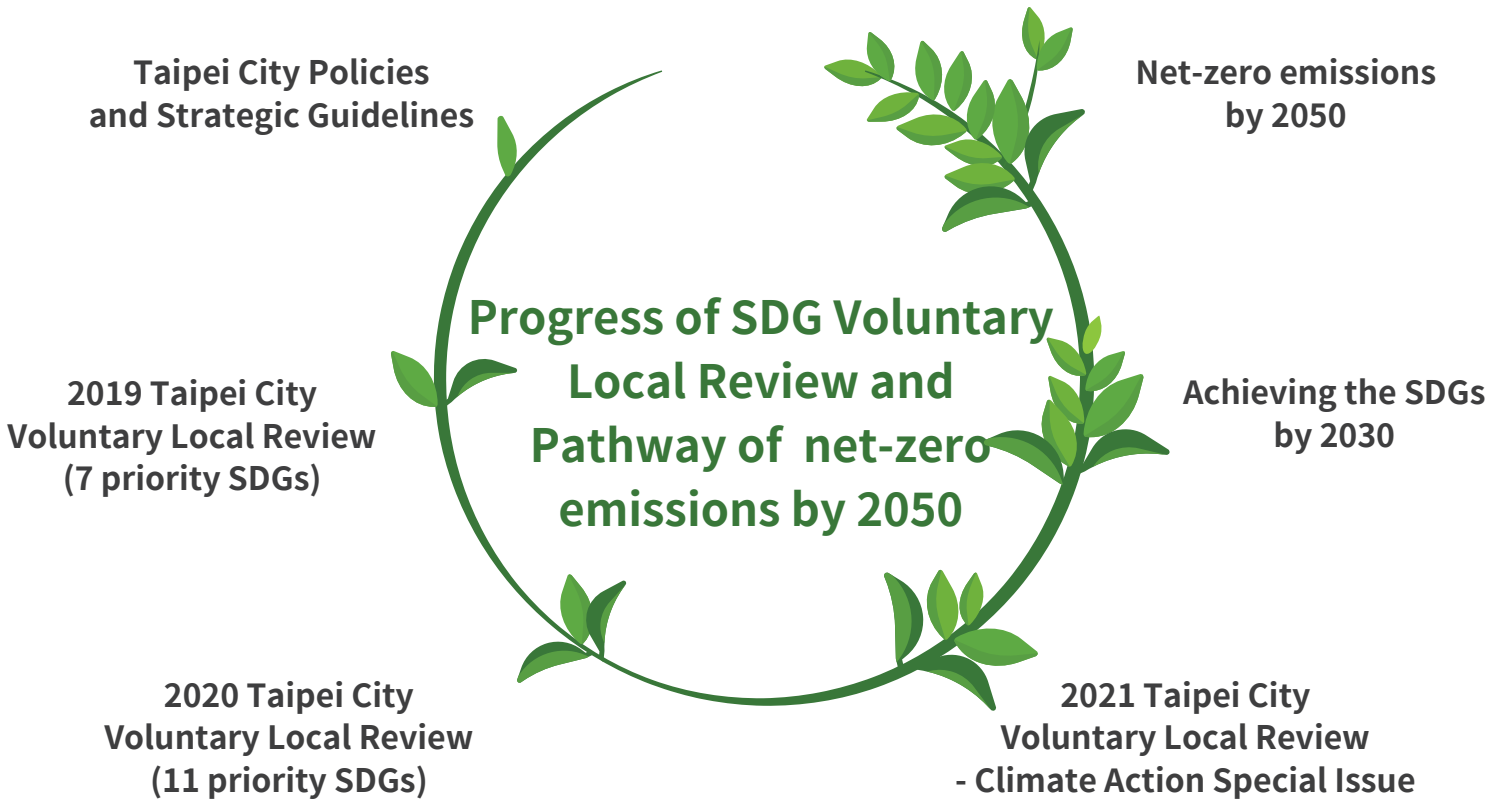
On January 1, 2016, the 2030 Agenda for Sustainable Development–signed by world leaders at the United Nations Sustainable Development Summit on September 25, 2015–officially came into force The Agenda, which outlined 17 Sustainable Development Goals (SDGs) with 169 targets and 232 associated indicators, were intended to be the guiding principle for sustainable development by 2030.

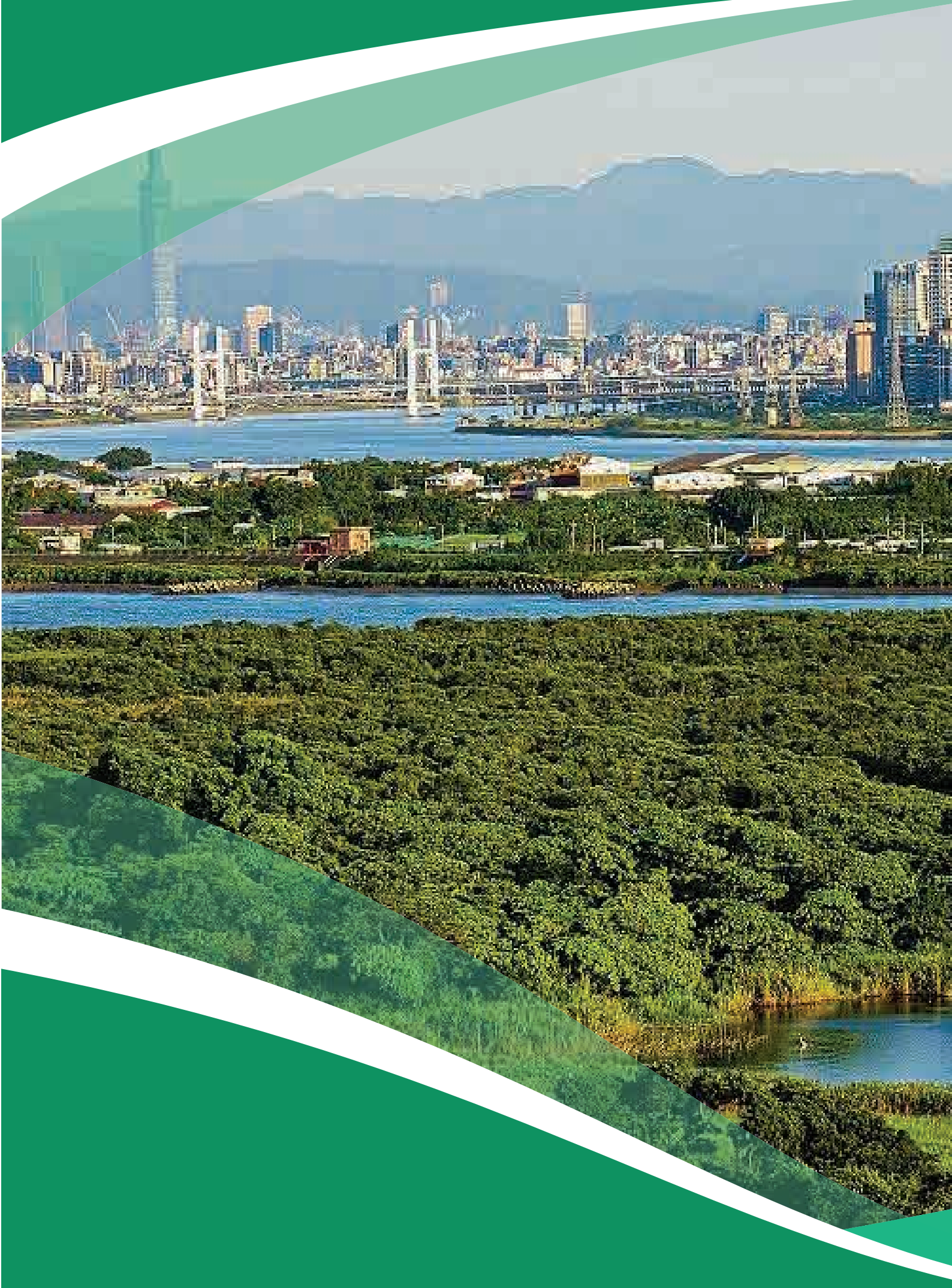
As the capital of Taiwan, Taipei City maintains close contact with the international community for the exchange of trade, technology, and culture. Therefore, the SDGs of the City must be considered within the international context of social development, balancing international development trends and local demands, responding to and implementing the 17 SDGs, and incorporating the City's existing sustainable development strategies.

In 2019, Taipei City published its first "Sustainable Development Goals – Taipei City Voluntary Local Review" with the focus on seven priority SDGs by evaluating how SDGs could be achieved at the municipal level, keeping track of development progress, and integrating them into the City's sustainable development strategies and strategic map.

In 2020, in addition to the seven existing priority SDGs, the City re-examined the 17 SDGs. Given consideration of the importance of education, gender equality, economic development and infrastructure, four additional priority promotion goals were added, bringing the number of priority SDGs to eleven, allowing the City's sustainable development to be more comprehensive. Furthermore, in response to the impacts brought by COVID-19 pandemic globally, the City aligned its epidemic prevention measures with the SDGs for the first time as a driving force for the post-pandemic transformation.

Taipei is the only city in Taiwan to publish the Voluntary Local Review for three consecutive years, as sustainable development has become an integral part of the City's policy agenda. In 2021, the climate crisis in the midst of the pandemic became an urgent and important international issue. In addition to tracking whether the City's various policy strategies and actions are in line with the eleven priority SDGs, the City conducted a rolling review of various indicators, aligning the City's efforts with global standards. Focusing on SDG 13, the City examined how various SDG goals and targets are connected to its climate actions, dividing the results into three aspects - environmental, economic, and social. These efforts show what the City has achieved in its long-term promotion of ongoing climate actions, allowing climate actions to occupy a spot on the City's policy agenda, rather than just a vision for the future. After achieving the SDGs by 2030, the City will continue to promote measures to reduce greenhouse gas emissions, including the development of renewable energy and e-mobility, the introduction of smart zero-carbon buildings, and the construction of a green innovation industrial environment, in order to gradually fulfill the goal of net-zero emissions by 2050.





Picture provided by Department of Information and Tourism, Taipei City Government.

Foreword

Foreword

Although cities cover only 3% of the Earth's land surface, 55% of the world's population–roughly 4.2 billion inhabitants–live in urban areas. [1&2]Urban populations consume between 60% and 80% of the world's energy and account for at least 70% of the world's CO^2 emissions. By 2050, the number of people living in urban areas is expected to reach 6.7 billion.[3]

The United Nations Framework Convention on Climate Change (UNFCCC), signed in 1992 at the United Nations, aims to stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent human-induced interference with the climate system. This would also ensure that food production is not threatened while enabling economic development to proceed in a sustainable manner. In 2015, the Paris Agreement was adopted under the UNFCCC. In 2018, a Special Report approved by the Intergovernmental Panel on Climate Change (IPCC) pointed out that, in order to achieve the goal of limiting global warming to 1.5 °C, the world needs to achieve net-zero emissions by mid-century. At the same time, major CO_2 emitting countries and cities pledged to achieve net-zero emissions by 2050.

With comprehensive infrastructure and an abundance of high-quality talents, Taipei City is the most globalized city in Taiwan. The City is irreplaceable in its economic and trade advantages, and is gathering the highest number of corporate headquarters and R&D centers among cities and counties across Taiwan. In the face of climate change impacts, the City needs to take citizens' needs into account. In addition to actively promoting various measures to reduce greenhouse gas emissions, the City also needs to focus on workers, children, women, and other disadvantaged groups, keep abreast of changes in international trends, create a business-friendly environment, and implement sustainable development goals.

[1] According to page 9 of “2018 Revision of World Urbanization Prospects”, published by the Economic and Social Affairs of the United Nations in 2018.

[2] According to page 7 of The Strategic Plan 2020-2023 published by UN-Habitat in 2019.

[3] According to page 43 of “World Urbanization Prospects Report: 2018 Revision”, published by the UN Department of Economic and Social Affairs in 2018.

To this end, Taipei City has continued to publish its VLR report showcasing the City's sustainable development efforts. Following the principles of the UN SDGs, the City conducts rolling reviews and tracks various sustainable development indicators, examines the City's relevant policies, and establishes the focus of Taipei City VLR report based on international trends and the City's major policies.

On April 22, 2021, Mayor Ko, Wen-Je announced Taipei City's vision to achieve net-zero emissions by 2050, initiating net-zero pathway assessments and planning work. As such, to review the results of various climate actions, the City focused on SDG 13 this year and examined climate actions under various SDGs from environmental, economic, and social aspects to formulate a basis for the City's promotion of net-zero emissions by 2050. Taipei City is working towards steadily achieving its carbon reduction goals and, with completing various SDGs by 2030 as a milestone, gradually achieving the goal of net-zero emissions by 2050.

Photo by Andrew Haimerl on Unsplash

Picture provided by Public Works Department, Taipei City Government.

Vision and Goals

Vision and Goals

Photo by Lisanto on Unsplash

Empowered by globalization and digitization, all major cities often play the leadership role in each respective region, driving the competitiveness and sustainability of the City itself and its surrounding satellite cities. The City's advantage lies in its inclusiveness and diversity, as well as its emphasis on cultural assets, quality of life, environmental protection and natural resources. These features allow the City to bring better quality of life to its citizens, shaping a robust foundation for sustainable development measures that "strengthen environmental protection, promote social inclusion, and facilitate economic development".

For this purpose, the City has conducted analysis based on national and municipal policy outlook and sustainable development measures. Through consensus building after a magnitude of discussions between the Council for Sustainable Development, Taipei City Government and the Promotion Task Force, the overall sustainable development goal of Taipei City is set out as: "construct a world-class capital that forms a symbiotic relationship between ecological system and environmental resources that enjoys both social security and improvement, and where smart economy and technology prosper".

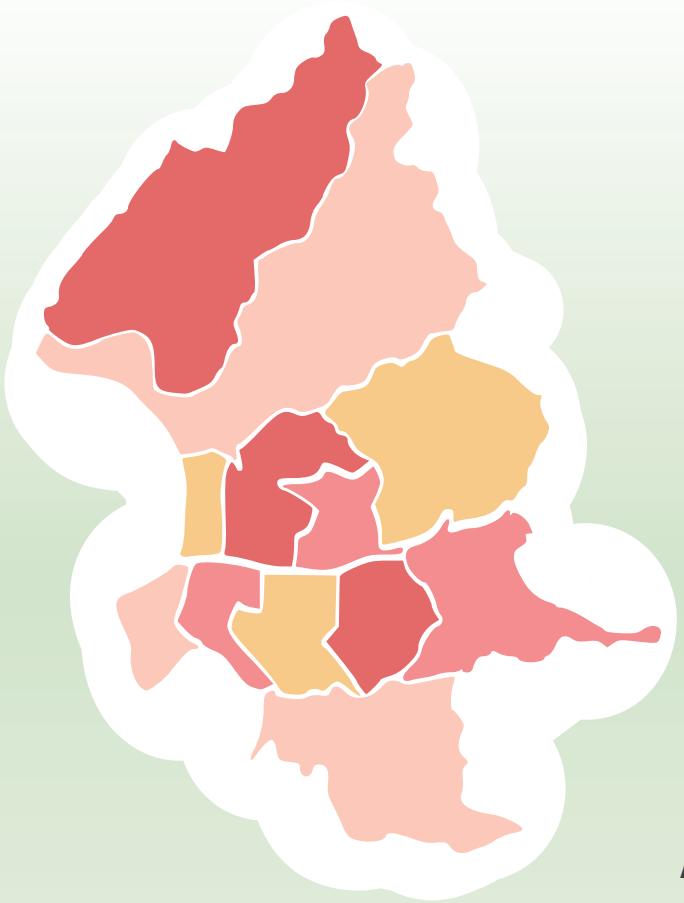
Furthermore, the City will plan various climate actions from the perspective of sustainable development, thereby forming the basis for implementing long-term emissions reduction policies, steadily striving toward the goal of net-zero greenhouse gas emissions by 2050. Ultimately, the City will fulfill its vision of sustainable development, building a "Livable and Sustainable Taipei ".

Picture provided by Public Works Department, Taipei City Government.

Environment and Policies

Environment and Policies

Environment



Population
2,602,418

Annual rainfall
1,700mm

Total area
271.8 km²

Average temperature
16-30°C

Taipei City is located in northern Taiwan and covers an area of approximately 271.8km². Topographically, it is a basin surrounded by mountains. At the north of the basin is the Guandu Plain, bounded by hills and the Yangmingshan National Park, forming the largest agricultural land under section in Taipei City. It comprises the City's only nature reserve, a wetland of national importance, and a first-grade coastal conservation zone—the Guandu Wetland. Divided into 12 administrative districts, Taipei City is one of the highly developed cities in Taiwan.

As of the end of 2020, the City's total population was 2,602,418. Though not the most populous city in Taiwan, it is the most densely populated, and has a diverse demographic composition that comprises indigenous peoples, Hoklo and Hakka peoples, mainlanders, immigrants, and foreign nationals.

Located at 25 latitude North, the City has a subtropical monsoon climate with average temperatures that range between 16°C and 30°C, while the annual precipitation amounts to around 1,700 mm. Each year, the City's rainy season runs from May to June and brings abundant rain. In recent years, due to climate change and global warming, the City has begun experiencing extreme weather conditions as well. In terms of temperature, Taipei is severely affected by its basin terrain in the summer and the overabundance of concrete structures that cause heat to be trapped, thus creating an urban heat island effect (UHIE). Temperatures often exceed 35°C and have repeatedly reached record highs. As for rainfall, days with short-duration intense rainfall have increased, and the temporal distribution of precipitation is highly irregular. Global climate change is testing the sustainable development and governance of the City.

Policies

As the effects of climate change become more apparent, dealing with the impact of climate change has also become an important urban governance issue in addition to promoting the City's economic development. To protect the environment, promote social inclusion, and boost economic development, The Council for Sustainable Development, Taipei City Government (hereafter the Council) was established in 2004 under the framework of global sustainable development. The Council members are comprised of government officials, experts and scholars, NGOs, and industry representatives. The organization is divided into seven major task groups that make periodic adjustments and conduct rolling reviews of relevant issues regarding sustainable development through quarterly meetings. In 2021, to fulfill the obligations of a global citizen and share the collective international responsibility to jointly reduce carbon emissions, Taipei City Mayor Ko Wen-Je announced on Earth Day (April 22) that “Taipei City will courageously shoulder its responsibility to reduce global carbon emissions, pursue the goal of net-zero greenhouse gas emissions by 2050, and work with the rest of the world to ensure climate safety”. With this purpose in mind, the City will make efforts to achieve a new era of carbon neutrality.

Stage 1 Climate Action Strategic Development (2008–2015)

Taipei City signed the "Green Cities Declaration" and the "San Francisco Urban Environmental Accords" in San Francisco in 2005, pledging to reduce greenhouse gas emissions by 25% in 2030 compared to 2005 levels. The City also passed the "Taipei to Promote Energy Saving and Carbon Reduction Plan" in 2008, which laid the foundation for reducing greenhouse gas emissions. Since 2009, Taipei City has independently monitored its greenhouse gas emissions, setting the first stage of its emission reduction target as "reducing greenhouse gas emissions between 2016 and 2020 to 2008 levels (16.4 million metric tons)". In 2012, the City proposed the "Taipei Climate Change Adaptation Plan" along with continued efforts to enact relevant laws and regulations, passing regulations like the "Taipei City Ordinance for Industrial and Commercial Energy Saving and Carbon Reduction Guidance and Self-Administration" and "Taipei City Self-government Ordinance for Green Buildings". In 2014, Taipei City achieved its first stage target for greenhouse gas emissions reduction ahead of schedule.

Stage 2 Climate Action Capacity Building (2015–2030)

In order to take more in-depth climate actions and expand the results of the "Taipei to Promote Energy Saving and Carbon Reduction Plan", Taipei City Government established the "Taipei City Greenhouse Gas Control Program" in 2016, setting mid to long-term greenhouse gas reduction targets. In 2019, the City also formulated the "Taipei City Greenhouse Gas Control Implementation Plan" in accordance with the Greenhouse Gas Reduction and Management Act, establishing the "Greenhouse Gas Reduction Supervisory Report" at the municipal level, which helped create comprehensive climate action monitoring mechanisms. According to statistics, the City's carbon emissions in 2019 amounted to 11.6 million tons, down 11.3% from 2005.

In 2021, based on the UN's Sustainable Development Goals (SDGs) for 2030, Taipei City adopted the principle of "from inner to outer, from public to private sector", expanding policies such as renewable energy use, e-mobility, introducing smart zero-carbon buildings, and constructing a green innovation investment environment. The City adjusted its 2030 carbon reduction goal from 25% to 30% and established a target of net-zero emissions by 2050, launching its 2050 net-zero pathway assessment and planning work.

Stage 3 Climate Action Outcomes (2030–2050)

Following the concept of "think globally, act locally", Taipei City will build a consensus with its citizens on mitigating global warming and initiate active and effective climate actions with substantive results. This will allow the City to steadfastly achieve the goal of net-zero emissions by 2050 through government leadership, industry cooperation, citizen participation, and rolling reviews.

Strategic Development

- ◆Taipei to Promote Energy Saving and Carbon Reduction Plan
- ◆Taipei City Climate Change Adaptation Plan
- ◆Taipei City Ordinance for Industrial and Commercial Energy Saving and Carbon Reduction Guidance and Self-Administration
- ◆Taipei City Self-government Ordinance for Green Buildings

2008-2015

Capacity Building

- ◆Pathway for net-zero emissions by 2050
- ◆Taipei City Voluntary Local Review
- ◆Taipei City Greenhouse Gas Control Implementation Plan
- ◆Greenhouse Gas Reduction Supervisory Report

2015-2030

Outcome

- ◆Achieve net-zero emissions by 2050

2030-2050

▲ History of climate actions in Taipei City

Picture provided by Public Works Department, Taipei City Government.

History of Taipei City's Efforts to Promote Sustainable Development

History of Taipei City's Efforts to Promote Sustainable Development

The compilation of the City's Voluntary Local Report stemmed from the conclusion reached in the 44th meeting of the City's Council for Sustainable Development in July 2016. It was decided that the reports should compare existing sustainable development indicators from the City's strategic roadmap with the ISO 37120 indicators of the World Council on City Data (WCCD) and the UN SDG indicators. In-depth evaluations and analyses of various indicators based on the SDG indicators will also be conducted in order to adjust the composition and structure of the Council's work accordingly. After numerous rounds of collaborations between government agencies and negotiations with experts and scholars, the Council decided on the priority promotion SDGs at the 49th Council meeting in November 2017. Based on Taipei City's existing sustainable development goals and strategic roadmap, the Council established tasks corresponding to various SDGs, proposing or amending strategies, visions, goals, and action plans accordingly.

Picture provided by
Public Works Department, Taipei City Government.

In March 2019, Mayor Ko, Wen-Je visited the US. While in New York, he spoke about the progress Taipei City had made to promote sustainable development in line with the SDGs. During the meeting, he also announced plans to follow New York's footsteps, prioritize SDG 3, 6, 7, 11, 12, 13, and 17 with the mindset of "Global Perspective, Taipei Action", and officially published the "Sustainable Development Goals - Taipei City Voluntary Local Review" in September 2019.

In 2020, the City continued the outcome of the 2019 Voluntary Local Review, reexamining the 17 SDGs and their connection to the City. Considering the importance of education, gender equality, economic development, and infrastructure, the City decided to prioritize four additional SDGs - SDG 4, 5, 8, and 9. Additionally, many of the epidemic prevention measures taken in response to the COVID-19 pandemic also echoed the seven prioritiy SDGs. In September 2020, the City officially published the 2nd version of "Sustainable Development Goals - Taipei City Voluntary Local Review", continuing to make rolling reviews and adjustments to various tasks and regularly disclosing the results, gradually moving toward the goal of becoming a "Livable and Sustainable city".

Climate actions are closely related to sustainable development. On Earth Day, April 22, 2021, Taipei City mayor Ko Wen-Je announced that "Taipei City will courageously shoulder its international responsibility to reduce global carbon emissions, pursue the goal of net-zero greenhouse gas emissions by 2050, and work with the rest of the world to ensure climate safety". Therefore, the VLR report this year (2021) will focus on SDG 13 - Climate Action, showcasing the connections and relevant results of various SDGs and climate actions to gradually move towards achieving sustainable development and the goal of net-zero emissions by 2050.

Photo by Pixabay.com

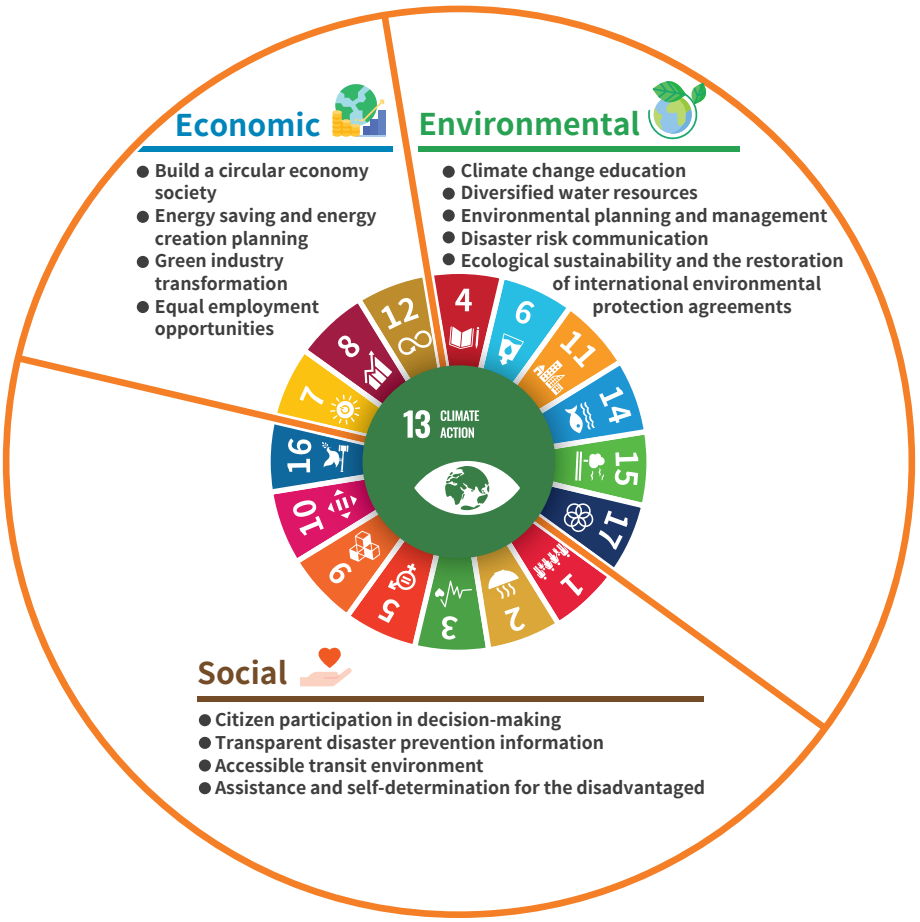
Sustainable Development and Climate Actions

Sustainable Development and Climate Actions

Since the Industrial Revolution, rapid economic growth has changed our way of life, bringing material improvements and higher standards of education. These advancements, however, also came at the cost of the environment and even the rights of marginalized groups. The COVID-19 pandemic has been a severe threat worldwide since 2020. In addition to cooperating with the central government's epidemic prevention policies, Taipei City also established its own pandemic prevention Standard Operating Procedure (SOP). Taipei City launched various epidemic prevention policies and will continue to implement the SDGs based on sustainable development principles. However, while the COVID-19 pandemic will gradually subside as vaccines are rolled out, there is no vaccine for climate change—the biggest threat to the survival of human civilization. Though Taipei City has been impacted by the COVID-19 pandemic, the City did not allow the pandemic to hinder its efforts to promote climate actions. It has continued to implement various action plans in order to achieve net-zero emissions by 2050.

Climate change impacts cities in far-reaching ways. The increase of extreme weather patterns in recent years has caused Taipei City to be affected by extreme heat and heavy rains, which highlights the importance of implementing strategies to combat climate change. On top of existing strategic roadmaps and the voluntary local reviews, the City gradually proposed measures to implement greenhouse gas control and climate change adaptation to serve as a cornerstone of climate actions. Therefore, in 2021 the City focuses on SDG 13 to reexamine the connection among various SDGs and targets and climate actions, dividing them into environmental, economic, and social aspects. The City also proposed six major strategies to net-zero emissions that promote smart zero-carbon buildings, construct photovoltaic infrastructure, increase green transportation and e-mobility, construct an environment for green innovation investment, and establish low-carbon green procurement guidelines. These efforts showcase the City's determination to promote net-zero emissions, implement various municipal tasks, and implement urban transformations to achieve environmental, economic, and social harmony and shared prosperity as Taipei City moves closer to the goal of sustainable development and becomes a “Livable and Sustainable city”.

Picture provided by Public Works Department, Taipei City Government.



▲ **Correlation between SDGs and environmental, economic, and social dimensions**

Focusing on SDG 13, the City has prioritized the integration of climate change measures in relevant policies, strategies, and plans in addition to improving early warning systems and adaptability when it comes to climate-related risks. Following the principle of "from inner to outer, from public to private sector", the City will respond to SDG targets 13.1, 13.2, and 13.3 with consideration toward aspects such as energy, society, industry, economy, and welfare, cooperating with the central government's energy transition efforts to achieve net-zero emissions by 2050.

This report will be divided into three levels: "Basis for Climate Change Mitigation and Adaptation". "Sustainable Development and Net-Zero Emissions by 2050", and "Sustainable Environmental, Economic and Social Development Strategies", presenting the concrete results of the City's climate actions under sustainable development to serve as a basis for promoting future climate actions.

13.1 Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries

13.2 Integrate climate change measures into national policies, strategies and planning

13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning

SDG Tree of Life

Work toward achieving net-zero emissions by 2050 with the SDGs for 2030 as a foundation

Six Major Strategies to Net-Zero Emissions

- Promote smart zero-carbon buildings
- Improve green transportation
- E-mobility
- Establish renewable energy
- Construct an environment for green innovation investment
- Promote sustainable, low-carbon procurement

Sustainable environmental, economic, and social development

In response to the SDGs motto “leave no one behind”, the City pays attention to environmental, economic, and social dimensions on the way toward the goal of “Livable and Sustainable Taipei”.

Environmental

Economic

Social

Climate change policies and strategic foundations

- Taipei City Strategic Roadmap
- Voluntary Local Review
- Taipei City Greenhouse Gas Control Implementation Plan
- Climate Change Adaptation Plan

Facilitate urban transformation based around climate actions

Climate Change Mitigation and Adaptation

Implement the Greenhouse Gas Control Program to build a foundation for climate actions

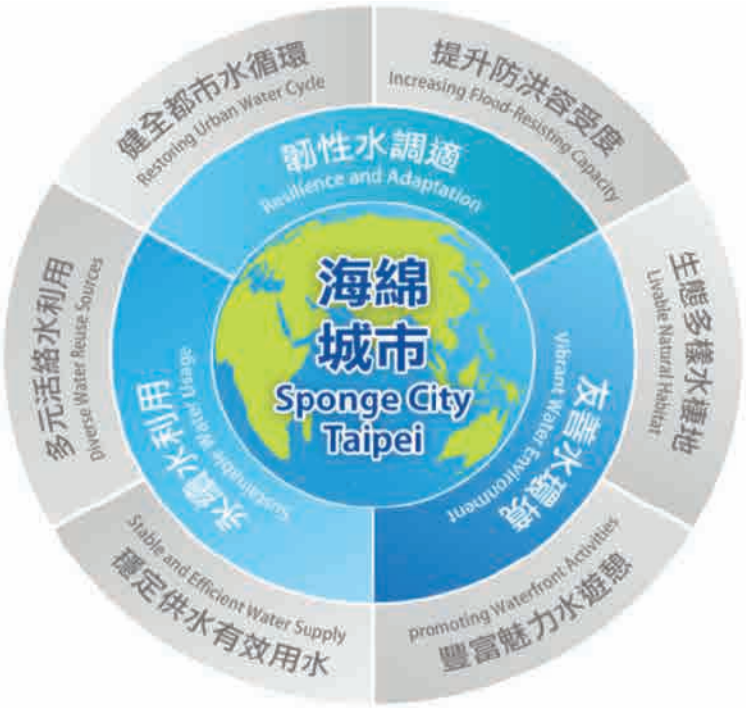
Taipei City has been working to reduce greenhouse gas emissions since 2008. In 2016, to meet the requirements of the Greenhouse Gas Reduction and Management Act and reach greenhouse gas reduction targets at a steady and pragmatic pace, the City followed up on the results of the "Taipei to Promote Energy Saving and Carbon Reduction Plan" by formulating the "Taipei City Greenhouse Gas Control Program" and establishing the "Greenhouse Gas Reduction Supervisory Report", which is overseen by the Mayor, with the Department of Environmental Protection, Taipei City Government taking charge of greenhouse gas reduction affairs. The report establishes the department responsible for the residential and commercial sectors, transportation sector, waste sector, agricultural and forestry sector, and education and advisory, along with specific promotion strategies. Quarterly meetings are held to review and adjust the implementation of various action plans and stipulate the greenhouse gas reduction targets of each department by regularly examining and updating the City's greenhouse gas emissions data. The meetings also allow the municipal government to analyze the growth trend of greenhouse gases and establish the most appropriate reduction targets. In the spirit of "government leadership, industry cooperation, and citizen participation", the City has made energy-saving and carbon reduction a common goal, thereby striving toward the vision of a "Livable and Sustainable Taipei".

Creating a Sponge City to Restore Urban Water Cycle

Challenges such as extreme weather and competition for water resources will become increasingly prominent in the future. Accordingly, the City has placed the concept of a sponge city at the core of its water environmental policy, with "resilience and adaptation", "sustainable water usage", and "vibrant water environment" as the three major visions outlining a safe, sustainable, water-friendly, and ecological blueprint for Taipei's water environment. The sponge city concept involves six major goals: "restoring urban water cycle", "increasing flood-resisting capacity", "stable water supply and efficient water consumption", "aquatic habitats with biodiversity", and "promoting waterfront activities". Engineering and management methods will be leveraged to further implement water-permeable pavements, increase the urban green coverage rate, promote the construction of green rooftops, increase the capacity of urban water storage for flood retention, upgrade sewage treatment, diversify the utilization of recycled water, restore and protect aquatic habitats, and create waterfront recreational environments. These measures in the City will allow water to infiltrate and be retained, while evaporation of water can help maintain the urban microclimate.

The City promotes the use of water-permeable pavements throughout public facilities (sidewalks, park squares, campuses, parking lots, etc.) so that water will be absorbed on rainy days and evaporate under the sun. From 2015 to 2020, 269,984 m^2 of sidewalks, park squares, campuses, and parking lots throughout the City were constructed with water-permeable pavements. Actual monitoring shows that the cooling effect of permeable bricks could successfully reduce the surrounding temperature by about 1.42–5.86°C. Therefore, it is evident that permeable pavements are capable of regulating the microclimate and reducing the urban heat island effect. Regarding the goal to enhance the City's capacity for flood prevention and increase the City's

water retention volume, the City has completed three new detention pools, the Jinrui Flood Management Park (detention volume: 27,000 m^3) in Neihu District, the Taipei Wenshan Sports Center Northern Flood Detention Pool (detention volume: 6,000m^3), and the Military Police Camp Flood Detention Pool on Xinhai Road (detention volume: 46,000 m^3), which added 79,000 tons of flood detention capacity. The City also promoted public-private partnership in disaster prevention. Private development projects above a certain scale must meet the minimum water retention requirement of 780m^3 per hectare as well as the maximum discharge volume. The City has also established higher water retention standards for new or renovated parks, requiring water retention of 1,090 m^3 per hectare to satisfy the "zero outflow from parks" design principle.



▲ The vision of Sponge City

▲ Construction of Xinhai Ecological Park on top of the Military Police Camp Flood Detention Pool on Xinhai Rd.

Promote heatwave early warning and response to reduce the impact of high temperatures

In addition to increasing green spaces and improving airflow to reduce the urban heat island effect, Taipei City also established a heatwave warning and notification system in 2016. The system was modified in 2018 to use the Central Weather Bureau's "High Temperature Information" as the standard for heatwave early warning. The warning system alerts relevant city government departments to initiate high temperature response measures. For example, the Department of Environmental Protection will start spraying water on streets to counter the heat, the Parks and Street Lights Office will irrigate green areas in parks, the Department of Labor will conduct labor inspections on outdoor workers, the Department of Social Welfare will take special care of senior citizens living alone, disabled people, and the homeless, the Market Administration Office will enhance food safety announcements for markets and vendors, and the Department of Health will notify emergency medical services and advise the food industry on health management. These measures mitigate the potential hazards caused by high temperatures during periods of extreme heat. The heatwave warning system has set out 72 alerts since its establishment in 2016 and as of the end of 2020. In response to these alerts, the City sprayed water on 5,038 km of roads to lower the road surface temperature, irrigated 6,638,601 m^2 of greenery, counseled the food industry 1,587 times, conducted 1,617 inspections on workplaces exposed to high heat, had the Market Administration Office hold 6,515 food safety advocacy campaigns in markets and venues where vendors gather, and reached out to senior citizens living alone, disabled persons living alone, and homeless people 82,218 times. These measures serve as an early warning and response to help mitigate the negative effects high temperatures can have on citizens.

▲ Sprinkling water to lower the surface temperature of roads in response to high temperatures

Sustainable Development and Net-zero Emissions by 2050

Achieving net-zero emissions is key to urban transformation. This issue has expanded beyond environmental protection to encompass industrial and energy transition, having a significant effect on the future international competitiveness of Taiwan. From energy, society, and industry to economy and welfare, the entire system needs transformation with a brand-new mindset. Therefore, with Agenda 2030 as a foundation, the City will continue to promote its six major strategies and cooperate with the government's energy transition efforts to gradually achieve net-zero emissions by 2050.

Promote smart zero-carbon buildings

Taipei City's economic development is primarily based on tertiary industries. Furthermore, residential and commercial sectors account for 75% of the City's overall greenhouse gas emissions. To effectively reduce residential and commercial greenhouse gas emissions, the City plans to promote the development of zero-carbon buildings with the introduction of energy traceability systems for buildings and smart green building design to track the energy use of buildings. The City also encourages the use of circular construction materials for public and private buildings in order to achieve the goal of zero-carbon buildings and a circular economy by 2050.

▲ Perspective drawing of Nangang Depot Social Housing

These efforts start with the construction of social housing. Taking the “Taipei Nangang Depot Social Housing” as an example, the City introduced energy management systems and information and communication technology (ICT) plans on top of existing green building design concepts, and also promoted strategies such as “recyclable and circular building materials”, “resource recycling and reuse”, “resource recovery of waste”, “flexible modules”, and “rent over buy” to reduce the carbon footprint of building materials. Taipei Nangang Depot Social Housing became the first social housing complex in Taipei to introduce and implement a circular economy and received certifications such as the “silver-grade green building certification”, “gold-level intelligent building certification”, “structure accreditation”, and “accessible housing certification”, implementing the City's social housing circular economy system and promoting the recycling and sustainable utilization of social housing resources to ultimately reduce the building's greenhouse gas emissions.

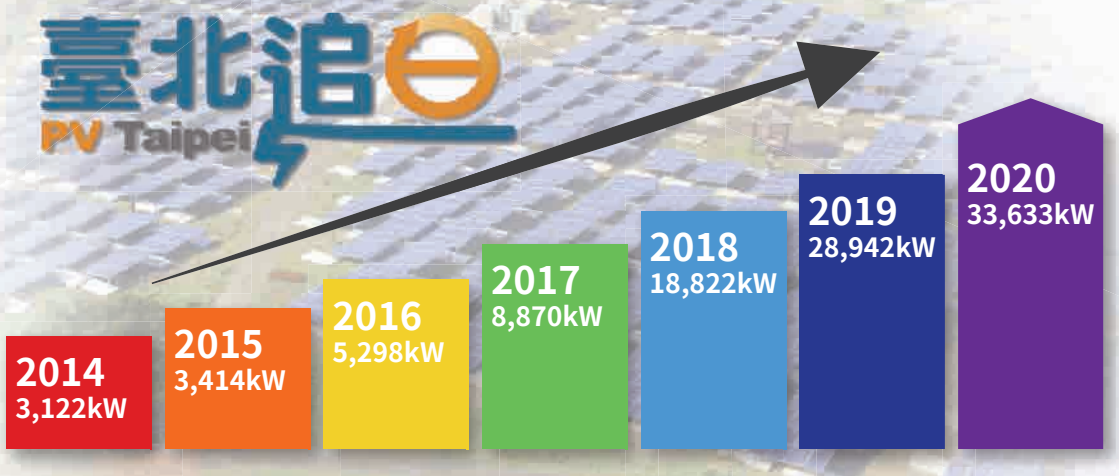
Going forward, the City will adopt the principle of “from inner to outer, from public to private sector”, establishing low-carbon planning design principles starting with public construction projects and, in line with the concept of smart green buildings and circular economy, selecting regeneration or eco-friendly building materials to reduce greenhouse gas emissions during the construction process. The City will also continue to formulate construction regulations and systems to reduce the overall life cycle greenhouse gas emissions in buildings.

Deployment of renewable energy

In response to the global trend of energy transition, the City established the "Sustainable Energy Taipei" with the long-term objectives of building an energy-saving environment, expanding green energy supply, and driving industrial transformation. In particular, prioritizing the use of local and sustainable energy is the key to transitioning to low-carbon energy. Therefore, Taipei City actively seeks to expand the development and use of renewable energy. The City has launched the "Solar Taipei Program", and proposed four major directions (tenders for municipal properties, subsidies for private installation, promote smart grids, establish civic power plants). These measures allow the City to use its limited space to create a circular, low-carbon green capital and driving production and employment opportunities in solar-related industries. Regarding public properties, the City established the "Guidelines for the Installation and Use of Solar PV Power Generation Equipment in City-Owned Public Properties", which allowed government offices and schools to call for tenders to install solar PV power generation equipment. Over the past six years, the amount of solar PV installations has increased nearly 10-fold. As of the end of 2020, the City had installed 33,633kWp of solar PV systems. Additionally, to fully utilize and revitalize vast stretches of restored landfills, the "Taiwan Energy Hill 1.0 & 2.0" power generation program was enacted at the "Fudekeng Environmental Restoration Park", with the City Government providing the restored landfills and the private sector providing funds. The program is expected to produce 300 MWp of green energy per year by converting sunlight into electricity or heat, thereby promoting the concept of circular economy.

Additionally, the City also collaborated with the citizen interest group Homemakers United Foundation to provide solar-cell installation consultation and matching services. These efforts helped facilitate citizen participation in the utilization of renewable energy. Public fundraising allowed the group to obtain enough funds and built Taiwan's largest civic power plant at Guandu Junior High School in December 2020. Comprising 63 solar power panels with a capacity of 19.8 kWp, the civic power plant is expected to generate 19,000 kWh of power per year.

The City is also actively encouraging the installation of solar PV equipment in apartment buildings and residential complexes by subsidizing private properties. The Xinyi Xincheng Community in Da'an District is a prime example of this. The community residents, solar energy system manufacturers funded 145.7 kWp of solar PV systems on the roof with subsidies from the Taipei City Government, which not only helped resolve problems such as high temperature and water leakage on the top floor but also generates a steady income for the community from electricity sales.



▲ Year-by-year solar PV capacity

Picture provided by Department of Environmental Protection, Taipei City Government.

Improve green transportation

To provide smoother, high-quality, low-carbon transportation services and reduce the City's overall greenhouse gas emissions from transportation, the City plans to include Transit-Oriented-Development (TOD) planning principles through urban planning, urban design, and urban renewal reviews, gradually adjusting land allocation to provide user-friendly transportation environments. This includes reducing the scale construction plans to leave room for more comfortable sidewalks and bike paths, strengthening the City's public transit network, planning suitable transfer and temporary parking areas, and strengthening the management of private vehicles to ensure orderly, coordinated transportation. These efforts will improve the capacity of the City's overall traffic environment.

The Taipei Metro is the backbone of the City's green transportation network, supplemented by electric buses, shared vehicles and scooters, and taxis, along with options such as walking or renting a YouBike. Following its "green transportation policy", the City provides transfer discounts and transit passes for public transportation while expanding paid parking and parking management of scooters in commercial districts, thereby encouraging citizens to use green public transportation instead of driving private vehicles. The goal is to increase the ratio of green transportation from 60% to 70%.

The City has already made systematic plans to optimize bus routes in the direction of "fast transit, main bus lines, branch routes, and microcirculation", using big data to help optimize the bus route network. In 2021, the City also launched the YouBike 2.0 upgraded project, which is expected to install 1,200 YouBike stations across the City by the end of 2022. The project will provide citizens with closer, more accessible public bikeshare services.

Going forward, the City will continue to improve its green transportation management system to construct a more convenient and comprehensive sustainable transportation system and effectively reduce greenhouse gas emissions.

▲ YouBike 2.0

Promote e-mobility

In addition to improving green transportation management, e-mobility is also an important part of reaching net-zero emissions. The City has already proposed plans for transitioning to city buses, subsidies for electric scooters, and infrastructure plans. These strategies will provide citizens with cleaner air and gradually complete the City's low-carbon transportation infrastructure.

■ All City buses go electric

To accelerate the City's transition to electric buses, Taipei City began planning the “Taipei City Electric Bus Promotional Pilot Project” in 2018. The project includes measures such as encouraging operators to adopt electric buses by subsidizing the purchase of electric buses, suspending subsidies for diesel buses, requiring new routes to be operated with electric buses, prioritizing the replacement of old diesel buses for new electric buses on busier routes, and helping operators build electric bus terminals. As of the end of 2020, Taipei had 48 electric buses on the road and 3 electric bus terminals. By the end of 2022, Taipei City expects to have 400 electric buses on the road with additional electric bus terminals. By collaborating with the private sector, the City Government aims to expand the scope of green transportation and achieve 100% electrification of city buses by 2030.

▲ Taipei electric buses

■ Electric Scooter Subsidy Program

Taipei City has increased its electronic scooter subsidies. In 2021, not counting subsidies from the central government, the City tripled the subsidy provided in 2020, offering NT$9,000 for riders to replace old scooters for electric models and bringing the maximum e-scooter subsidy to NT$19,000 (including subsidies from the Environmental Protection Administration and Ministry of Economic Affairs). The City also offers e-scooter riders "four exemptions", namely exemptions from vehicle license taxes, fuel taxes, parking fees, and charging fees, while following the Electric Vehicle Promotion Policy to actively establish e-scooter friendly environments. Between 2021 and 2022, the number of e-scooter charging stations is expected to increase from 156 to over 250, ensuring a sound infrastructure for electric vehicles. The goal is for electric scooters to account for 20% of all scooters in Taipei by 2023 and over 35% by 2030.

2021 Scooter Replacement and Purchase Subsidy

		Heavy Models	Light Models	Small-light Models
Replace gas scooters with electric scooters	Department of Environmental Protection	9,000 (10,000 vehicles/year)	5,000 (500 vehicles/year)	
	Environmental Protection Administration	3,000		1,000
	Industrial Development Bureau, Ministry of Economic Affairs	7,000	7,000	5,100
	Total	19,000	13,000	11,100

		Heavy Models	Light Models	Small-light Models
Purchase of new electric scooters	Department of Environmental Protection	4,000 (15,000 vehicles/year)	2,000 (1,000 vehicles/year)	
	Industrial Development Bureau, Ministry of Economic Affairs	7,000	7,000	5,100
	Total	11,000	9,000	7,100

NOTE : 1. An additional subsidy of NT$10,000 is given to those with low-income or middle-low-income (200 vehicles/year)

2. The program will remain unchanged from 2022 to 2023. Subsidies provided by the central government will be handled based on the measures announced by the central government.

▲ 2021 Electric Scooter Subsidy Program

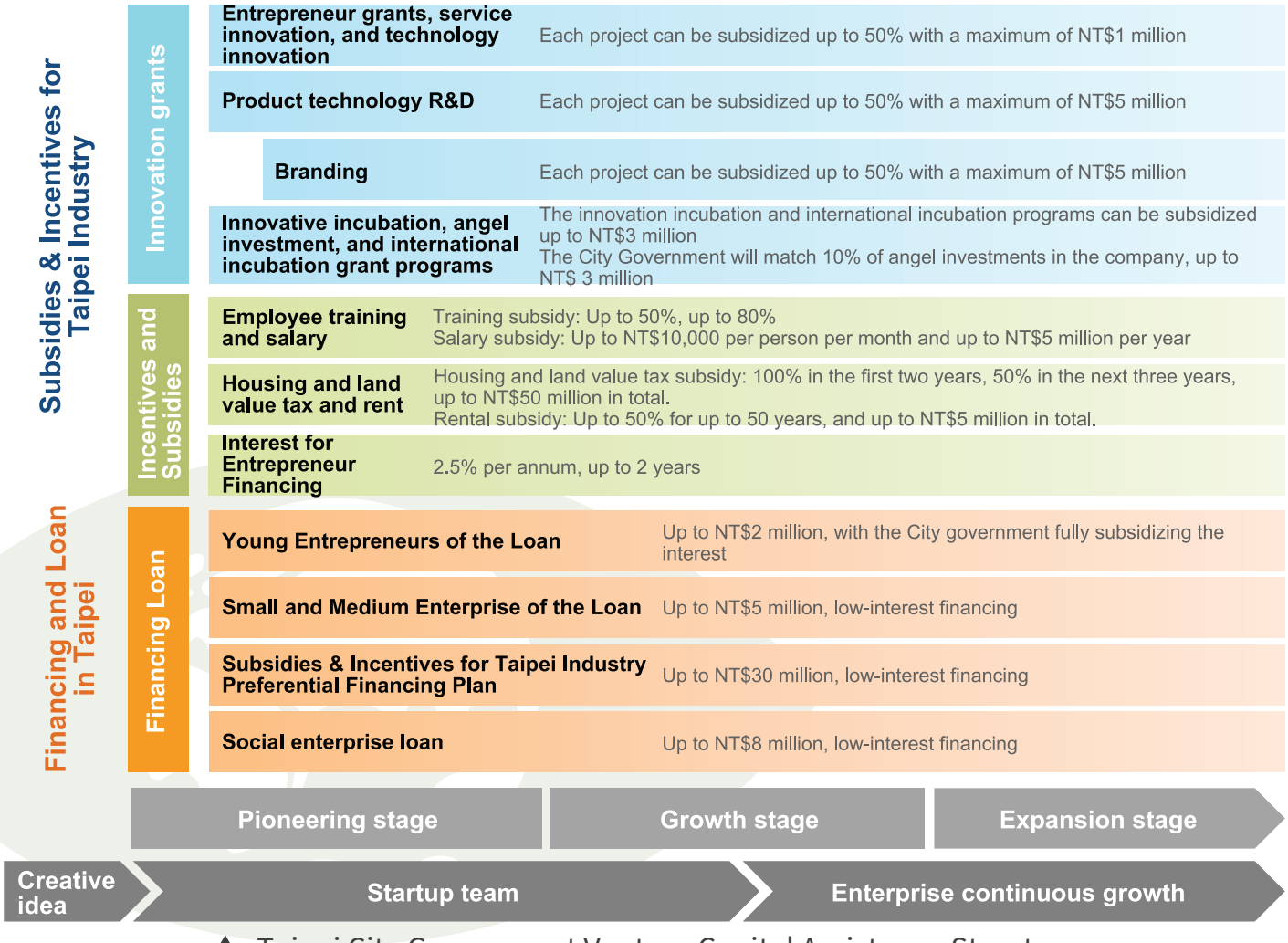
■ Establish supportive infrastructure

Currently, the City has installed a total of 368 charging bays for electric vehicles (EVs), 42 in parking lots in government offices and schools, and 326 in public parking lots. To encourage apartment complexes to install charging infrastructure for electric vehicles, Taipei City has included electric vehicle chargers as a subsidized item under the "Directions for Subsidies for the Maintenance and Repair of Apartment Building Common Areas" starting 2021, subsidizing a maximum of 49% or NT$100,000 to NT$200,000 for resident committees to install EV chargers. The objective of these efforts is to increase people's willingness to purchase electric cars and scooters.

Construct an environment for green innovation investment

Green industry is a key developmental item in the City's objective of striking a balance between environmental sustainability and economic development. With a focus on the concept of circular economy, Taipei City launched the "Subsidies & Incentives for Taipei Industry" to facilitate the upgrade and transformation of small and medium enterprises. As of the end of 2020, the City had provided NT$16.36 million in incentives and subsidies to 10 circular economy and green energy-related enterprises. These subsidies will drive private enterprises to invest an estimated NT$35.02 million in innovation, becoming the cradle of circular economy entrepreneurship and driving the development of new business models with innovation.

There have already been numerous cases of circular economy implementation from subsidized enterprises in the City. For example, Nutransfer International Co., Ltd. developed the "ink recycling reusable circular system", installing residual ink catchers that can recycle over 90% of residual ink, thus making the product friendlier to the environment, lowering emissions, and strengthening the value of green energy-related industries. ClothesTelling Co., Ltd. launched an online shared closet that allows buyers and sellers to exchange second-hand clothing, embodying the spirit of circular economy. Agriforward Co., Ltd. aims to resolve agricultural sustainability issues through technology, providing technology and consultation services tailored to each client. This helps resolve farming and agricultural environmental pollution issues, maximize the value of agricultural products to increase farmers' earnings, and establish a "cradle to cradle" model for food and agriculture to address the conflict between humankind and the environment.



▲ Taipei City Government Venture Capital Assistance Structure

Promote sustainable, low-carbon procurement

Taipei City actively fosters a low-carbon green industrial environment, encouraging citizens to practice green consumption and implementing green procurement in the public sector. Through green procurement, the City strengthens its promotion of sustainable consumption and production models, thereby achieving the goals of environmental protection and raising awareness among general consumers. In 2020, the amount spent through green procurement for designated programs reached NT$ 728.81 million and continued to show steady growth. For private enterprises and groups, the City guides relevant manufacturers to apply for eco-labels, thereby increasing the market share of green products. This, in turn, encourages consumers to choose said products. In 2020, private enterprises and groups in Taipei City engaged in green procurement worth up to NT$ 13.2 billion, the highest in Taiwan. Going forward, the City will establish low-carbon sustainable procurement regulations, with the public sector leading the charge in purchasing products with low-carbon certifications like eco-labels or energy-saving labels. The City will also continue to encourage citizens to practice green consumption, promote green business opportunities, and build a green living circle.green living circle.

▲ Green procurement and consumption

Sustainable Environmental, Economic, and Social Development Strategies

Eco-Friendly Resilient City

Environmental protection is the foundation of climate action. It's important to take active energy-saving and carbon reduction measures, not only to reduce greenhouse gas emissions but also to re-examine various disaster prevention and environmental standards, maintain biodiversity, and ensure the City's water resources and water quality. By introducing environmental education to citizens at a young age, the City can raise awareness toward climate change issues. The City also needs to take part in global conversations on combating climate change. Therefore, after considering the targets under each SDG, SDG 4, 6, 11, 14, 15, and 17 were chosen as a foundation for these strategies.

Cultivate citizens' climate literacy

Core SDG

Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

4.7 By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development.

Secondary SDG:

To encourage citizens to understand and pay attention to environment-related issues, the City will incorporate sustainable development into environmental education, training teachers in environmental protection literacy so that schools can incorporate sustainable development and climate change issues into the curriculum, as well as create environmental education maps that cultivate climate literacy and the spirit of environmental sustainability. Schools are encouraged to organize field trips, providing students with rewarding environmental education includes field study and sensory learning experiences, which are not constrained by limitations such as time and venue.

◆Taipei City School Environmental Education Center

In order to achieve the SDGs, the City has established the “Taipei City School Environmental Education Center” based on three main areas of focus - “green simplicity”, “eco-friendly green living”, and “sustainable development”. The center coordinates environmental education with interdisciplinary partnerships and the use of external resources. Through various events, lesson plans, course designs, as well as educational pamphlets and media, the center helps the City's teachers and the general public understand a wide range of environmental education issues. The center also integrated the resources of the City's level three environmental education advocacy groups as well as experts and scholars from various fields to coordinate and plan environmental education strategies for schools at all levels, thus helping teachers and students to better understand environmental education.

◆Establish immersive environmental education facilities

▲ Explore nature in field trip by five senses

The City has 21 environmental education facilities, including the Taipei Collectible Botanical Garden located in Xinsheng Park. This is Taiwan's first environmental education center in a greenhouse botanical garden that is also a diamond-level green building, and displays hundreds of plant species from various parts of Taiwan in different climates and altitudes. The garden hosts dozens of environmental education events every year for families, schools, communities, and corporations, driving action through education, encouraging public awareness and concern for the environment, and cultivating global citizens that are capable of taking action to protect the environment and have respect for life and culture. As of the end of 2020, the garden had organized 1,306 physical environmental education classes for organizations, corporations, communities, schools, environmental education staff, and the general public, with a total of 45,054 participants. In response to the COVID-19 pandemic, the City provided online digital courses, which were watched 349,282 times in 2020, achieving the highest number of digital learning person-time the City has ever had.

In 2021, in addition to promoting events hosted by environmental education facilities that encourage people to “learn from the environment”, the City also introduced the concept of “integrations”, breaking down physical barriers and striving to improve environmental integration. The plan is to create environmental education museums without walls, connecting the City's flora, fauna, ecological resources, and scenic sights with local culture and living spaces, thereby encouraging the public to connect with and protect the land.

Stabilize the water environment

Core SDG

Ensure availability and sustainable management of water and sanitation for all

6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all.

6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity.

Secondary SDG:

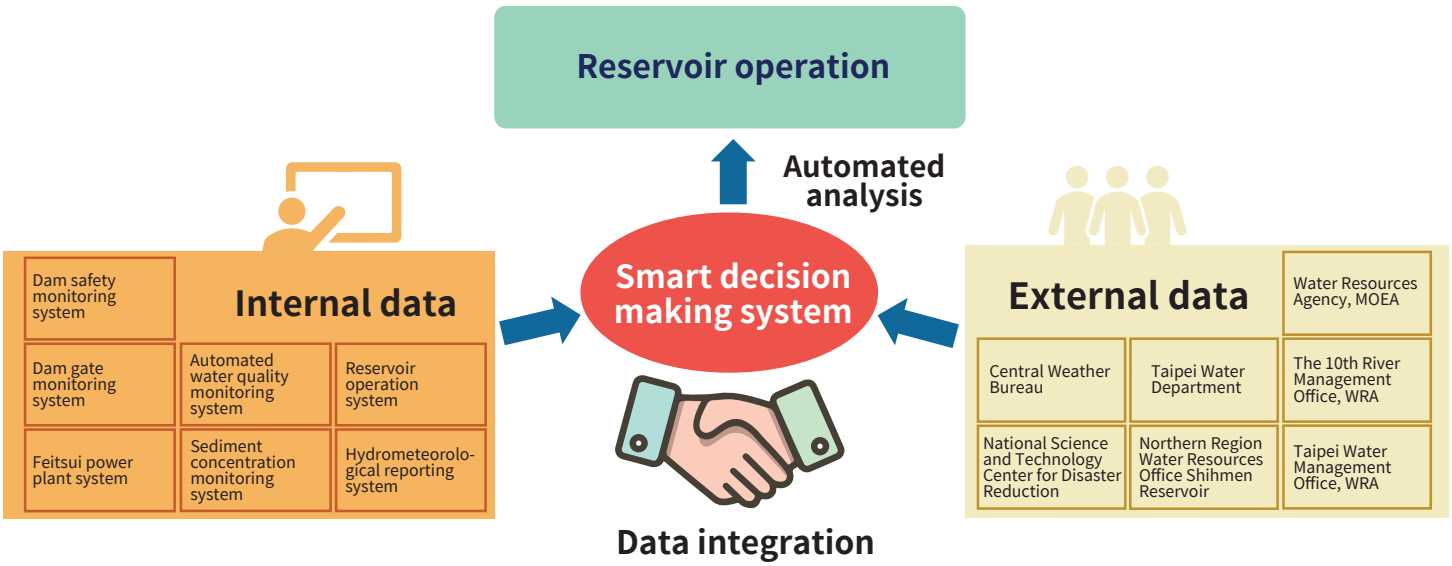
Climate change has caused changes in rainfall patterns. The difference in precipitation levels between the wet and dry seasons has increased along with the number of days without rain, resulting in frequent problems of heavy rain or drought. These issues have brought challenges to water resource processing and utilization. To ensure a stable water supply and maintain the sustainable management of water resources, the City has made great strides to ensure water supply quality from the source and reduce reservoir silt buildup. Furthermore, water recycling technology has been developed and applied to recycle water resources and prevent water shortages.

◆Ensure water supply quality

Feitsui Reservoir is an important source of water for the Greater Taipei Metropolitan Area. Along with the natural water flow of Nanshi River, the reservoir provides water for a population of six million people (including the population of New Taipei City). Therefore, stabilizing the water source of Feitsui Reservoir is key to ensuring clean, safe, and stable water for everyone in the City.

Soil and water conservation in the area surrounding Feitsui Reservoir is crucial to ensuring that the reservoir can meet the water demand of the Greater Taipei area. The City allocates budgets for water and soil conservation around the reservoir every year and has gradually reclaimed and reforested 12.5 hectares of previously developed land surrounding the reservoir since 2014. A total of 21,000 trees native to Taiwan have been planted to strengthen water and soil conservation in the catchment area. Additionally, the City has utilized the latest information technology to set up the Feitsui Reservoir Smart Decision Making System, which uses an automated process to connect relevant hydrometeorological data. It also improves the efficiency of the reservoir, strengthens the utilization of water resources, and maintains a stable water supply through intelligent analysis and applications.

As a result of the above scientific and smart management, the water source utilization rate of Feitsui Reservoir reached 90.1% in 2020. Feitsui Reservoir has maintained excellent oligotrophic-level water quality for 8 consecutive years, the only reservoir in Taiwan to reach such high water quality standards. Moreover, according to the 2020 survey, the cumulative sedimentation rate of Feitsui Reservoir was only 6.68%, indicating that the catchment area conservation and sedimentation management had been effective. Careful operation, monitoring, and management will extend the life of the reservoir and also ensures a stable water supply for people in the Greater Taipei Metropolitan Area.



▲ Establishing the Feitsui Reservoir Smart Decision Making System to improve the stability of water supply

◆Promote water recycling and reuse

In addition to providing a stable supply of water for residential use, the City also worked on the diversified development of water resources, transitioning the Dihua Sewage Treatment Plant and Neihu Sewage Treatment Plant into water resource recycling centers. Currently, the two plants can produce 10,000 m^3 and 20,000 m^3 of reclaimed water daily, respectively. The reclaimed water is used to clean factory floors, water plants, cool road surfaces, and wash equipment, and is provided for free to government agencies and the public. The City actively promotes the use of reclaimed water for plant watering, street cleaning, dust suppression, road cooling, and other uses that do not involve direct skin contact. The City also organizes environmental education courses to promote the advantages of reclaimed water and the importance of recycling water. Between 2017 and 2020, the average monthly reclaimed water usage was 222,844 m^3, saving an average of 89 standard swimming pools' worth of water (2,500 metric tons per pool) each month.

▲ Aerial view of Minsheng Water Resources Recycling Center

The City has continued to plan the construction of three additional water resource recycling centers in the Minsheng area, Binjiang area, and Shezi Island, which would steadily increase the City's sewage treatment capacity and production of reclaimed water. In particular, the Minsheng Water Resources Recycling Center is expected to begin operating in 2025, with a daily sewage treatment capacity of 40,000 m^3 and reclaimed water production capacity of 20,000 m^3. Minsheng Water Resources Recycling Center will also incorporate surrounding parks, greenery, and existing water facilities to become a brand-new “water resources education center”. The nearby Minsheng Community will serve as a demonstration area for the diversified water supply model of “laying pipe network and supplying water directly to households” to integrate reclaimed water into the daily lives of citizens in the City as a secondary water source and encourage its use.

Ensure urban disaster prevention and quality environment

Core SDG

Make cities and human settlements inclusive, safe, resilient and sustainable

11.5 By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations.

11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management.

Secondary SDG:

◆Ensure citizens can enjoy good air quality

To create an environment with good air quality, the City enacted the "Taipei City Clean Air Action Plan" in 2016, implementing the strategy of "low emission, green transportation, and regional cooperation". Aside from promoting the replacement of old diesel vehicles, with additional subsidies for replacing diesel vehicles with electric models, the plan also involved measures such as creating an electric vehicle-friendly environment, establishing pollution prevention standards and regulations for the food and beverage industry, promoting low-pollution boilers, converting large coal-fired power plants nearby to natural gas, coordinating the reduction of sulfur content in aviation fuel at Songshan Airport and the installation of diesel particulate filters on garbage trucks and diesel vehicles.

▲ Air Quality Maintenance Zone Sign

In addition, the City has designated three transportation hubs and six tourist hotspots as "Air Quality Maintenance Zones", introducing an automatic license plate recognition system to flag vehicles that fail to meet emission standards. Large diesel vehicles and trucks would need to be certified at a city or county diesel vehicle emission inspection station and obtain the Premium Self-Management Label (equivalent to phase four vehicle emission standards), and scooters need to undergo required regular inspections at local scooter inspection stations to ensure their exhausts are in good condition before they could enter the zone.

Thanks to the combined effort of the City Government and Taipei citizens, the City's annual average concentration of $PM_{2.5}$ has dropped from 19.6μg/m^3 in 2014 to 12.1μg/m^3 in 2020, an improvement of 38.3%,

showing a progressive improvement of air quality. Also, the City's $PM_{2.5}$ levels have met national standards for three consecutive years, with the Environmental Protection Administration announcing that the City's $PM_{2.5}$ level is low enough for the City to be upgraded from a class 3 control region to a class 2 control region, effective from January 2021, thus giving Taipei citizens a healthy living environment with good air quality.

◆Implement the Taipei City Regional Disaster Prevention and Response Plan

Through various disaster simulations and risk analysis, taking into consideration the effects of climate change, the City formulated the "Taipei City Regional Disaster Prevention and Response Plan" to serve as a comprehensive guide for disaster prevention planning. According to the scale of various disaster scenarios, annual targets and key disaster prevention tasks are established for decision-makers, the general public, and high-risk communities to reference. Meanwhile, through multi-channel advocacy to different demographics, the City carries out effective disaster education so that the public can understand the potential risks and disasters that can happen in their environment to ensure the proper execution of disaster prevention tasks.

Slope safety management

To help the public better the safety of their homes, the City established the "Slope Data Integration System" [4], consolidating data from the City's 26 rainfall stations and 11 debris flow monitoring stations, as well as relevant disaster relief information such as major rivers with potential mudslide risk, old hillside settlements, and monitored slopes. When the rainfall reaches warning levels, the system automatically sends out an alert, proving the City Government with a reference for disaster relief decisions and evacuation mechanisms to ensure the housing safety of hillside residents.

The City also launched the "Self-driven Disaster Prevention Community 2.0" plan, holding seminars to educate the residents on disaster prevention and avoidance and working with district offices to organize self-driven disaster prevention drills and establish a self-driven community support system, thereby establishing a disaster relief and response partnership between the government and the community to implement mudslide prevention and awareness-raising.

Integrate flood control infrastructure into urban plans

Extreme weather has caused an increase in the frequency of intermittent rainfall. The Guandu and Shezi Island region is a low-lying area within the City, so when urban planning changes were made, plans for the region were also formulated based on flood defense standards for a 200-year return period. These included flood prevention facilities, low walls, and other appropriate fixtures. Furthermore, low impact development (LID) management mechanisms have been introduced, establishing water resource management mechanisms such as water penetration, water retention, water storage, runoff, and the recycling of reclaimed water, improving the ability for public and individual construction sites to adapt to the climate in response to the challenges extreme weather can bring.

[4] Slope Data Integration System (https://www.geomis.gov.taipei/)

Protect rivers and safeguard ecology through public-private partnership

Core SDG

Conserve and sustainably use the oceans, seas and marine resources for sustainable development

14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.

Secondary SDG:

Climate change can affect river water supplies, water quality, and rainfall patterns, directly impacting freshwater ecosystems and making it harder for freshwater species to survive. Therefore, the City effectively manages creeks, rivers, and wetlands to maintain a healthy freshwater system, improving the City's served rate of modern sewerage systems and proper handling procedures. As of the end of 2020, the served rate of sanitary sewer had reached 80%, with 85.58% of the percentage of city population served by sewerage collection. The City also encourages citizens to participate in water environment patrols and river conservation, utilizing the power of the public to clean up rivers, reduce pollution, and expand water environmental education.

Currently, the City's water environment patrol has 22 teams patrolling an area spanning 109.58 km, covering areas including the Tamsui River, Keelung River, Xindian River, and Jingmei River, forming a monitoring network. Patrol volunteers often patrol rivers on foot or by bicycles, examining for any abnormalities with the rivers, and examining river water quality with simple water quality test kits. There are also student water environment patrol teams, including the “Youth Volunteer Service for Eco-Friendship”, “Zhinan Elementary School”, “Muzha Vocational High School”, and “Zhong-zheng Senior High School”, which patrol Keelung River, Zhinan Creek, Jingmei Creek, and Southern Sulfur Creek, respectively. The first of these student patrol teams, the “Youth Volunteer Service for Eco-Friendship” operates on the philosophy of “youths changing the world”. The team invites junior high school and high school students on river cleanups and holds an ecology camp every summer, taking students on nature trips and combining games with water environmental education. These activities allow students to learn by doing and reflect on environmental issues, thereby encouraging them to affect others and put efforts into environmental education services.

As of the end of 2020, the City's four student water environment patrol teams had conducted 74 river patrols and simple water quality tests and organized the “One with Water” Green Youth Empowerment Service Promotion Project, inviting student volunteers within the area to help protect the rivers to make them enthusiastic about environmental protection and carry out environmental education.

▲ River cleanup event organized by the Taipei City Water Environment Patrol

▲ Youth Volunteer Service for Eco-Friendship promotes the importance of river water quality tests

Ensure biodiversity

Core SDG

Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements.

Secondary SDG:

To ensure the City's biodiversity and achieve a balance between urban development and ecological conservation, the City maintains existing ecological parks, establishes forest trails, and conserves nature conservation zones to create an urban ecological green corridor and provide citizens with friendly recreational environments. Also, by restoring wetland and pond ecology as a buffer between the City and nature, the City is able to provide a friendly environment where people can coexist with nature, regulate the urban climate, and protect the City's ecological sustainability and circulation.

◆Create urban green corridors

Taipei City's basin topography, abundance of buildings and skyscrapers, and highly developed transportation system cause a large amount of hot air to be expelled from air conditioners. This, in turn, causes the City to be much hotter than neighboring suburban areas. In response, Taipei City Government proposed the "Taipei street trees 15-Year Vision Plan". Starting in 2021, the plan involves the three strategies of "green network, green shade, and green decoration", six targets, and nine actions, planting trees and shrubbery to connect green spaces, improving roadside greenery, strengthening street trees maintenance management and health inspections, decorating roadsides with Azaleas, the City flower, and beautifying Taipei City with a variety of plants. These measures will provide citizens with high-quality roads, establish an urban green ecosystem, improve the air quality around roads, protect citizens' health, and help create a clean environment.

◆Constructing the green lungs of the City

To improve the living environment of local residents and create a leisure and recreational space, the City transformed Lihe Ecological Park from an old hillside settlement into a 1.8 hectare ecological park. In addition to the existing Paper Mulberry trees, Chinese tallow tree, Chinese fringe tree, China berry tree, and other native trees are planted to create a forest trail with layered green landscaping. The mountain path at the end of the trail connects to Fuyang Eco Park and other hiking trails to Fujhoushan Park and Zhongbu Mountain, joining the area's large hillside parks and natural resources.

In addition to parks and green spaces, the City's Guandu Nature Reserve has a rich ecosystem of mangroves and water birds with diverse native species, making it a key conservation area. To ensure a balance between land development and conservation, the City has formulated the "Species DNA Ecological Base"

initiative. Under the initiative, the gentle slopes set aside in accordance with flood prevention plans must integrate existing artificial wetlands and Daotou Park to serve as a conservation area for local species. The area must also have parks and green spaces planned based on existing old trees and ecological resources, with overall planning to connect these spaces into an eco-corridor where various species can grow and thrive.

As of the end of 2020, the area of green resources in Taipei had reached 14,051 hectares, roughly 52% of the City's land. Urban green resources not only provide a green public recreational space for citizens but also help to purify the air and reduce greenhouse gas emissions.

◆Promote wetland ecological engineering and conservation

Taipei has rich waterfront resources and ecology, but it is also prone to flooding due to the low-lying terrain of certain regions. Therefore, for many years, the City has strived to strike a balance between water and flood control and the ecological environment.

▲ Environmental education event held at the Shezi Island Wetland Information Center

The artificial wetlands of Shezi Island are located between the old and new dikes on the left bank of Keelung River, downstream of Shezi Bridge. Here, the City has created a diverse habitat, introducing and conserving many species, expanding and extending the wetland area, and promoting environmental education events (Shezi Island Wetland Information Center). These efforts turn the area into an artificial wetland suitable for watching waterbirds, not only extending the waterfront green corridor created by the Guandu Wetland and the mouth of Keelung River, but also expanding the conservation area to provide a diverse wetland environment.

Located in Neihu District, the Dagou Creek Ecology and Water Control Park is a flood detention basin set up to reduce the burden on the downstream drainage system during heavy rainfalls. The park's river channels feature a hydraulic drop design that reduces the drop of the riverbed, slowing down the water flow and reducing the force of potential floods to prevent erosion. The park is situated at the foot of a hill where the river runs through, and has the advantage of abundant water resources and proximity to the mountains. This makes it an ideal place to observe animals that live in low-altitude, lightly forested environments. The park has a waterfront trail where citizens can see butterflies and dragonflies (May to September). In addition, nearly 1/3 of Taiwan's existing frog species can be observed around Dagou Creek.

Through the combination of hydraulic engineering and ecological design, the City has completed many water control parks that serve as a public recreation area for the public and a habitat for various species. These efforts were completed while also taking into account flood prevention and safety. Data gathered from long-term ecological resource monitoring of these parks will be applied to environmental planning, environmental education, habitat improvement, and biodiversity resource maintenance, balancing the goals of water control, food prevention, and ecological protection to turn Taipei City into a sustainable ecological city.

Establish Global Partnerships

Core SDG

Strengthen the means of implementation and revitalize the global partnership for sustainable development

17.14 Enhance policy coherence for sustainable development.

17.16 Enhance the Global Partnership for Sustainable Development, complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology and financial resources, to support the achievement of the Sustainable Development Goals in all countries, in particular developing countries.

17.17 Encourage and promote effective public, public-private, and civil society partnerships, building on the experience and resourcing strategies of partnerships.

Climate action and sustainable development are important issues for major cities across the world. Aside from promoting relevant policies, it is also necessary to take part in global conversations to understand international development trends that can serve as a reference for future policies. In 2020, Taipei City was invited to take part in the London Climate Action Week (LCAW) to share the achievements of the City's sustainable development actions. The City has also participated in various international organizations to establish international communication channels.

◆Urban Environmental Accords (UEA)

In 2005, the “Urban Environmental Accords” (UEA) was signed in San Francisco in the United States. The agreement proposed 21 action plans on seven major issues: energy, waste reduction, urban design, urban nature, transportation, environmental health, and water, in order to enhance the sustainable development of urban environments. Since 2011, summit meetings have been held every two years to allow members of the alliance to exchange progress and achievements in the implementation of the Accords.

In 2011, 2015 and 2017, the City attended the Urban Environmental Accords Summit held in Gwangju, South Korea, Iloilo, Philippines, and Melaka, Malaysia, respectively. During the 2017 summit, Taipei City was awarded the first UEA City Award, which recognizes Taipei as a model city that promotes best practices in green and sustainable measures.

◆Carbon Disclosure Project (CDP)

The City has been participating in the international Carbon Disclosure Project (CDP) since 2011, actively reporting the City's greenhouse gas reduction results every year. In 2018, the CDP rated for the first time the results of the 2017 disclosure of 596 cities participating in global carbon disclosure. Only 7 % of the cities were rated A, among which was Taipei City. Taipei City was also the only city in Asia featured in a special feature article. In 2019, among more than 850 cities around the world that participated in carbon disclosure, Taipei City received another A-level evaluation (among 105 A-level cities), and was named in the CDP annual carbon disclosure A-level evaluation for two consecutive years.

◆Other international organizations for sustainable development

To promote sustainable development of Taipei City, connect with the world, establish a close partnership with global cities, and build Taipei's reputation as a livable and sustainable city, Taipei City actively participates in the Asia Pacific Cities Summit (APCS), CityNet, the Local Governments for Sustainability (ICLEI), United Cities and Local Governments (UCLG), the Global Social Economic Forum (GSEF), and other international organizations focused on issues related to sustainability. During these conferences, Taipei City actively presents the results of the City's sustainable development strategies and policies, sharing successful stories with other cities through these international platforms. The City also seeks out opportunities for cross-region collaborations, making use of the publicity channels (print, online, and social media) of the international organizations or events to market and promote the City's sustainable policy results and increase the City's international visibility.

Picture provided by Public Works Department, Taipei City Government

Circular Economy, Prosperous Taipei

As the Intergovernmental Panel on Climate Change (IPCC) indicated in its 2018 "Special Report on Global Warming of 1.5°C", global warming of 1.5°C would cost the world economy 54 trillion USD by the end of the century. If warming reaches 2°C, it would cost the world economy 69 trillion USD.[5] To achieve the goal of net-zero emissions, the City focused its efforts on energy, circular economy, and low-carbon vehicles. The City is also emphasizing emerging energy technologies, achieving full resource recovery, and promoting circular economy and the commercialization of new energy vehicles, thereby creating jobs and promoting economic growth. Therefore, considering the targets under each SDG, the actions under SDG 7, 8, and 12 were chosen for these aspects.

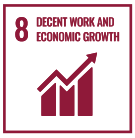
Develop diversified energy base

Core SDG

Ensure access to affordable, reliable, sustainable and modern energy for all

- 7.2 By 2030, increase substantially the share of renewable energy in the global energy mix.
- 7.3 By 2030, double the global rate of improvement in energy efficiency.
- 7.a By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology.

Secondary SDG:



[5] According to the 2018 "Special Report on Global Warming of 1.5°C" by the IPCC

Taipei City is committed to becoming a smart green energy capital. With “energy conservation, efficiency, and innovation” , as the City's guiding principles, the development of renewable energy became one of the City's main policies to achieve net-zero emissions by 2050. To that end, the City is actively promoting the development of solar PV, opening municipal properties, and encouraging corporations and citizens to jointly participate in power generation.

Through the diverse developments in the energy sector, the City improved energy self-sufficiency and introduced smart micro power grid systems that integrate solar PV and energy storage equipment in social housing, campuses, government offices, and parks. The public sector took the lead in constructing smart grid demonstration fields, adopting the three major strategies of “site type planning”, “expanding green energy use” and “establishing design guidelines”. These strategies demonstrate the diversified application model of smart energy systems in metropolitan areas and their ability to reduce electricity consumption, promote the use of renewable energy, reduce the burden of energy use for the environment, and improve the overall stability of the City's power supply. Now, the City is gradually completing its smart grid network to achieve its goal of energy transition.

◆Actively apply for and trade green certificates

Since 2017, the City has actively compiled a list of government offices and schools that have installed renewable energy equipment and applied for green certification. So far, the City has made applications for energy self-generation equipment at seven public sector agencies, and over 1,000 certificates have been issued. In 2020, the City put these certificates up for sale for the first time, encouraging suitable private companies to purchase the City's green certificates. Since then, the City has completed the trade and transfer of over 200 certificates, thus achieving diversified energy development and application. By taking the lead in acquiring green certificates, the City government promotes and improves green energy industrial development and capacity in public and private sectors so that “every household can conserve energy, and green energy is available everywhere”.

◆Energy-efficient renovation for vulnerable households

In line with its people-centered spirit, the City's energy transition process also takes into account the needs of vulnerable people. The “Energy Welfare Plan for Disadvantaged Families”, which aimed at registered middle- and low-income households, was launched in 2015. As part of this plan, professional teams visited the households to evaluate their needs and replace old lighting fixtures with energy-saving lighting for free. This not only reduced energy consumption but also helped these disadvantaged families save on electricity bills, and created bright, comfortable, and warm spaces for senior citizens living alone, the disabled, and children. In addition, the City actively promotes the concept of energy conservation, gently and gradually changing the residents' energy usage habits, connecting energy conservation with power usage safety. We expect to spread the awareness of energy conservation across more households, tackling issues from an energy perspective, generating social benefits, and giving hope to light up vulnerable families. By combining environmental protection with care for the needy, the City aims to create warm power of positivity.

◆Establish smart grid demonstration sites

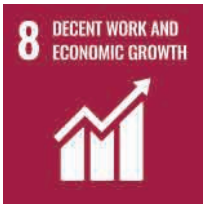
To increase energy use efficiency, the City established smart grid technology-based energy management systems at government offices, schools, public spaces, and private institutions to effectively manage renewable energy, energy-saving, and energy storage facilities. The City also formed a team comprising multiple government agencies to participate in Taipower's demand bidding program so that these government agencies would reduce their electricity consumption during peak load periods in exchange for reduced electricity fees. This would help improve the balance between power supply and demand in the region. Currently, the City has eight smart grid sites, including three government offices, two schools, two public spaces, and one private institution. Among these sites is Baoqiao Fire Station, which installed solar PV power facilities on the rooftop, established disaster prevention backup application demonstrations, and set up an energy storage system. On average, the station saves 3,833 kWh of power during peak load periods and generates 5,910 kWh of power each year. It also has the capacity to provide power to buildings and provide backup power for disaster prevention scenarios when necessary. In addition, Taipei's only private smart grid site at the moment, Tatung Company, introduced green energy facilities and smart energy-saving facilities to its existing office building. In 2020, the company signed a cooperation demonstration agreement with Taipei City and completed its introduction of power-saving facilities, installing an energy storage system and an air-conditioning monitoring system, which on average saves the company 15,618 kWh of power during peak load periods per year.

▲ Taipei City Energy Management System[6]

[6] Taipei City Energy Management System (https://tpcems.tier.org.tw/open/home)

Provide vocational training and services to all

Core SDG



Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

8.3 Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services.

8.5 By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value.

Secondary SDG:

Green industry transformation can easily impact the employment of certain disadvantaged groups. To ensure that all citizens have equal employment opportunities, the City provides vocational resources for disadvantaged groups, strengthening their professional skills and competitiveness to reduce the unemployment rate.

◆Employment services for people with disabilities

The City prioritizes the assessment of the abilities, skills, and attitudes of disabled persons, providing relevant vocational training and job-matching services. For disabled persons who do not meet the requirements of general workplaces, the City will match them to a suitable workplace (ex: Taipei Sheltered Workshop), providing work opportunities to protect the employment rights of disabled persons.

Vector by Freepik.com

◆Facilitate the employment of specific disadvantaged groups

Focus on specific groups, including: individuals who are solely responsible for their family's income, middle-aged and senior citizens, persons with disabilities, indigenous people, low or middle-income individuals who are able to work, the long-term unemployed, women re-entering the workforce, victims of domestic violence, and rehabilitated ex-convicts. The City provides one-on-one case management services to offer comprehensive support as well as professional consultation and assistance to help these individuals re-enter the workforce and gain steady employment.

◆Encourage the employment of middle-aged and senior citizens

Taipei City is expected to become a super-aged society by the end of 2021, with one in every five citizens being over the age of 65. To increase the labor participation rate of middle-aged and senior citizens, the City formulated various measures, including: the senior citizens consultation service counter at the Nangang Dongming Youth and Seniors Employment Service Station, and the Senior Employment Platform on the Taipei OKWork website (includes information about job openings and subsidies for corporations and citizens). The City also collaborates with the Ministry of Labor in implementing the “Promotion of Senior and Middle-Aged Job Redesign Plan”, facilitating middle-aged and senior workers in the workplace by improving workplace environments, work equipment, and machinery, providing employment counseling, improving work conditions, and adjusting workflows and processes. The City also holds two major employment fairs for youths and middle-aged or elderly people, thereby providing employment assistance from multiple angles to ensure the workplace health and safety of middle-aged and senior workers.

▲ Cultivate exercise trainers for middle-aged and senior citizens

Construct circular economy development

Core SDG

Ensure sustainable consumption and production patterns

- **12.1** Implement the 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns, all countries taking action, with developed countries taking the lead, taking into account the development and capabilities of developing countries.
- **12.5** By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse.
- **12.7** Promote public procurement practices that are sustainable, in accordance with national policies and priorities.

Secondary SDG:

In response to the calls for sustainable development around the world, the City developed the "Circular Taipei 2.0" Implementation plan, incorporating circular sustainability into policymaking through inter-departmental integration. With the strategic direction of building a "circular urban resource chain", the City focuses on key areas such as water resources, energy sources, food and agriculture, waste management, transportation, and architecture, while also creating an environment that bolsters industry innovation, raising public awareness about resource sustainability in hopes of achieving the goal of building a circular, smart, shared, and livable environment.

◆Source reduction and resource recycling

To facilitate the sustainable recycling of materials, promote relevant waste reduction and resource recycling policies, and encourage conservation of natural resources and reduce waste disposal strain, the City has continued to promote measures such as banning plastic bags, launching dual-use shopping bags, and banning disposable tableware. The City has also adopted a wide array of policies and tools to ensure that the amount of solid waste produced decreases year by year.

Disposable tableware ban

In response to the overuse of single-use and melamine tableware, which have hazardous effects on the environment and health risks, the City has promoted the ban of single-use and melamine tableware in government offices and schools. This policy helped reduce waste, save energy, lower carbon emissions, protect the environment, and protect the health of staff members, teachers, students, and visitors alike. The City also issued the "Guidelines of the Ban on Single-Use and Melamine Tableware" to be followed in government buildings and schools. As of the end of 2020, the use of paper and plastic container has fallen by 82% and 67%, respectively. These guidelines are followed in 38 markets, 13 night markets, 29 colleges and universities, 27 central government buildings, and 117 outsourced venues, as well as 222 companies. As for department stores, shopping centers, and hypermarkets, the City banned a total of 54 department stores and shop-

ping centers and 13 hypermarkets from providing "disposable tableware of any material" to consumers dining on-site according to the "Objects and Means and of Restricting the Use of Disposable Tableware" announced by the Environmental Protection Administration, effective since January 1, 2020 and May 1, 2020, respectively.

Improve resource recycling rate

Taipei City's Per-Bag Garbage Collection Fee and garbage sorting system have achieved outstanding results that have garnered international recognition, receiving the "Asia Waste Management Excellence Award" in 2001. The City also made efforts to encourage students to recycle by organizing inspections as well as recycling drives for home appliances and electronic products for college students during graduation season.

Additionally, in response to the City's housing arrangements, the City organized property community counseling and seminars to encourage the public to take initiative in resource recycling through neighborhood management and facilities. The City also collaborated with companies to organize recycling for electronic products so that companies can also help encourage the public to recycle resources. The City also installed reusable shopping bag circular boxes and shopping bag rental machines at markets to protect the environment by reducing resource waste and plastic use. Through community counseling and environmental education courses held by refuse incineration plants, the City promotes the restoration of used furniture and other examples of resource recycling as it continued to promote additional measures to implement source reduction, expand recycling sources, promote resource recycling, and cooperate with EPA programs such as the "Recycling Army" volunteering program, Happiness Recycling Station events, and "Recycling Care Project". Moreover, the City developed a transparent system to track cleaning and transportation equipment and had incineration plants distribute electricity sales vouchers and coupons for designated garbage bags, achieving public and private cooperation to increase the City's resource recycling rate year by year. As of the end of 2020, the resource recycling rate of Taipei had reached 64.6%.

Banning plastic bags and promoting dual-use shopping bags

In 2018, the Environmental Protection Administration expanded the restrictions on the use of plastic bags for shopping, banning a total of 14 categories of businesses from providing free plastic bags for shopping. The City also promoted dual-use shopping bags. Hypermarkets, supermarkets, and convenience chain stores can only sell "environmentally friendly dual-use bags" to reduce the use of plastic bags. Furthermore, the City strengthened advocacy campaigns with slogans like "Don't forget plastic reduction: bring your own bag, borrow a bag, or use a dual-use shopping bag" so that citizens will bring their own reusable bags. To commemorate the 20th anniversary of Taipei

▲ Taipei City eco-friendly dual use bag

City's Per-Bag Garbage Collection Fee, the City launched limited-edition dual-use shopping bags illustrated by Jimmy Liao on December 19, 2020. Six million commemorative bags were produced with three different designs to encourage the public to "bring the bag, reuse the bag".

◆Develop industrial exchange platforms

International exchange and connection

On September 11, 2020, Taipei City Government organized the "2020 Taipei International Sustainable Future Vision Forum- Low-Carbon Transformation and Circular Cities for Urban Change". Speakers from Singapore, the UK, and Australia; foreign companies such as Microsoft, Dell, Siemens, and IKEA; as well as 20 Taiwanese experts and scholars were invited to the Forum. The event conveyed the concept of low-carbon transformation and circular value, enabling citizens' understanding towards the featured products, effectively promoting the City's policies and indirectly driving business opportunities for green circular industry.

Industry-government collaboration

To establish advantages and increase industry and citizen participation in building a low-carbon circular economy, the City provides necessary assistance and support to businesses that are still in their infancy or just starting out through counseling and matchmaking services. Each year, the City chooses 10 to 15 corporate social enterprises for incubation counseling, providing support and counseling from experts and those with experience in the industry in addition to matching them with diverse industry resources to help them gradually develop a commercially stable business scale. Starting in 2020, the City strengthened connections with the commercial market, and as of the end of 2020, had counseled a total of 70 corporate enterprises.

Startup labs

To provide startup teams with the initial working space they need and attract foreign entrepreneurs to settle in the City, Taipei City actively consolidates existing spaces in need of revitalization, using public lands and existing facilities to create startup labs, selecting sites that are immediately available and have the potential for expansion, good environmental functions, and convenient transportation. So far, the City has made plans for 23 incubation labs with a total floor space of 589,000 m^2. As of the end of 2020, 14 such labs had started operations and were available to companies, with nine additional bases set to operate in the future, creating startup industry settlements and exchange spaces to bolster the City's capacity for innovation in the development of circular economy.

▲ t.Hub (Taipei Innovation Hub) in Neihu Technology Park

Friendly, Inclusive and Shared Society

Due to health or economic factors, disadvantaged groups are often the most significantly impacted by climate change. Climate change also impacts men and women differently, with women often suffering more from natural disasters than men. Therefore, the side events of the UNFCCC COP have begun integrating a gender perspective to the discussion, improving women's participation in higher levels of decision-making, and establishing gender-related indicators in climate change adaptation and mitigation plans in order to distribute resources more fairly and appropriately. Therefore, considering the SDG targets, SDG 1, 2, 3, 5, 9, 10, and 16 were chosen for this aspect.

Build self-driven disaster prevention communities

Core SDG

End poverty in all its forms everywhere

1.5 By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters.

Secondary SDG:

Extreme weather such as short-time-delay heavy rainfall poses a challenge for urban drainage systems. Sudden strong precipitation of over 100mm has become an undeniable threat. This type of sudden strong rainfall not only exceeds the amount of rain that Taipei's drainage system was designed to handle (78.8mm/hr) but is also sudden and highly unpredictable, easily causing temporary flooding and damage to citizens' property. The City has established various disaster prevention platforms and disaster relief services to help citizens develop disaster prevention and disaster relief capabilities and reduce damage caused by disasters.

Disclose disaster information

To provide citizens with real-time information from rainfall stations, water pumping stations, storm-water sewers, and other flood-prevention infrastructure, the City established the "Taipei City Disaster Prevention Info Website", which has a map-based interface that makes it easy for citizens to look up information such as rainfall, the water levels of rivers or sewage systems, and the operation status of water pumping stations. The City also designed the "Taipei City Disaster Prevention App" so that citizens can receive the latest disaster prevention information on the go.

Disaster prevention community education

The City promotes the concept of self-driven disaster prevention communities so that the residents helping and protecting each other formulate the front line of defense in disaster prevention and rescue, while community mutual assistance and government rescue are the second and third lines of defense, respectively. Moreover, the City raises citizens' crisis awareness by encouraging community self-driven disaster prevention, devoting efforts to the disaster prevention education and rights of disadvantaged groups. Taipei City also takes tangible actions to reduce the risks of disasters and the damage disasters can cause. Additionally, the City actively coordinates disaster relief volunteer training and certification. As of the end of 2020, a total of 1,840 individuals had become certified disaster relief volunteers, with at least two disaster relief volunteers in every neighborhood. During normal periods, these volunteers assist in promoting disaster prevention efforts to families, neighborhoods, and corporations. In the event of a disaster, these volunteers help with initial disaster relief and rescue, evacuations, disaster investigation, and other disaster response measures.

Disaster relief and shelters

The City has formulated the "Taipei City Emergency Evacuation and Shelter Plan for Various Disasters", establishing short-, mid-, and long-term shelters and regional evacuation mechanisms. The City also has disaster relief plans in place to distribute disaster relief funds and reduce the impact of extreme climate disasters.

▲ Organize events to promote flood resilient communities

Ensure stable and sufficient food supply

Core SDG

End hunger, achieve food security, improve nutrition, and promote sustainable agricultural production measures

2.1 By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round.

2.4 By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality.

Secondary SDG:

Climate change not only causes natural disasters such as high temperatures, heavy rains, and droughts, but may also indirectly lead to ecosystem imbalances that can impact crop production and result in food shortage crises. Although Taipei City is not a major agricultural city, efforts to stabilize the food supply and ensure minimal food waste should still be made. Therefore, the City has designated the Guandu Plain agricultural zone to promote food education to citizens. Additionally, the City promoted events that encourage people to cherish food and appreciate the value of sharing food, so that no food goes to waste. The City also promoted community senior citizen outreach programs to ensure safe and sufficient food for all.

◆Maintain a stable food production system

Though not one of Taiwan's major food production areas, Taipei's Guandu Plain Agricultural Zone nevertheless should be maintained as an agricultural resource and a good agricultural environment. Currently, the area can be subdivided into the Guandu Agricultural Zone and the Zhoumei Agricultural Zone, which are 314 hectares and 163 hectares respectively. Adjacent to the Guandu wetland, these areas are maintained for agricultural use in the short term and reserved for future generations in the long term.

To educate citizens about food security and the concept of cherishing food, the areas are also used to promote food and agricultural education, with local villages collaborating with relevant school courses to advocate the concepts of food education and edible landscaping, encourage urban residents to take part in farming, marketing, and cooking produce, and strengthen citizen participation. These efforts will raise awareness toward food education concepts and help achieve sustainable farming.

Going forward, the City will endeavor to safeguard undamaged agricultural areas, prevent the area of arable land from reducing due to land development projects , thereby ensuring food security. The City will also strengthen the functions of agricultural ecosystems, including flood control, landscape, recreation, and cooling to improve urban resilience.

◆Build Taipei Garden City and create ecological stepping-stone

Taipei City's basin topography and abundance of developed land have made it difficult for hot air to dissipate, resulting in high temperatures that in turn cause citizens to increase the use of air conditioners, which worsens the urban heat island effect. Greenery and improving airflow are among the ways to reduce the urban heat island effect. Therefore, the City began promoting the concept of the "Taipei Garden City" in 2015, utilizing idle rooftops and corners to plant edible plants. These efforts increased green spaces, reduced the urban heat island effect, and incorporated food education, allowing citizens, teachers, and students to understand the importance of organic farming to environmental sustainability through the gardening process. Leftover produce grown by communities is given to low-income families, senior citizens living alone, and other disadvantaged groups, or used for community group meals to encourage senior citizens to go out and interact with others.

As of 2020, the City had over 210,000 m^2 of urban garden space, with over 260,000 people (person-time) participating in urban gardening. In addition to incorporating food education, the ever-increasing number of urban green areas can also serve as ecological stepping-stone, both benefiting the City's ecosystem and beautifying the urban landscape.

▲ Taipei Garden City

◆Promote food exchange platforms

Leftover food is often wasted without the means to send them to people who need them. To resolve the issue of leftover food waste and effectively distribute and utilize leftover food, the City established a food exchange platform. The platform works with seven public markets (Nanmen, Xinglong, Muxin, Chengde, Yongchun, Tudong, and Chenggong) and the Taipei Agricultural Products Marketing Corporation. Vendors would donate food left over each day, and the Department of Social Welfare would coordinate social welfare groups that serve the elderly, disabled people, children, women, or families to pick up the food at the markets at specific times. In 2020, a total of 14,689 kg of foods were donated, benefiting 28,812 people (person-time). Going forward, the City will continue to add suitable social welfare groups to the program to prevent food waste, making the most of leftover foods by turning them into delicious dishes.

◆Teach our young to cherish food

In addition to campaigns aimed at raising public awareness about the importance of cherishing food, the City also tackles the issue of food waste from the source by strengthening efforts to reduce the food waste of the food and beverage industry. In 2020, a total of 53 enterprises (381 chain restaurants, catering services, department stores, hotels, hypermarkets, and fast food restaurants) signed an agreement to reduce food waste.

Moreover, the City encourages teachers and students to utilize empty spaces in schools to create green campuses and promote organic farming and healthy foods. By promoting practical dietary and food education, schools educate students about how food is grown and produced, helping them develop healthy and safe eating mindsets. As a result, food waste from school lunches has reduced from an average of 10 metric tons per day in 2016 to 2.01 metric tons in 2020.

▲ Using board games to educate the public about the importance of healthy eating

◆Promote shared meals for senior citizens and community care

In 2021, the percentage of Taipei's population over the age of 65 is about to exceed 20%. With an aging population and low birth rates, there will be increasingly severe manpower shortages in nursing care. Therefore, the City actively established local community care centers and holds “senior group shared meals” to encourage senior citizens stepping outside to interact with the community. Taipei City currently has a total of 550 group meal locations, 40% of which operate their own kitchens while the other 60% rely on buffets, boxed meals, or central kitchens. Teams of experts and scholars conduct on-site consultation about food health and safety while the Department of Health conducts spot inspections to ensure food safety. The City also helps disabled individuals that cannot leave the house for food by providing food delivery services and subsidized meals delivered to disabled low-income or middle-income persons to lighten their financial burden.

Additionally, these locations host a variety of classes and healthy activities, consolidating resources from various city government departments and agencies. These locations not only offer meals but also a place to exercise, sing, learn talents and the use of electronic products, and get vaccinated, giving senior citizens a reason to leave the house.

Establish a monitoring network and implement disease prevention

Core SDG

Ensure healthy lives and promote well-being for all at all ages

3.D Strengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks.

Secondary SDG:

Extreme temperatures caused by climate change not only increased the risk of infectious diseases (dengue fever, bird flu) but also increased the mortality rate of cardiovascular and respiratory diseases, increasing the burden on the healthcare system. Extreme rainfall patterns increased the risks of droughts and flooding, causing a shortage of clean water or increasing the risk of exposure to contaminated water, thereby increasing the risk of skin infections, gastrointestinal issues, and other diseases.

◆Construct a comprehensive disease monitoring system

The City established the "Community Disease Surveillance Network". As of the end of 2020, a total of 154 medical facilities had signed on, monitoring 23 different types of disease syndromes for unusual spikes in cases. This would improve the accuracy and immediacy of epidemic warnings and allow the government to take appropriate countermeasures and effectively lower the risk of community spread of infectious diseases. Also, in response to the COVID-19 pandemic, the City will add four COVID-19 related syndromes and seven syndromes monitored by the CDC through health insurance data to the surveillance network, increasing the number of syndromes monitored to 34.

As for the prevention of gastrointestinal diseases, the City established an "epidemic prevention advocacy team" with professionally trained epidemic prevention seed teachers to promote accurate infectious disease prevention concepts and epidemic prevention measures in schools, workplaces, and communities, spreading epidemic prevention concepts to every corner of the City in order to become one step closer to the goal of "epidemic prevention - zero epidemics". In 2020, the City organized an educational training course for seed teachers for the epidemic prevention advocacy team. A total of 78 students attended the event. The City also organized an education training course for epidemic prevention personnel with a total of 264 participants (person-time), as well as 319 community infectious disease prevention seminars.

◆Protect the health and safety of disadvantaged groups under extreme temperatures

To prevent extreme temperatures from affecting the health of elderly people living alone, disabled people, and the homeless, the City has established a comprehensive care network for senior citizens living alone and an evacuation plan for homeless people to work in tandem with the City's heatwave early warning system and cold weather warnings from the Central Weather Bureau. In the event of extreme temperatures, the Department of Social Welfare will immediately activate the care services, mobilizing hundreds of social workers and volunteers from senior homes, disability resource centers, and the social welfare service centers of the City's 12 districts to take care of disadvantaged people and provide necessary resources and shelter, reducing the impact of extreme temperatures and preventing illnesses caused by extreme heat or cold.

Achieve gender equality under climate change

Core SDG

Achieve gender equality and empower all women and girls

5.4 Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate.

5.5 Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life.

5.C Adopt and strengthen sound policies and enforceable legislation for the promotion of gender equality and the empowerment of all women and girls at all levels.

Secondary SDG:

The City established the “Committee of Women's Rights Promotion” in 1996 and has remained committed to protecting women's rights. In response to issues of gender diversity and inclusion in recent years, the committee changed its name to the “Taipei City Gender Equality Committee” in 2021. It is also the first organization in Taiwan to establish a new model of participatory democracy by combining public-private partnership, with women, gender activists, experts, and scholars alike participating in public affairs,. Before this, women were often at a disadvantaged position and were excluded from decision-making. The establishment of this committee promotes and implements anti-discrimination laws and policies in line with the principle of gender equality.

To overcome women's vulnerability in the face of climate change and offer men and women to equitable access to resources, Taipei City followed General Recommendation No. 37 (on gender-related dimensions of disaster risk reduction in the context of climate change) of the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) and recommended inviting experts and scholars with relevant knowledge and experiences to take part in the disaster prevention expert consultation committee. The City also established the “Regulations Governing the Protection of Women's Rights” to ensure women's participation in politics and public affairs. For example, in city government-level committees, committee members of either gender must make up at least 1/3 of all members. This includes climate change and disaster prevention-related “Taipei City Government Environmental Impact Assessment and Review Committee”, the “Taipei Sustainable Development Committee”, the “Taipei City Disaster Prevention and Rescue Expert Advisory Committee”, and the “Taipei City Gender Equality Committee”. The regulations also stipulate the need to consult with feminist groups before making important environmental and economic protection policies. Through practical actions, gender equality and equal rights are promoted.

Create an accessible transit environment

Core SDG

Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation

9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and trans-border infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all.

Secondary SDG:

To provide citizens with a good transit environment, the City improved pedestrian safety and cycling environments by upgrading its green transportation system network, hoping to reduce the use of private vehicles to not only achieve the goal of net-zero emissions but also ensure that the City will have the basic infrastructure necessary to sustain life in the event of natural disasters while also providing citizens with quality recreational spaces.

▲ Neighborhood transportation environment improvement plan

Replace physical sidewalks with sidewalk markings near MRT stations and other areas with high foot traffic to improve walking spaces and provide a more accessible environment. Also, with consideration to the needs of pedestrians with disabilities, the City followed “The Regulations for Road Traffic Signs, Markings, and Signals” to mark out pedestrian crossing lines based on the geometric shape of intersections and install barrier-free ramps to connect physical sidewalks, thus providing a pedestrian-friendly environment.

Strengthen adaptation and resilience for indigenous communities

Core SDG

Reduce inequality within and among countries

10.3 Ensure equal opportunity and reduce inequalities of outcome, including by eliminating discriminatory laws, policies and practices and promoting appropriate legislation, policies and action in this regard.

Secondary SDG:

Climate change has increased the risk of extreme weather patterns. To reduce the impact of climate disasters for all ethnic groups in the City, Taipei City established the “Indigenous Peoples Commission” in 1996 to preside over indigenous affairs, providing vocational, economic, housing, and disaster aid subsidies and services to protect the rights and interests of indigenous people and allow indigenous people better access to social resources.

With regard to higher-risk villages, townships, and indigenous tribes that may lose outside contact in the event of a natural disaster, the City helps to establish eight community-driven disaster prevention organizations each year. A total of 24 old settlements and 50 hillside residential communities are under the management of such organizations. If the rainfall at one of these old settlements reaches the warning level of 300-400mm, these organizations will initiate evacuations, giving indigenous communities the ability to better respond to climate disasters with limited disaster prevention resources.

Promote citizen participation

Core SDG

Promote peaceful and inclusive societies for sustainable development, provide access to justice for all, and build effective, accountable and inclusive institutions at all levels

16.6 Develop effective, accountable and transparent institutions at all levels.

16.7 Ensure responsive, inclusive, participatory and representative decision-making at all levels.

Secondary SDG:

In line with the City's governing concept of "open government, citizen participation, and transparency", the City government actively promotes transparent governance, citizen participation, and public-private collaboration for the welfare of citizens. The City established the "Taipei Citizen Participation Committee" and conducted "participatory budgeting", which allows direct public participation in the government's partial budgeting decisions. Residents and community representatives can discuss the priorities of public budget expenditures in formal or informal meetings and make decisions by proposing plans and voting.

From 2016 to the end of 2020, there had been 360 participatory budgeting proposals, 312 of which, or 86.7%, had been approved by the Taipei Citizen Participation Committee, with the other 48 still being processed. Actual expenditures from these proposals have reached NT$814,214,835. Most of the proposals involve improving the environment, ecological construction, age-friendly communities, adding parks and green spaces, and renovating hiking trails, and all proposals are closely tied to improving the living environment and quality of life of citizens.

- In 2016, the City established the i-voting mechanism, allowing citizens to participate and express their opinions. Through the i-voting mechanism, Shezi Island residents selected an urban regeneration project focused on sustainable development.
- The 2019 participatory budgeting proposal in Da'an District (Vacant Land Re-engineering, Eco-Friendly Charging Stations) installed eco-friendly charging stations, carried out simple green landscaping projects like establishing green spaces and rainwater harvesting, and increased police patrol areas.
- The 2020 Shilin District participatory budgeting proposal (proposal name: Owl Book House - Little Book Houses Around the Corner), using recycled objects (suitcases, dehumidifiers, wine cabinets, etc.) to create owl book houses that provide a library for second-hand books.
- The 2020 Neihu District participatory budgeting proposal (proposal name: Convenient Dog Waste Solution) added dog waste trash cans to the City's pedestrians-only trash cans, with daily cleaning, maintenance, and replacement of dog waste bags. The proposal also includes quarterly cleaning and disinfection of road-side ditches.

Photo by Freepik.com

Taipei City's priority SDGs and implementation results

Taipei City's priority SDGs and implementation results

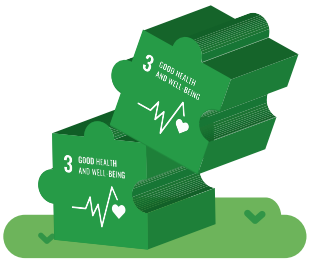
Photo by Fred Rivett on Unsplash

In 2019, Taipei City identified 7 priority promotion SDGs. In 2020, in addition to the seven priority SDGs, given the importance of education, gender equality, economic development, and infrastructure, the City decided to prioritized four additional SDGs. Thus, the 11 priority SDGs serve as a foundation for the City's efforts to promote sustainable development.

In 2021, the City is focusing on SDG 13 - Climate Action to showcase how far the City has come in promoting climate actions. The City also conducted rolling reviews and adjustments of the other 10 priority SDGs, steadily moving towards the vision of a "Livable and Sustainable Taipei".

SDG 3

Ensure healthy lives and promote well-being for all at all ages

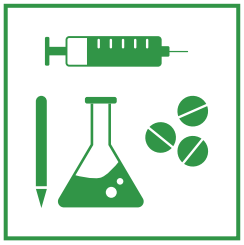


United Nations SDG targets currently in effect in Taipei

3.4 Reduce mortality from non-communicable diseases and promote mental health

3.5 Prevent and treat substance abuse

3.6 Reduce road injuries and deaths



3.B Support research, development and universal access to affordable vaccines and medicines

3.C Increase health financing and support health workforce in developing countries

Progress

- Provide free vaccination to high-risk groups: Provide influenza vaccine and rotavirus vaccine subsidies and routine vaccinations, and expand the pneumococcal vaccine program to citizens over the age of 65 and indigenous people aged 55 to 64 to improve herd immunity.
- Social participation services for senior citizens: Provide local community services in conjunction with relevant welfare resources. Provide consultation and referrals for home visits and greeting services as well as food and healthcare services. The City also subsidizes non-governmental organizations to help them form safe communities that protect the welfare of the elderly.
- Juvenile drug abuse prevention: The Department of Education carries out three levels of campus drug abuse prevention measures, including prevention advocacy, inspection and screening, and community counseling services. Additionally, the Juvenile Affairs Division of Taipei City Police Department (Juvenile Counseling Division) provides juvenile crime prevention and counseling services for juvenile delinquents while the Juvenile Welfare Service Center and other non-governmental organizations provide parenting education for parents with drug abusing children. For juvenile individuals with drug abuse, the "Youth integrative drug addiction treatment program of the Kunming Prevention and Control Center of the Taipei City Hospital" is provided, using case management services to integrate medical care, support, and collaboration of recovery resources in order to establish an integrative adolescent drug addiction prevention and treatment system.
- Suicide prevention: The City established the municipal-level Suicide Prevention Center and organized health education campaigns to improve the professional knowledge and skills of suicide prevention workers. In 2020, a total of 103 suicide prevention course sessions were arranged with 11,493 attendances (per-

son-time) and a total of 140,632 online views (person-time). The City also works with professional private institutions to enhance care and welfare visiting services. In 2020, suicide prevention workers conducted follow-up visits in 99.6% of the 8,541 suicide reports received.

- Reduce road traffic accidents: Regarding the locations of A1[7] accidents, the City made improvements to traffic conditions and relevant law enforcement. In 2020, there was a total of 60 A1 accidents, and as a result, 196 proposals were made to improve road engineering and traffic safety education. Additionally, 147 traffic safety seminars were held for a total of 18,185 participants. There were also 40 school and group tours of the Transportation Park, with a total of 1,645 visitors.
- Cancer screening and education: The City actively provides cancer prevention health educations, screenings, referrals or health consultation services, establishing the "Cancer Screening Management Center" to provide cancer prevention consultation and increase cancer screening rates. In 2020, 458,220 people completed Pap smear screening, 214,056 completed mammography screening, and 292,463 underwent colorectal cancer screening, bringing the cancer screening coverage rate to 43.82%.
- Establish a support network for people with dementia: The City organizes community-baesd dementia screening and referral services, providing preliminary screening, confirmation of diagnosis, and assessment services for suspected patients to better assess and manage dementia cases. In 2020, a total of 905 people were diagnosed with dementia out of 1,621 suspected cases, resulting in a diagnostic rate of 55.83%.

Outcome

Promote community integrated care service plan

The City launched an innovative community integrative care service project to integrate the expertise of health and social administration units and implement proper division of labor, combining medical and mobile home services to reduce hospital visits and repeat medications for the elderly, thereby avoiding the overuse of healthcare resources. The project allows the City to better provide comprehensive and convenient medical and care services in times of long-term care worker shortage and limited subsidies.

In 2020, the City improved long-term care service quality and capacity by establishing long-term care service case classification and classified management services, strengthening the cooperation model between home-based medical care and long-term care service units. The City also continued to hold disability-delaying courses focused on topics including walking, nutrition, and swallowing. Professional rehabilitation teams regularly monitor the physical conditions of the elderly, designing courses based on the conditions of the elderly participants to strengthen their physical functions and delay disability, thereby allowing them to age in place. As of the end of 2020, the mobile service discovered 763 disabled cases in communities, served 590 individuals, and provided online consultation to 5,332 people. Service centers were set up in entrusted regions, holding a total of 1,616 disability-delaying, health promotion, and home career support events with a total of 23,451 attendances.

In addition to its long-term care policy, the City also established a local health care model to carry out the Taipei City Family Responsible Physician Care Integrated Plans. For every 100,000 people in Taipei city, 608 are registered physicians. In 2020, 2,947 cases were admitted, providing more than 12,073 home care/-medical visit services by physicians, thereby implementing integrative care to individuals, families, and the community as a whole.

[7] A1 traffic accidents: Traffic accidents that cause death on the scene or within 24 hours.

■ Extend childcare services

Create a friendly environment for childrearing with diversified and fairly priced childcare service models to lessen the burden on parents and encouraging people of marriageable, childrearing age to have children. Establish family centers at each district and subsidize non-governmental organizations to open friendly childcare centers. In 2020, the City organized 22 government-instituted, privately operated infant daycare centers, 53 public infant daycare centers, and 176 private infant daycare centers, along with 4,288 home babysitters. Together, they have the capacity to provide childcare services to 8,829 infants.

The City promoted the “quasi-public” policy, encouraging private infant daycare centers and babysitters to join the quasi-public partnership system and provide quality childcare services through fair pricing, price freezing, quality assessment, and incentive measures. In 2020, 75% of childcare centers are either public or quasi-public. To provide supportive services for families, the City established family centers in each administrative district and subsidized non-governmental groups to open friendly childcare centers, providing free family activity venues as well as relevant parenting courses, seminars, and other childcare support services. In 2020, the City opened 13 family centers and 11 friendly childcare centers that served a total of 1,315,923 people.

The City also continued to promote subsidy extensions for children aged two to three in order to respect the different developmental needs of different children. When children reach two years old, parents can continue to receive friendly childcare subsidies and assisting childcare allowances regardless of whether the children are cared for by home babysitters, public or private daycare centers, or relatives. Depending on the type of childcare and each child's order of birth, parents can receive additional subsidies ranging from NT$4,500 to NT$12,000, alleviating some of their childcare burdens and allowing them to send their children to childcare and work at their jobs with peace of mind.

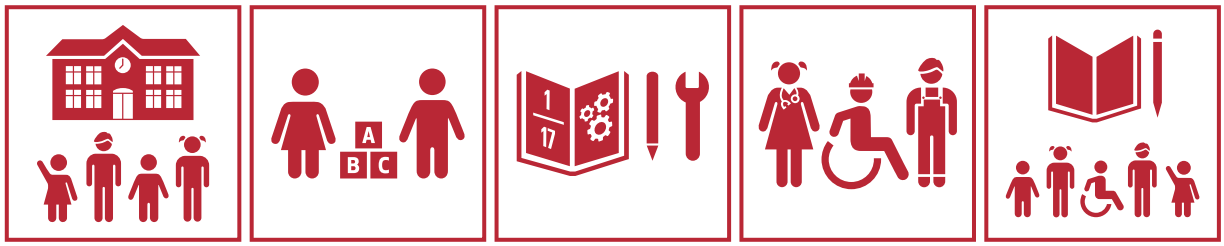
Picture provided by Department of Health, Taipei City Government.

▲ Government- instituted and privately-operated infant daycare centers

SDG 4

Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

United Nations SDG targets currently in effect in Taipei



4.1 Free primary and secondary education

4.2 Equal access to quality pre-primary education

4.3 Equal access to affordable technical, vocational and higher education

4.4 Increase the number of people with relevant skills for financial success

4.5 Eliminate all discrimination in education

4.6 Universal literacy and numeracy

4.7 Education for sustainable development and global citizenship

4.A Build and upgrade inclusive and safe schools

Progress

- Free, equitable, and quality education: Taiwan's 12-year Basic Education is divided into two stages. The first nine years are part of the national compulsory education for citizens aged 6-15 which is universal, obligatory, compulsory, tuition-free, and government-hosted. The following three years are part of the senior high school education for citizens aged 15 and above, which is universal, voluntary, tuition-free, provided by both public and private schools, primarily entrance exam-free, with diverse school types for both general and vocational education.
- Promote dropout reporting, tracking, counseling, and prevention policies: The City constructed a school district resources network by combining the resources of police units, social affairs units, non-governmental organizations, and neighborhood communities. In 2020, the City subsidized 71 schools to provide flexible adaptive courses aimed at preventing students from dropping out. The City also collaborated with private institutions to set up collaborative dropout classes such as the Good Shepard School Academy and Elim Youth Academy. In 2020, the two academies served a total of 208 students (person-time).

- Supportive employment transition program for Taipei City's senior high school graduates with disabilities: To increase the future employment rate of disabled students, the City emphasizes workplace integration in lesson planning and cooperates with the Department of Labor to help students apply for supportive employment after graduation so that they can make successful workplace transitions. In 2020, the employment rate of fresh graduates was 65.7%.
- The City established the "Taipei City Primary School Supportive Learning and Stimulated Learning Program": schools will conduct selection tests and provide learning opportunities to students in need of supportive learning (remedial studies).
- Fundamental education courses for adults of Taipei City: The City utilizes free spaces on school campuses, subsidies from the Ministry of Education, and the City's own funding, to open fundamental education courses for adults. A total of 40 courses were opened in 2020 (27 for Taiwanese nationals and 13 for new immigrants).
- Develop syllabuses with information and technology courses: Taipei City is the first city in Taiwan to incorporate computing mindsets into life education for toddlers and establish K-12 systematic programming courses. It is also the first city in the country to compile and publish textbooks on AI to help students develop logical thinking and technological know-how while learning about programming logic.
- Develop resource handbooks for international education month: To implement international education, the City has compiled 2 handbooks for international education month, namely "Taipei City is My Classroom" and "City Classroom 2.0 - Exploring the Taipei-Keelung Metropolitan Area". The handbooks are uploaded to the Taipei CooC-Cloud for the public to download.

Outcome

Promote "3+3 preschool education core programs"

To fulfill parents' need for preschool education for their children, the City has expanded the capacity of public education services, revitalizing and utilizing free spaces in primary and middle schools to increase kindergarten classes or open new public and non-profit kindergartens. The City also established public kindergartens in newly built social housing complexes while actively promoting the "COPAY program", encouraging private kindergartens to sign on as quasi-public kindergartens. Additionally, the City also plans to set up special education preschools in special education schools and alleviate parents' burdens by extending tuition subsidies and childcare subsidies.

▲ Create learning environments for toddlers - Lao Song Elementary School Library

■ Install inclusive playgrounds in schools

The City plans to install inclusive campus playgrounds designed with "safety", "accessibility", "inclusiveness", and "environmental integration" in mind. Designs are created with input from teachers, students, neighborhood residents, disability organizations, experts, and scholars. Priority is given to schools with centralized special education classes and resource classes that have suitable outdoor spaces with playground facilities due for replacement.

▲ Campus inclusive playground in Wanhua District

In 2019, inclusive playgrounds were installed in nine schools. In 2020, these playgrounds were installed in three additional schools, Lao-Song Elementary School, ZhiShan Elementary School, and Jingmei Elementary School. To achieve the goal of having inclusive playgrounds in every district by 2022, these playgrounds are set to be installed in 5 new schools in 2021 and 2022 respectively and 3 new schools in each following year.

■ Create a digital learning environment with the Taipei CooC-Cloud platform

In line with the concept of "equal education", the City launched the cloud-based learning system "Taipei CooC-Cloud". The platform includes over 11,000 educational videos and over 300 thousand e-books, covering the primary school to high school levels, that teachers and students across Taiwan and in overseas compatriot schools can access for free. In 2020, due to the COVID-19 pandemic, online learning became the primary mode of education for teachers and students, and usage of the platform increased dramatically. Some schools had to suspend classes due to the pandemic, and some students had to quarantine at home. To protect these students' rights to education, the City maintained the principle of "right to education during pandemic prevention", using live or pre-recorded teaching videos to provide remote teaching services to students out of school because of the pandemic. For economically disadvantaged students, the City also provided free SIM cards, thereby ensuring that all students have equitable access to education. So far, the "Taipei CooC-Cloud" platform has partnered with 13 cities and counties, allowing outstanding teachers from different cities and counties to offer specialty online courses such as the "Mathematical Drawing Software Application and Design" course offered by Chiayi County's Jhuci High School and the "Book Thinking - Reading with Critical Thinking and Logic". The platform also has courses offered in collaboration with local universities that are uploaded to the Internet as shared teaching resources for students across Taiwan.

■ Construct student-centered and school-based "friendly campuses"

Per the "Regulations Governing Prevention and Control of Bullying on Campuses" issued by the Ministry of Education, the City has established the "Taipei City School Prevention and Control of Bullying on Campus Implementation Plan". The plan aims to construct student-centered, school-based "friendly campuses" that emphasize qualities such as respect, care, empathy, inclusion, safety, and participation, fostering virtues of justice, honor, mutual assistance, care, and empathy among students, in order to eliminate campus bullying.

Five principles for constructing friendly campuses

Through day-to-day teaching, students will be encouraged and taught how to communicate rationally, take the initiative to help others, and handle interpersonal relationships. This will nurture their sense of responsibility, ethics, helpfulness, self-respect, and respect for others.

Strengthen the advocacy of rule of law education, moral education, human rights education, life education, gender equality education, information ethics education, deviant behavior prevention and control, and victimization prevention in order to build a foundation for preventing bullying on campus.

Schools hold regularly on-the-job training each semester to improve the faculty's anti-bullying knowledge and problem-solving skills.

Resources from retired teachers and parents' associations are leveraged and volunteer recruitment workshops are held to assist schools in preventing bullying on campus and fortify campus security.

Utilize various education and awareness-raising campaigns and encourage students to report and ask for investigations into bullying incidents as soon as possible so that evidence can be collected for investigations.

Photo by Freepik.com

SDG 5 Achieve gender equality and empower all women and girls

United Nations SDG targets currently in effect in Taipei

5.1 End discrimination against women and girls

5.2 End all violence against and exploitation of women and girls

5.5 Ensure full participation in leadership and decision-making

5.6 Universal access to reproductive health and rights

5.A Equal rights to economic resources, property ownership and financial services

Progress

- Breast cancer prevention: By integrating medical institutions, workplaces, and communities, the City conducts breast cancer screening notifications, inspections, and referrals for women above a certain age and those at high risk of breast cancer. The City also works with non-governmental cancer prevention foundations to raise awareness about cancer screening. In 2020, the rate of women aged between 45 and 69 that underwent mammography screenings within the past two years reached 40.61%.
- Teenage pregnancy service network: A unified contact channel to manage teenage pregnancy cases. In 2020, the Department of Social Welfare conducted 135 group courses for students and parents. The department also had Health Centers from the City's 12 districts or entrusted professional organizations pay home visits to provide services such as postnatal care, health education, and maternity care.
- Promote gender equality in inheritance: To actively promote gender equality, the City's land offices handed out leaflets and hung up posters at community work report meetings, festivals, college seminars, and other events to promote the concept of equal inheritance regardless of gender, hoping to achieve the goal of gender equality in inheritance through different advocacy campaigns.
- Flexible work programs for government employees caring for young children and the elderly: The City expanded its existing flexible work policy and reduced working hours in accordance with Article 19 of the Act of Gender Equality in Employment, thereby creating a friendly work environment that allows employees to balance work and family.

Outcome

■ Domestic violence and sexual assault prevention and advocacy

To educate the public on domestic violence and sexual assault prevention, the City consolidated resources, for example the Internet, print literature, online media, outdoor media, radio advertising, television interviews, and short films in a diverse advocacy campaign directed at all age groups. Considering the language barrier for new immigrants, translated versions of the campaign are also made available. Also, to increase the effectiveness of crime prevention advocacy, the City incorporated information regarding domestic violence prevention into district office events and meetings as well as social welfare workshops for neighborhood officials to spread the right message. In 2020, the City organized 46 domestic violence prevention events, including press conferences, dynamic and static promotional campaigns, and theater. The City also organized 19 sexual assault prevention advocacy events to educate the public on basic concepts such as "only yes means yes" and "acquaintance sexual assault", as well as a seminar on the "Domestic Violence and Sexual Assault Prevention Pamphlet".

To ensure that the public is equipped with the proper knowledge about sexual harassment prevention, the City organized 23 sexual harassment prevention training sessions in 2020. Those attending the sessions include city government employees that handle or manage sexual harassment cases, cram school operators, family protection officers of the City's police departments, medical professionals, and department stores. The City also created the interactive online game "Is This Okay? Sexual Harassment Survey" and posted about the importance of sexual harassment prevention on the Facebook page "Taipei Women Speaking Out". A total of 14,994 people (person-time) participated in the interactive game.

▲ Denim Day promotional poster

■ Promote gender equality at birth

In 2020, the City promoted the concept of equal sex ratio and gender equality at birth under the slogan “Happy Family with a Boy or Girl”, emphasizing the importance of parents, children, spouses, and other family members by highlighting the concept of family as the source of love and happiness. Through the City government’s “Humans of Taipei” Facebook page, social media focused on the health of women and children, and radio shows, the City promoted articles regarding the “Happy Family with a Boy or Girl” campaign with an online questionnaire and drawing event to better understand the public’s perception and knowledge of gender equality.

The City also invited celebrities and experts to host a series of lectures covering topics including sex ratios and gender equality and encouraging men to be involved in childcare. Dynamic, easy-to-understand advertising and articles featuring celebrity interviews are published in pamphlets, magazines, and newspapers. These materials, along with active participation from the public and efforts from activists, strive to make sure the idea of gender equality is ingrained in people’s hearts.

▲ Campaign advocating for gender equality at birth

■ Workplace Gender Equality Index implementation plan

To protect the rights and interests of workers, the City made improvements to create gender-friendly work environments, making businesses pay more attention to gender equality in the workplace. In 2018, the City established the "Taipei City Workplace Gender Equality Index" to help corporations promote gender equality. Implementation indicators are a way to examine various aspects of gender equality awareness within enterprises, providing a guide for enterprises to adjust existing policies to improve gender equality.

Since 2019, the City has organized advocacy meetings, challenge camps, and other events to promote workplace gender equality. The City not only continued to hold these events in 2020, but also added "gender diversity" as a bonus category in its 2020 gender equality indicators. The City also organized Taiwan's first workplace gender equality certification system. Of the 30 enterprises that applied, 12 were given the certification. These measures allow the City's business to better understand the meaning of workplace gender equality. A certification icon for workplace gender equality was designed. In the future, businesses that reach certain workplace gender equality criteria will be awarded the certification icon, which boosts their image.

■ Increase female participation in decision making

Civilian women, gender advocacy groups, and experts and scholars formed the "Taipei City Gender Equality Committee", a public-private cooperative organization that participates in public affairs and had a role in planning many innovative "Taipei First" initiatives. The committee also plays an important role in consulting, guiding, and supervising the City government's gender-related policies. Also, to increase female participation in decision-making across all fields, the City requires all municipal task force committees to have either gender comprising 1/3 of all members. As of the end of 2020, 93% of all municipal task force committees met this requirement.

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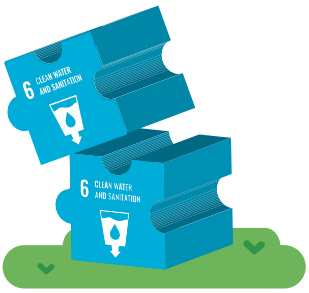
SDG 6

Ensure availability and sustainable management of water and sanitation for all



United Nations SDG targets currently in effect in Taipei

6.1 Safe and affordable drinking water

6.3 Improve water quality, wastewater treatment and safe reuse

6.4 Increase water-use efficiency and ensure freshwater supplies

6.6 Protect and restore water-related ecosystems

Progress

- The City improved water environment and conducted comprehensive inspections of regulated businesses: Enhance pollution detection with regulated businesses and sewer systems, regularly inspect the water quality of effluent water, and encourage industries to implement proper operation of sewage treatment facilities. In 2020, the City conducted a total of 2,381 audits, strictly regulating the water quality of effluent water to protect the water environment.
- The City hosted the Tianmu Water Trail Festival: Preparation for the festival brings organizations and communities in the Tianmu area together, fosters a sense of community, constructs an ecological cultural circle in Tianmu, and develops into a model of community sustainable management. Schools in Tiamu also integrate the Caoshan Waterway system into various courses, encouraging students to cherish water resources and educating them on local issues and water conservation to cultivate better water education.

Outcome

Proper sewage treatment strategies

The year 2020 was the start of the sixth phase of the City's branch network division project and user drainage equipment project (2020-2023). The proportion of the population connected to sewage treatment facilities reached 85.58%. The City strengthened inspections of manholes and worked on extending the lifespan of sewage pipelines with the aim to comprehensively increase sewage connection rate and extend the service life of sewage pipelines. Also, to resolve the issue of rainwater getting into the sewage pipelines, the City not only measured water levels to identify problems of rainwater in the sewage system or leakages but also utilized alley beautification projects to identify and fix these issues.

■ Upgrade the quality of tap water supply

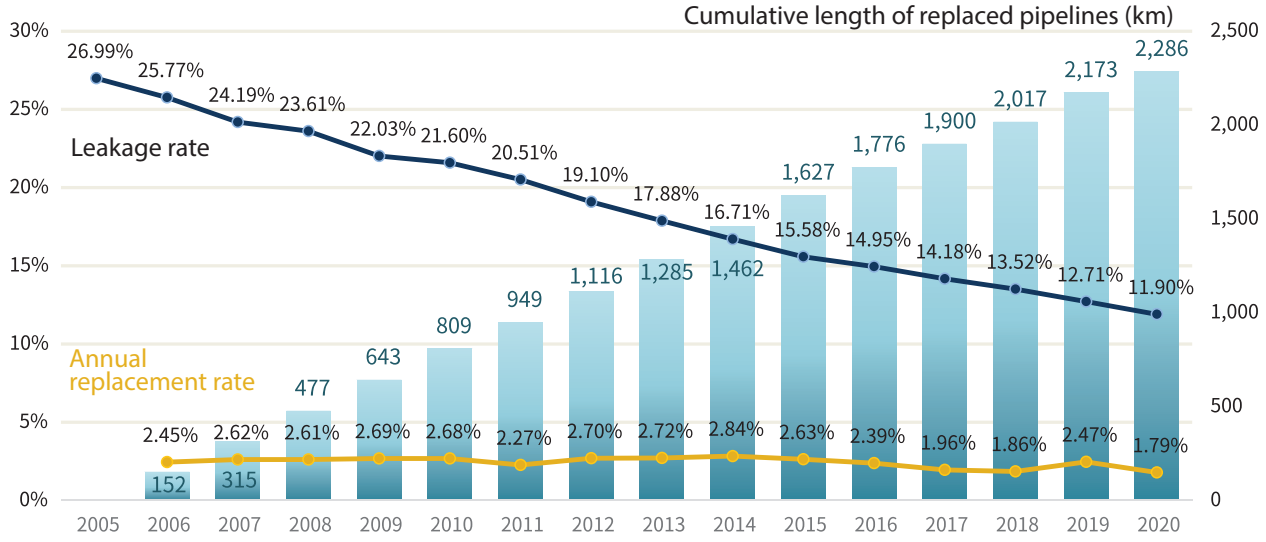
To improve the quality of the City's tap water supply, a total of 95 water quality monitoring stations are set up with 24-hour monitoring. A "multi-barrier" water purification management strategy is used, and the quality of water from water purification plants is regulated with an internal control standard 10 times stricter than what is required by the "Drinking Water Quality Standards". Precise 24-hour online water quality monitoring ensures 100% compliance with the "Drinking Water Quality Standards". In 2020, the average turbidity of the tap water supply was 0.02 NTU, far below the regulatory limit (2 NTU). The water turbidity falls under 0.1 NTU 99.6% of the time, surpassing the 95% target for developed countries.

Water quality monitoring is conducted on the water source, raw water, and clean water of purification plants. In 2020, 569 samples of raw water were taken for 8,721 tests while 268 samples of clean water were taken for 4,462 tests. Meanwhile, representative points are set up throughout the water supply network based on population distribution. These points are sampled and tested monthly, with a total of 6,730 samples taken for 42,018 tests in 2020. The City conducts 139 water quality tests, far exceeding the legally mandated 68 tests. Throughout the years, inspection results have all met the Drinking Water Quality Standards. Relevant water quality inspection results are published online to provide transparent water quality information.

■ Water supply pipe network improvement strategies

In light of the increasing scarcity of water resources, the City has established the 20-year "water supply pipe network improvement and management plan" long-term strategy (2006-2025) to utilize water sources effectively, prevent leakage, and reduce the water leakage rate. The plan is divided into four stages, and the City is currently in the 4th stage (2020-2025), which involves the continued replacement of old pipes and water pressure management, as well as measures such as comprehensive regional water quantity measurement and regional leak inspections to control and improve water leakage issues.

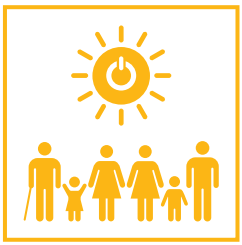
Also, following the pipeline replacement, water pressure management, active detection of leakage and repair rate quality recommended by the International Water Association (IWA) regarding the amount of water lost in the network, the City worked to improve the water supply network with a multipronged approach, gradually reducing the leakage rate. Between 2006 and 2020, the City replaced 2,286 kilometers of old water pipelines, achieving an average annual replacement rate of 2.45%, exceeding the recommended 1.5% by the International Water Association (IWA) every year. The water leakage rate also decreased from 26.99% at the end of 2005 to 11.90% in 2020, saving 182,790,000 tons of water, which is roughly equivalent to 54% of Feitsui Reservoir's 335,505,000 tons of effective water storage capacity, effectively reducing leakage and improving water resource utilization.



▲ Water supply pipe network improvement results over the years

SDG 7 Ensure access to affordable, reliable, sustainable and modern energy for all

United Nations SDG targets currently in effect in Taipei



7.1 Universal access to modern energy

7.2 Increase global percentage of renewable energy

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Progress

■ Energy conservation strategies for residential buildings: In line with the Taipei City Self-government Ordinance for Green Buildings, the City continues to promote green building certification for new buildings to create an energy-saving, carbon-reducing, green, eco-friendly, healthy, and comfortable living environment. Under the ordinance, new public buildings, buildings built per the Act for Promotion of Private Participation in Infrastructure Projects, or buildings built on public land with a total project cost of over NT$ 30 million must obtain green building certification. New non-public high-rise or buildings applying for additional floor space are also required to apply for green building certification.

Outcome

■ Build a smart, energy-saving Taipei City

According to the City's 2020 electricity consumption statistics, residential and business sectors accounted for 92.58% of the City's total electricity consumption (around 14.92 billion kWh, of which the service sector accounted for approximately 48.6%, and the residential sector approximately 34.9%). It is evident that promoting energy conservation in the residential and business sectors is the City's top priority, so the "Taipei City Energy Conservation Promotion Task Force" was established. With 2005 as a baseline, the goal of the task force is to reduce electricity consumption by 2% by 2020 in the short-term, and 5% by 2025 in the mid-term. Competent authorities joined forces to promote power-saving measures, strictly controlling industrial and commercial inspection mechanisms and assisting government offices, schools, and communities in implementing power-saving strategies. At the same time, the task force promoted the use of social housing complexes as smart grid demonstration sites and the installation of solar photovoltaic systems on the rooftops of government offices, schools, and private institutions.

Equipment replacement

In collaboration with the central government, the City subsidized the service industry, hotel industry, medical institutions, transportation industry, government offices, schools, neighborhoods, and households to replace old equipment. As a result, business and residential sectors saved roughly 579 million kWh of electricity in 2020 compared to 2016, reducing carbon emissions by approximately 295 thousand tons, approximately equivalent to the carbon sink of 762 Da'an Forest Park.

Organize the Energy Conservation Leadership Award

To enhance private enterprises' ability to manage energy conservation efforts and encourage residential communities to actively promote energy conservation, the City organized the Energy Conservation Leadership Award to reward and openly praise enterprises in the service sector or residential communities that achieved outstanding energy conservation performance, inspiring others to do the same, turning the low-carbon, energy-saving lifestyle into a social movement. In 2020, a total of 53 units applied for the award, and 18 winners were selected. Collectively, they saved approximately 10 million kWh of electricity, reducing approximately 5,095 tons of carbon emissions, approximately equivalent to the carbon sink of 13 Da'an Forest Park.

Taipei City provides industrial and commercial energy-saving counseling

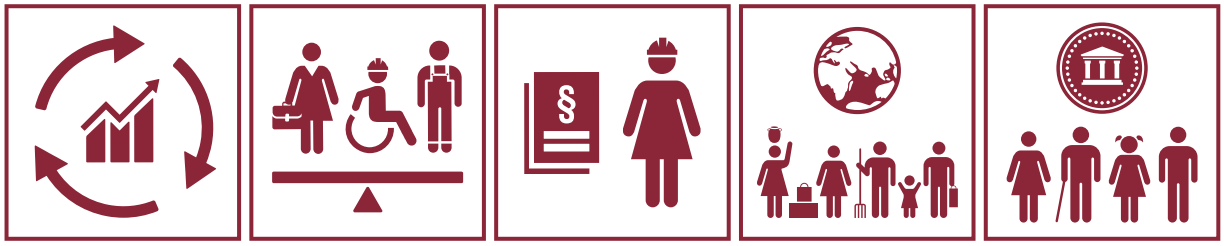
Through counseling and tracking measures, we help users apply for government subsidies to accelerate the replacement of old equipment with energy-saving equipment or introduce them to ESCO 7 service providers to carry out energy-saving improvement projects. The City also designated 20 types of users for inspection as per Article 8 of the "Energy Administration Act" promulgated by the Ministry of Economic Affairs and collaborated with hypermarkets, electronics add home appliance stores, home appliance retailers, and other chain stores to promote energy-saving products.

▲ Energy Hill 1.0

SDG 8

Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

United Nations SDG targets currently in effect in Taipei



8.4 Improve resource efficiency in consumption and production

8.5 Full employment and decent work with equal pay

8.8 Protect labour rights and promote safe working environments

8.9 Promote beneficial and sustainable tourism

8.10 Universal access to banking, insurance anad financial services

Progress

- Promote tourism industry development: Due to the COVID-19 pandemic, the tourism industry had to adjust its marketing strategies. The City organized the 2020 Taipei City Post-Pandemic Tourism Transformation Forum and participated in online international expos such as the "2020 Taiwan Online Travel Mart (Indonesia)", "ITB Asia Virtual", and "Incentive Travel & Conventions, Meetings Asia" to promote Taipei's pandemic relief achievements and tourism resources.
- Assist innovative companies with financing loans: Taipei City Government teamed up with banks in Taiwan to help small and medium-sized enterprises (SMEs) and young entrepreneurs with grants and funding to foster industry development. Between 2015 and 2020, a total of 2,646 cases had been approved with a total loan amount of over NT$ 2,272.33 million.
- Expand on-site employment matchmaking service: Invite enterprises that are hiring to organize various recruitment events with real-time matchmaking and open, transparent interview channels. In total, 12 medium- to large-scale recruitment events and 418 small-scale events were held in 2020.
- Create a cross-generational workplace management website: Taipei City established the "OkWork" website, providing diverse job-seeking channels and regularly publishing information about enterprises with age-friendly hiring practices to improve the utilization of the labor of middle-aged and senior citizens. In 2020, the website received a total of 14,423,637 views.

Outcome

■ Strengthen employment counseling - promote lifelong careers

The "case management service model" is adopted to evaluate each job seeker's employability and understand any difficulties and needs they may have through an overview of their academic and professional background and professional one-on-one consultation provided at employment service offices. Individuals with proficient employability are recommended suitable employment opportunities. Those with insufficient employability or who do not meet the needs of the job market are recommended to participate in vocational training courses to develop an additional field of expertise.

For those who are inclined to start a business, the City offers entrepreneurship seminars that can give them entrepreneurial know-how. Entrepreneurial consultation services are also provided in the hopes that professional guidance can help reduce some of the difficulties of starting a business and increase the entrepreneurial success rate. As of the end of 2020, there had been 71,275 newly registered job seekers, 45,146 of which found actual employment, resulting in an employment rate of 63.34%. The number of newly registered job seekers that belong to specific target demographics was 37,276, of which 23,136 found actual employment, resulting in an employment rate of 62.07%. In 2020, employment service offices processed a total of 6,824 cases, provided general employment consultation to 15,084 people, in-depth employment consultation to 652 people, vocational aptitude test to 1,272 people, vocational training recommendations to 1,475 people, and job recommendations to 15,357 people, and helped 6,008 people find employment.

Meanwhile, senior citizens consultation service counters are set up to help middle-aged and senior citizens with lifelong career planning. The City has continued to set up new youth and seniors employment service stations to help everyone from the young to the elderly with lifelong career planning. The City has also promoted new senior-friendly employment models like youth-senior co-work and micro-tasking to help middle-aged and senior citizens rejoin the labor force, re-enter the job market, and work healthily. In 2020, employment service offices helped a total of 1,508 senior citizens find employment.

▲ In 2020, the City organized training events such as the Career Seeker Discovery Camp

■ Taipei City 4-Year Occupational Safety Plan

To encourage businesses to pay attention to workplace safety, abide by labor laws and regulations, and actively implement occupational health and safety management, the City set a goal to conduct 21,707 occupational health and safety inspections in 2020 and ended up achieving 106.37% of that goal, conducting a total of 23,090 inspections.

By sharing resources, including instructors and teaching materials, the City established partnerships with relevant associations, unions, businesses, schools, government offices, and communities to help organize occupational health and safety training. In 2020, 1,654 training sessions were held for 89,943 attendees.

An occupational health and safety counseling group was established to help organize health and safety advocacy campaigns, counseling, and other relevant events. In 2020, the City held 290 counseling sessions for "interior decoration and small construction sites" due to the higher occupational injury rates of those fields, and 123 sessions for general industries.

■ Training courses and rights protection for migrant workers

The City has an assurance plan for employers hiring foreign caregivers. Based on the needs of the hiring family, professional teams of nurses and bilingual interpreters will conduct a health management assessment for the care recipient and make house calls to provide one-on-one technique training and care. Since 2019, these teams will also help migrant workers gain a better understanding of behavioral problems caused by dementia to prevent them from suffering occupational injuries or care recipients being injured and protect the rights and interests of both employers and migrant workers. The City began providing at-home training in May 2020 and, as of the end of 2020, had trained 486 people.

Meanwhile, the City institutionalized the mediation of migrant worker disputes, regularly organizing training workshops for lawyer mediators to discuss cases and regulation amendments to improve their abilities to mediate cases and increase the odds of successful mediations. The City also established a professional mediation SOP for disputed cases that included professional interpreters to maintain proper and professional division of labor and best protect the rights of employers and migrant workers alike. As of the end of 2020, labor disputes mediated by professional lawyers had a mediation success rate of 77.25%.

■ Facilitate the employment of specific target demographics

To facilitate the employment of young, middle-aged, and senior citizens, the City organized employment fairs focused on these demographics, gathering age-friendly enterprises willing to hire middle-aged and senior citizens for appropriate positions to help middle-aged and senior citizens find employment. The employment fairs also integrated corporate internships, helping youths get student internships and full-time job opportunities through services such as mock interviews, resume checkups, and career consultation to facilitate youth employment. The "Employment Fair for Youths and Senior Citizens" was held on August 15, 2020 and attended by a total of 8,169 people with a 52.6% initial job matching rate for middle-aged and senior citizens. The "Employment Fair for Middle-Aged and Elderly People" was held on November 14 of the same year and attended by a total of 5,412 people with a 54.9% initial job matching rate for middle-aged and senior citizens. The City Government actively works to help senior citizens and the elderly find employment and uses these events to encourage enterprises to hire or consider the feasibility of hiring senior citizens.

■ Organize vocational training camps and courses for middle-aged and senior citizens

In response to the City becoming an aged society, the City organized short-term employment (career change) camps to help middle-aged and senior citizens gain some preliminary understanding of the characteristics of different industries so that they can find a career direction sooner. Middle-aged and senior citizens are also given priority when applying for on-the-job or general career change courses and training courses. In 2020, the Vocational Development Institute held 20 vocational (career change) camps for 255 middle-aged and senior citizens, nine outsourced intensive training courses that prioritize middle-aged and senior applicants were held 194 participants (129 of which were over the age of 45). Four outsourced intensive vocational training courses that prioritize middle-aged and senior applicants were held for 113 participants (65 of which were over the age of 45). 1,263 people (person-time) over the age of 45 participated in vocational training programs organized by the Vocational Development Institute in 2020, 1,211 person-time completed the program and 885 of which found employment.

▲ Cooking class for middle-aged and senior citizens

SDG 9

Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation

United Nations SDG targets currently in effect in Taipei

9.1 Develop sustainable, resilient and inclusive infrastructures

9.C Universal access to information and communications technology

Vector by Freepik.com

Progress

- Encourage the elderly to use mass transit and facilities: Senior citizens over the age of 65 and indigenous people over the age of 55 with household registration in Taipei City are given a monthly discount of 480 points (NT$) for transportation. In 2020, the discount was expanded to cover public facilities including swimming pools and gyms. In November 2020, eligibility for the discount was expanded to include foreign nationals over the age of 65 that reside in Taipei City with an Alien Permanent Resident Certificate. The discount, which was used 111,184,900 times in 2020, aims to stimulate the mobility and social participation of senior citizens.
- Subsidize transportation expenses for children of low-income households: In compliance with Item 7, Paragraph 1 of Article 16 of the Public Assistance Act, the “Taipei City Low-income Household Transportation Subsidy Operation Instructions for Middle School or Higher Students”, transportation expenses for middle school or higher students from low-income households are subsidized to reduce financial burdens and allow the students to receive stable education.
- Promote wheelchair-accessible taxis and paratransit bus services: To implement social welfare policies and take care of residents with physical or mental disabilities, the City deployed 328 paratransit buses on 588,317 trips in 2020, which comes down to a monthly average of 49,026 trips and 88,102 passengers per month. Since wheelchair-accessible taxis officially began operating in the City in February 2013, the City had subsidized 349 wheelchair-accessible taxis to provide accessible services as of the end of 2020. In 2020, wheelchair-accessible taxis provided accessible services on a total of 252,402 trips.

Outcome

■ Promote free Wi-Fi hotspot network in public areas to achieve digital equality

To implement digital equality, the City's Taipei Free hotspot network starts from its major public facilities, with free Wi-Fi available without the need for accounts or passwords, providing a safe and convenient digital service environment where citizens can connect online. Since it was launched in 2011, the network now covers all of Taipei's major public facilities.

Going forward, the City will continue to improve both the quantity and the quality of these Wi-Fi hotspots, conducting regular reviews of how the hotspots are utilized and put resources into areas with high demand. The City will also improve internet equipment specifications and broadband to provide users with stable Wi-Fi signals.

■ Establish a friendly bicycle route network

In 2020, To enhance bicycle-friendly safe riding spaces, the City focused on "connecting existing bicycle route networks", "connecting intercity and riverside bicycle routes", and "improving existing bicycle routes", upgrading the bicycle routes of Chenggong Bridge, Minquan Bridge, Fuhe Bridge, and Fuxing Bridge. A bike path grid network in the City center of Taipei is also being gradually developed, forming a visionary bike path network. As of the end of 2020, the City had finished installing 87.53 km of separated bike lanes and 305.26 km of shared lanes (392.79 km in total). Those lanes, along with the 112 km long riverside bicycle routes, brought the total length of the City's bicycle paths to 504.79 km, providing citizens with friendly bicycle routes.

▲ Riverside bicycle route

■ Plan for high-tech smart park and facilitate industrial innovation

In order to make knowledge production the core of the City's competitiveness, the City actively promotes advantageous industries such as biotechnology, information and communications technology, and other emerging technologies, connecting Neihu Technology Park, Nankang Software Park, and Beitou-Shilin Technology Park into an R&D and operation-oriented technology corridor. In line with industry development needs, 25 hectares in the Beitou Shilin Technology Park is reserved for the development of a "smart interdisciplinary park". The City also set aside 16.79 hectares of land in the Eco-Shezi Island Development Project to serve as a dedicated area for science and technology production and a future industry development hub.

In order to drive industrial innovation development, the City established the "Taipei Municipal Self-Government Ordinance for Industrial Development", providing innovation, R&D, branding, angel incubation, and other innovation subsidies as well as financial support for rent, salaries, interests, and vocational training. From entrepreneurship, branding, to investments, the City provides comprehensive rewards and subsidies to lend corporations a hand. Also, the "Taipei City Smart City Industry Pilot Project" successfully facilitated many innovative pilot projects, driving the development of innovative industries in Taipei City through public-private collaboration and cooperation. 2020 saw the first "Smart Taipei Innovation Award", which selected 15 outstanding pilot projects as winners, not only encouraging manufacturers to actively invest in the development of innovative technologies but also accelerating the formation of smart policies and strengthening the effectiveness of the City's overall efforts to promote innovation.

▲ Entrepreneur Club

▲ Future image of the Beitou Shilin Technological Park

▲ Industrial innovation plan

SDG 11 Make cities and human settlements inclusive, safe, resilient and sustainable

United Nations SDG targets currently in effect in Taipei

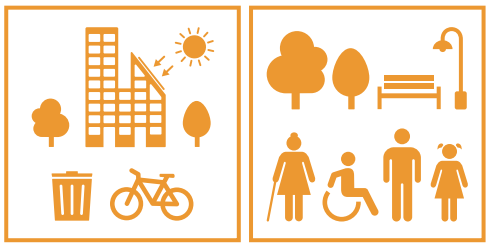
11.1 Safe and affordable housing

11.2 Affordable and sustainable transport systems

11.3 Inclusive and sustainable urban constructionsization

11.4 Protect the world' s cultural and natural heritage

11.5 Reduce the adverse effects of natural disasters



11.6 Reduce the environmental impact of cities

11.7 Provide access to safe and inclusive green and public spaces

Progress

- Source reduction and management of waste: The City implements various source reduction policies and tools, including Per-Bag Garbage Collection Fee, banning on single-use plastics, and the promotion of waste reduction strategies such as furniture recycling and repair to encourage citizens to reduce the amount of waste generated and increase resource recycling for reuse.
- Urban development with integrated use of city-owned buildings and properties (EOD): The City's short-term plans include taking inventory of existing city-owned buildings and land, accessing local needs for public service facilities functions, and converting idle or underutilized spaces into the facilities that each region needs. In the mid- to long-term, the City will integrate surrounding public facilities and regional needs when reconstructing old public buildings, adopting composite utilization of the spaces. The land vacated by old public buildings will be utilized to satisfy local needs for public facilities and functions that result from an aged population and low birth rates.

- Mountain road quality improvement: For regulated mountain roads, the City conducts general maintenance and disaster rescue measures such as improvements to road surfaces and slopes as well as the maintenance and landscaping of relevant facilities. The City also made plans to improve the landscaping environment of mountain roads, integrating elements of local culture into road designs to enhance the overall recreational quality of mountain roads.
- Cultural heritage protection: To protect tangible cultural heritage sites, the City set up a dedicated management authority to oversee the restoration, reuse, and operation of cultural heritage sites. The City actively promotes the Old Houses Cultural Movement Plan and, through counseling, subsidies, and assistance provided by relevant cultural heritage authorities, helps various managing departments submit management and maintenance plans or restoration and re-utilization plans for review. The goal is to not only resolve the problem of unused cultural heritage sites becoming filthy and hotbeds of crime, but also highlight the value of these cultural heritage sites.
- Low-income assistance: As of the end of 2020, the City had 21,495 registered low-income households with 45,052 people (1.73% of the City's population). In accordance with the Social Assistance Act, the City provides low-income families with multi-faceted support such as living allowances, transportation subsidies for children in junior high schools and above, maternity subsidies, pregnancy nutrition subsidies, and three-festival benefits. The City also utilizes education, health, housing, and other resources to provide schooling, medical treatment, employment assistance, and nursing care for low-income individuals to help underprivileged families maintain basic living functions and safeguard their dignity.
- Intelligent management of transportation data: The City promotes the development of the "Intelligent Transportation System (ITS)" and incorporates smart bus stops to send real-time bus information to an open data platform for private industry applications, allowing citizens to obtain an estimated time of arrival. As of the end of 2020, 2,135 smart bus stops had been installed throughout the City with a coverage rate of 63.86%.

▲ Construct smart bus stops

Outcome

■ Affordable housing construction project

The City takes inventory of potential locations for social housing and works to increase the supply of social housing and affordable housing resources through multiple channels. The City also scheduled long-term construction and financing plans to build sustainable, smart, energy-saving, earthquake-resistant, and accessible high-quality housing. The City expects to build over 19,000 units and maintain a social housing occupancy rate of over 95%. Currently, the City provides diversified assistance such as public housing for rent, diversified public housing, rental subsidies, and rental escrow that have benefited over 44,294 households.

Furthermore, to protect the housing rights of vulnerable citizens, the City established through a pioneering citizen review method in 2016 that 35% of the City's social housing will be reserved for special-status residents, of which 10% will be allocated to low-income households (economically disadvantaged) through a lottery. With the Social Housing Comment System, 20% of the social housing will be allocated to groups that may have a hard time renting housing (socially disadvantaged), notably the elderly, the disabled, single parents, victims of domestic violence, and inter-generation families. The other 5% will be allocated to indigenous people through a lottery on account of their special historical status. This system was first put into practice in the Dalongdong social housing complex in 2017 and was subsequently implemented in all social housing throughout the City to implement housing justice. Going forward, the City will continue to increase the coverage of social housing for disadvantaged groups and develop diversified housing types to give citizens a safe living environment.

▲ Construct diversified social housing - Minglun Social Housing

■ Fire prevention

Strengthen fire safety management in public places

A joint audit team, formed by the Fire Department, Construction Management Office, Office of Commerce, and other relevant departments, carries out public safety spot checks on business premises and strengthens the fire safety equipment, maintenance declarations, flameproof labeling, and fire prevention management of various establishments to reinforce level three building public safety inspections (level one - self-management and inspection by businesses, level two - routine inspection carried out by relevant authorities, level three - municipal government joint inspection).

Establish a joint audit mechanism for construction, management and fire protection

Regarding applications for addition, alteration, renovation construction licenses, alterations of use or interior decoration permits, applicants must follow Article 13 of the Fire Services Act and Article 13 of the Enforcement Rules of the Fire Services Act and draft a "fire safety plan under construction" and submit it to the fire battalion of the local administrative district. Only then can the license or permit be issued by the Construction Management Office and reviewed by the Architects Association. If the aforementioned permits involve the review of fire safety equipment illustrations, the reviews shall be carried out at the same time

Hold public safety supervisory meeting

A public safety supervisory meeting is convened at least once over 2 months to coordinate and supervise fire safety management, building safety management, specific purpose business management, health safety management, occupational health and safety management, and campus safety management measures and tasks carried out by relevant authorities. Experts and scholars are also invited to the meetings which, by regularly reviewing deficiencies and tracking matters that need improvement, improve the City's public safety performance and safeguards the safety of people's lives and property.

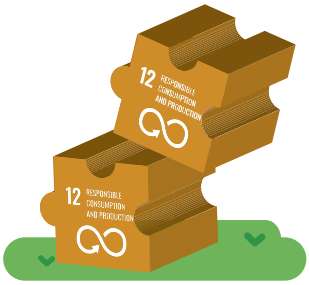
Fire prevention advocacy

For areas or specific places where fires occur frequently, increase the frequency of fire prevention advocacy visits and cooperate with local community events to promote fire safety concepts at event booths or fixed stations. Also, to expand the effectiveness of public education, achieve the purpose of raising disaster prevention awareness, and work toward the goal of disaster prevention, reduction, and avoidance, the "Disaster Prevention Taipei Manual" was compiled to strengthen citizen's disaster prevention awareness in an in-depth yet easily-understood way.

Promote the installation of smoke alarms and strengthen residential fire safety

The Fire Department, in conjunction with the City's civil affairs system, comprehensively promotes the installation of smoke alarms, establishing a procurement budget and encouraging private charities to donate smoke alarms. As of the end of 2020, 419,783 households in the City had installed smoke alarms, which went off and facilitated successful evacuations in 467 cases of fires.

SDG 12 Ensure sustainable consumption and production patterns



United Nations SDG targets currently in effect in Taipei

12.1 Implement the 10-year sustainable consumption and production framework

12.2 Sustainable management and use of natural resources

12.5 Substantially reduce waste generation

12.7 Promote sustainable public procurement practices

12.8 Promote universal understanding of sustainable lifestyles

Progress

- Promote second-hand book exchange platforms: In line with the concept of source reduction and resource recovery, the service life of books can be extended and help the disadvantaged. The City's first book-sharing platform, the Yanhui Library, was set up in Neihu District in 2013. A book-sharing website was set up in 2015 and updated on October 11, 2019 to allow the public to apply for book-sharing online, making use of the value of old books and providing free books to disadvantaged children, a true example of resource recycling.
- Waste management policies: To accommodate the City's economic and commercial patterns, the City government adopted three major policies, namely "continuing the Per-Bag Garbage Collection Fee", "gradual promotion of the comprehensive registry and tracking of cleaning and transportation equipment", and "development of waste recycling channels and technologies". Additionally, in order to maintain proper waste disposal management and control during an epidemic, the City not only provides waste disposal assistance for citizens in quarantine, but also enlists professional cleaning agencies to handle the waste per the epidemic prevention policies of the central government. This helps ensure that quarantine waste and general waste are handled separately, thereby reducing the risk of citizens catching the virus and improving the safety and resilience of the City.

Outcome

■ Reduce food waste

Food pantry program

Food pantry program have been established around the City since 2009. Through government efforts as well as private donations, social welfare centers across the City cooperate with participating establishments (i.e. boxed meal shops, noodle shops, and street food diners) to provide food to disadvantaged families in need. Disadvantaged families are given food vouchers that they can exchange for a hot meal at participating establishments. Social workers regularly collect these vouchers for write-off, then pay the stores using donations.

Second-hand goods donation program

Given that the majority of the income of disadvantaged families is used to pay rent, utility fees, childcare fees, and tuition, many disadvantaged families have difficulty paying for meals. Therefore, the City Government has established a goods bank in 2011 with 23 storage locations for private organizations, companies, and individuals to donate goods. Most of the goods donated are food (noodles, oatmeal, supplemental drinks, and formula) or daily necessities (diapers, toiletries). Donated goods will be evaluated by social workers and sent to disadvantaged families in need.

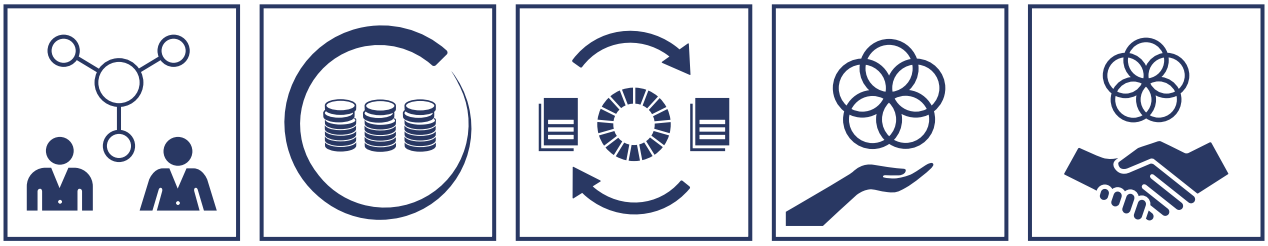
Food exchange platform

To protect the environment and prevent waste, a "food exchange platform" was established in July 2016. Market vendors are encouraged to donate leftover food each day for social welfare groups that serve the elderly, disabled, or women and children to pick up at designated time periods. The food will then be cooked by the social welfare groups for those in need or given to disadvantaged families upon evaluation by social workers. As of the end of 2020, seven markets and Taipei Agricultural Products Marketing Co., Ltd. had joined the program, donating fresh fruits and vegetables to social welfare groups to practice resource recycling.

Photo by Lou Liebau on Unsplash

SDG 17 Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development

United Nations SDG targets currently in effect in Taipei



17.6 Knowledge sharing and cooperation for access to science, technology and innovation

17.13 Enhance global macroeconomic stability

17.14 Enhance policy coherence for sustainable development

17.16 Enhance the global partnership for sustainable development

17.17 Encourage effective partnerships

Outcome

■ Establish the Taipei Smart City Project Management Office

Since 2003, the City has actively constructed broadband infrastructure and Wi-Fi network application services with “digital city” and “action Taipei” as starting policies. In 2007, with the slogan “Smart City, Quality Life”, the City began strengthening broadband infrastructure and providing convenient municipal services, listing these measures as a key part of building a smart city.

Based on existing development efforts, the City continues to implement policies to “develop a smart city”. The “Taipei Smart City Project Management Office (TPMO)” was established to match different government offices to the expertise they need for their tasks, providing assistance in policy integration. The platform allows government offices to connect more easily, accelerating policy implementation and developing “top-down” and “bottom-up” policy promotion models. Through the proof-of-concept (PoC) model, the platform provides space and opportunities to assist the industries in promoting innovative smart solutions and producing relevant smart services. Presently, through public-private partnership supplemented by the PoC mechanism, the City has promoted more than 230 experimental projects.

In addition to actively using innovative technology to improve citizens’ quality of life and develop Taipei into a smart city, the City also assists outstanding domestic smart city industries in forming international partnerships to expand Taipei’s smart city development achievements and embrace both domestic and international innovation. In 2018, the City initiated the launch of GO SMART (Global Organization of Smart Cities, Global Smart Cities Alliance). The alliance was officially established in March 2019 after a

year of preparation. Local governments from around the world as well as industrial and academic institutions are invited to join as members. GO SMART currently has nearly 200 members, including the six municipalities of Taiwan, as well as Japan, Singapore, Hong Kong, Australia, the United Kingdom, France, the Netherlands, the Czech Republic, the United States, Brazil, and other countries and cities. The alliance organizes the Smart City Summit & Expo every year. However, due to the COVID-19 pandemic, the 2020 event was held in a virtual format, in which Taipei shared its "technological epidemic prevention" experiences, showing other cities how Taipei used technology to help restore the City's operations and economic growth. The City strives to enhance global partnerships for sustainable development by matching domestic and foreign public and private capabilities, providing information exchange in the form of sharing knowledge, professional skills, technologies, and project funding. By facilitating collaborations that extend beyond the boundaries of cities, Taipei City can help countries and cities around the world achieve sustainable development goals.

■ Strengthen the importance of public health among global sustainable development partners in response to the COVID-19 pandemic

Open disclosure of epidemic prevention information

In 2020, in response to the severe COVID-19 pandemic, the City not only continued to engage with international organizations through video conferences, but also actively participated in various types of international virtual conferences to share epidemic prevention and city governance experiences. In 2020, Taipei City took part in a total of 23 video conferences. Additionally, international friendship cities and organizations, such as Ankara in Turkey and Seoul in South Korea, as well as the World Association of Major Metropolises and the UCLG ASPAC invited the City to join their international cities epidemic prevention information platform to share epidemic prevention information. On May 29, 2020, representatives from the representative office of New Zealand, Australia, the United Kingdom, the United States, Canada, and Singapore met with Mayor Ko Wen-Je to share epidemic prevention experiences and deepen Taipei's international sustainable development partnerships.

To share the results of the City's epidemic prevention efforts with the global community, Taipei City established an English version of its COVID-19 epidemic prevention website and SOPs for the City's over 70 international cities and over 60 foreign offices to reference.

Donate medical resources to friendship cities and member cities of international organizations

As pandemic prevention is a global effort, the City donated epidemic prevention supplies such as masks and protective gowns to nine international cities, namely San Francisco, Boston, and Phoenix in the US, Manila and Quezon in the Philippines, Prague in the Czech Republic, Castries in Saint Lucia, Colombo in Sri Lanka, and Lalippur in Nepal. These efforts have helped Taipei's sister cities and member cities of international organizations combat the pandemic. In total, the City donated over 190,000 masks and 2,100 protective gowns.

Photo by Branimir Balogović on Unsplash

Photo by Camille San Vicente on Unsplash

Future Prospects

Future Prospects

As human activity will continue to influence the progress of sustainable development, it is necessary to gain a clearer understanding of various sustainable development-related challenges in order to be prepared for the future. In January 2021, the World Economic Forum (WEF) published "The Global Risks Report 2021", stating that "climate action failure" is the most impactful and second most likely long-term risk. In response, Taipei City announced in 2021 its goal to achieve net-zero greenhouse gas emissions by 2050, signifying the City's willingness to do its part as a global citizen, shoulder its responsibility for global carbon emissions reduction efforts, and demonstrate a no-regret commitment to the sustainable development of mankind and planet Earth.

The 2021 Voluntary Local Report focuses on SDG 13 - Climate Action. The report reviews Taipei City's various climate actions and the City's efforts of implementing carbon-reduction goals from the aspects of energy-saving and carbon reduction, resource recycling, clean air, and urban greening. Setting 2030 as a projected milestone, the City continues to conduct rolling reviews of the various priority promotion SDGs. To establish a foundation for future follow-up reviews, the report also cross-references the UN SDG goals and targets with the City's various sustainable development indicators, ensuring the correctness of various measures. In addition, the report is submitted openly to international platforms as part of the world's joint effort towards sustainable development.

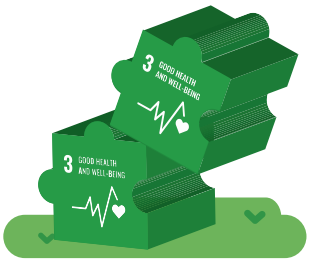
Going forward, the City will continue to advance and implement sustainable development, as well as achieve net-zero emissions by 2050. The City will carry out the principles of "open government", promoting the concept of sustainable development while taking suggestions from our citizens, civil society, and corporations as a reference for reviews and updates of future voluntary local reviews. The City will also actively promote various carbon-reduction measures and accelerate urban transformation to pursue the vision of net-zero greenhouse gas emissions by 2050 along with the rest of the world.

Photo by Camille San Vicente on Unsplash

Picture provided by Public Works Department, Taipei City Government.

Appendix

SDG 3 Ensure healthy lives and promote well-being for all at all ages



Indicators	2017	2018	2019	2020	Target for 2030
Life expectancy at birth (years)	83.36	83.57	83.63	83.86	86
Formula: cumulative stationary population of 0-year-olds/number of 0-year-olds survivors. Definition: the length of life newborns is expected to live after being exposed to the mortality risks of each age group, whereas the remaining life expectancy of persons alive at age X is referred to as “life expectancy at age X”.					
Coverage rates of three types of cancer screening (%)[1]	45.4 (4-type cancer)	46.52 (4-type cancer)	47.78 (3-type cancer)	43.82 (3-type cancer)	50.5
Formula: sum of coverage rates of 3 types of cancer screenings (colorectal, breast, and cervical cancer)/ 3 x 100% Definiton: number of people who have completed screenings/total number of people eligible for screenings					
Suicide mortality rate (Per 100,000 population)	11.8	13	12.8	12	<13
Formula: (annual number of suicide deaths / mid-year population) x 100,000 Definition: average suicide mortality rate per 100,000 persons					
No. of deaths and injuries from road traffic accidents per 100,000 population(persons/per 100,000 population)	1,075	1,063	1,105	1,301	<961
Formula: (no. of road traffic accident deaths + injuries / population) x 100,000					
No. of deaths from road traffic accidents per 100,000 population in 30 (Persons/ per 100,000 population)	3.95	5.1	4.87	4.11	<3.61
Formula: (no. of deaths in road traffic accident in 30 days / population) x 100,000					
Immunization coverage (%)	38	40.5	45.6	53	69.73
Formula: (sum of coverage rates of influenza vaccination for elders, influenza vaccination for children, rotavirus vaccination, and pneumococcal vaccination for elders) / 4 x 100% Definition: the proportion of the actual number of people vaccinated to the number of people eligible to receive each vaccine.					
Diagnosis rate for dementia (%)	53	58	63.07	55.83	70
Formula: (total no. of people diagnosed with dementia / total no. of people screened for suspected dementia that year) x 100%					
Public and quasi-public childcare services supply ratio (%)	IIn line with formula adjustments, statistics start from 2020			75	85
Formula: (approved no. of children under 2 years old cared for by the City's public-to-private + quasi-public infant daycare centers or home babysitting service providers) / the City's total infant childcare supply (no. of children under the age of 2 cared for by public and private infant daycare centers + home babysitters) x 100%					

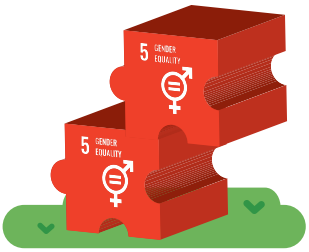
[1] The Health Promotion Administration, Ministry of Health and Welfare revised its oral cancer screening policy in 2016 and removed the target number of oral cancer screenings. Therefore, the definition of cancer screening indicators was revised accordingly in 2019 to just colorectal cancer, breast cancer and cervical cancer.

SDG 4

Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

Indicators	2017	2018	2019	2020	Target for 2030
Percentage of 5-year-old children with household registration in the City enrolled in preschool (%)	93.30	94.39	95.06	97.46	98
Formula: no. of 5-year-old children enrolled in legally registered kindergartens / no. of 5-year-old children with household registration in the City x 100% Definition: percentage of 5-year-old children with household registration in the City who enrolled in preschool					
No. of students participated in technological and vocational education (persons/schools)	252 (persons)	350 (persons)	596 (persons)	723(persons) 48(schools)	2,000(persons) 100(schools)
Formula: no. of students benefiting from government- and enterprise-/ association-hosted industry-academia collaborations projects.					
No. of participants in multicultural (indigenous peoples and new immigrants) language courses (persons)	-	1,609	1,656	1,858	2,000
Formula: no. of participants in multicultural (indigenous peoples and new immigrants) language classes.					
Improvement rate for students who underwent supportive learning counseling (%)	70	75.19	77.81	75.2	78
Formula: average improvement rate of the students' grade in subjects of Language, English, and Math after attending supportive learning counseling.					
Employment rate of graduates in centralized special education classes(%)	59.2	64	65.18	65.7	72
Formula: no. employments of the graduating class of centralized special education classes/ no. of students of centralized special education classes.					
The City's illiteracy rate for people over 15 years old (%)	0.49	0.45	0.42	0.39	0.35
Formula: no. of illiterate population over 15 years old/ population over 15 years old x100%					
Cumulative no. of elementary schools in the installation of inclusive playgrounds (schools)	3	6	9	12	42
Formula: calculated using the addition of inclusive playground installations in 3 schools annually.					
Rate of unfriendly treatment among peer students (%)	4.81	4.21	4.64	5.08	<4.5
Formula: no. of students who were treated unfriendly of the year/ total no. of students of the year x100%					
No. of Junior high dropouts and high-risk students participating in vocational experience course (persons)	25	24	27	97	150
Formula: no. of Junior high dropouts and high-risk students participating in vocational experience course.					

SDG 5 Achieve gender equality and empower all women and girls

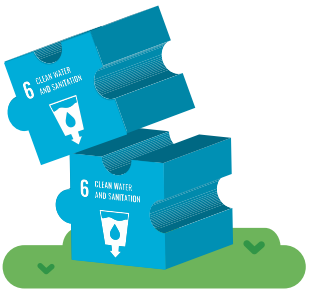


Indicators		2017	2018	2019	2020	Target for 2030
No. of victims of domestic violence per 100,000 population (persons/ 100,000 population)[2]	Male	264.66	278.58	363	390.55	324.19
	Female	506.49	517.68	636.01	605.58	566.44
Fomrula: no. of male (female) domestic violence victims / male (female) interim population x 100,000						
No. of victims of sexual assault per 100,000 population, respectively (persons/ 100,000 population)	Male	11.12	11.19	10.26	13.53	11.52
	Female	48.08	49.78	54.07	54.4	51.58
Formula: no. of male (female) sexual assault victims / male (female) interim population x 100,000						
The screening rate of women between ages of 45 and 69 to undergo mammography within the past 2 years (%)		39.6	49.7	47.68	40.61	50.18
Formula: no. of women between ages 45 and 69 to undergo mammography within the past 2 years/ population x 100%.						
Birth sex ratio (male/female)		105.96	105.75	106.97	-	Normal range is between 102~106
Formula: no. of male births / no. of female births x 100. Definiton: the ratio of newborn males to newborn females.						
Male to female ratio in acquiring real estate ownership (%)	Male	50.9	50.2	50.3	49.67	50
	Female	49.1	49.8	49.7	50.33	50
Formula: no. of males (females) acquiring real estate ownership by age group / no. of people acquiring real estate ownership by all age groups x 100%.						

[2] Based on the gender statistics of the City's Directorate-General of Budget Accounting and Statistics.

SDG 6

Ensure availability and sustainable management of water and sanitation for all



Indicators	2017	2018	2019	2020	Target for 2030
Utilization rate of water source from reservoir (%)	89.66	89.86	90.01	90.1	>90

Formula: annual reservoir utilized water volume / annual reservoir discharged water volume x 100%.
Definition: the water volume used refers to the amount of water utilized by water drainage through water supply or electricity use.

Qualification rate of tap water (%)	100	100	100	100	100

Formula: (no. of qualified tap water inspection / no. of tap water inspection) x 100%.
Definition: ratio of no. of sampling locations passing the inspection out of all sampling inspections of the whole year.

Tap water leakage rate (%)	14.18	13.52	12.71	11.9	10

Formula: leakage volume / allocated volume x 100%.
Definition: fragile land, old pipelines, excessive traffic load leading to damaged pipelines. The ratio between lost water volume and total allocated water volume.

River biochemical oxygen demand in line with water classification benchmark achievement rate (%)	95.8	93	94.6	94.7	95

Formula: no. of monitoring stations of the biochemical oxygen demand of the river sections with City jurisdiction in line with the water body classification benchmark value / total no. of monitoring stations x 100%.
Definition: compliance rates of City jurisdiction river section Category C water body biochemical oxygen demand ≦ 4 mg/L, category D water body biochemical oxygen demand ≦ 8 mg/L.

Percentage of city population served by sewerage collection (%)	81.81	82.81	84.83	85.58	94.24

Formula: total population with sewage treatment / population × 100%.
Definition: sum of no. of the public sewage drainage connection sewer system, no. of specialized sanitary sewer, no. of building' s sewer facilities x household quantities / population ratio.

River heavy metal (cadmium, lead, mercury, copper, zinc) 5-year moving average pass rate (%)	98.46	98.77	99.38	100	100

Formula: [no. of times the river heavy metal (cadmium, lead, mercury, copper, zinc) passed water quality standard / total monitoring times x 100%] 5-year moving average
Definition: river heavy metal (cadmium, lead, mercury, copper, zinc) 5-year moving average pass rate

SDG 7

Ensure access to affordable, reliable, sustainable and modern energy for all

Indicators	2017	2018	2019	2020	Target for 2030
Cumulative installed capacity of solar photovoltaic energy equipment (kW)	8,870	18,822	28,942	33,633	66,000

Formula: cumulative installed capacity of solar photovoltaic energy system

SDG 8

Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

Indicators	2017	2018	2019	2020	Target for 2030
Assist in enterprise innovations in the City (enterprises)	377	321	296	857	250

Formula: actual no. of enterprises.
Definition: actual no. of approved lenders for financing loans

Taipei City foreign exchange earnings in tourism (NT$100 million)	3,211.6	2,948.07	2,829.24	257.08	4,032

Formual: no. of foreign visitors to Taipei City x amount of consumption per person per day x average length of stay x exchange rate.
Definition: the amount of consumption from foreign visitors to Taipei City.

SDG 8

Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

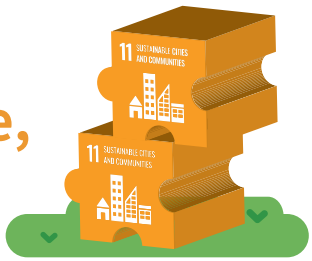
Indicators	2017	2018	2019	2020	Target for 2030
Employment rate (%)	59.74	53.38	68.33	63.34	61.68
Formula: no. of effective employment / no. of newly registered job applicants x 100%. Definition: the proportion of effective employment and newly registered job applicants.					
Matchmaking rate for specific target employment (%)	50.3	47	63.23	62.07	57.9
Formula: no. of effective specific target employment / no. of newly registered specific target job applicants x 100%. Definitoon: the specific target employment is including to indigenous people, economically disadvantaged families, persons who financially support families alone, the middle-aged and older adults, victims of domestic violence, women seeking re-employment, the disabled, persons from medium or low-income families, rehabilitated ex-convicts, long-term unemployment.					
Stable employment rate of job applicants with disabilities (%)	72	76.2	68.7	69	> 70
Formula: no. of persons employed for at least 3 months / no. of successful employment recommendations x 100%					
Workplace fatal injury rate	5.93	6.29	7.05	5.79	5.5
Formula: no. of deaths from major occupational accidents in the City / no. of insured labors with the City's labor insurance under Occupational Safety and Health Act x 10^6.					
Workplace major injury rate	2.12	1.26	1.66	1.65	1.64
Formula: no. of major injuries from major occupation accidents in the City/ no. of insured labors with the City's labor insurance under Occupational Safety and Health Act x 10^6.					
No. of foreign caregivers participating in skills training (persons)	75	420	430	486	450
Formula: no. of foreign caregivers participating in skills training.					
Mediation success rate of migrant worker dispute cases via coordination meetings (professional coordinators) (%)	-	88	85	77.25	> 85
Formula: no. of successful cases via coordination meetings / no. of cases via coordination meetings x 100%. Definition: have professional lawyers lead the mediation meeting and provide legal advice to improve the chances of successful mediations.					

SDG 9

Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation

Indicators	2017	2018	2019	2020	Target for 2030
Annual cumulative siltation rate of the reservoir (%)	6.47	6.54	6.62	6.68	< 7.57
Definition: annual cumulative siltation rate of the reservoir.					
Facility availability rate of the dam (%)	99.6	99.65	99.41	99.65	> 99.7
Formula: [(dam monitoring instrument availability rate, gate facility availability rate, power plant unit availability rate)] / 3. Definition: calculate the average of 3 of the dam's important facilities availability rates of dam monitoring instrument, hydraulic gate, and power plant units.					
Bikeshare ridership (10,000 trips)	2,195	2,625	2,846	3,030	3,300
Formula: annual usage of public bicycles. Definition: the usage of public bicycles.					
Public transportation usage rate among disadvantaged groups (%)	128	130	111.38	95.26	≧100
Formula: (no. of wheelchair-accessible taxi service trips / annual (times) delivery rate x 50%) + (no. Of paratransit bus services trips / annual (times) delivery rate x 50%)					
Usage rate of public transportation by elders (times/person)	210.02	250.43	261.35	224.33	250
Formula: no. of users taking public transportation using the senior citizens card this year / senior citizens population					
Annual benefit of the Taipei Free Wi-Fi network (average monthly usage / no. of hotspots)	-	213	2,131	3,417	4,500
Formula: [Σ(monthly no. of Taipei Free usage / monthly no. of Taipei Free hotspots)] / 12 Definition: Taipei Free monthly usage number and number of hotspots					

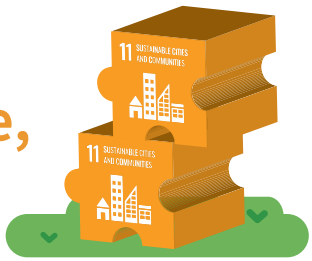
SDG 11 Make cities and human settlements inclusive, safe, resilient and sustainable



Indicators	2017	2018	2019	2020	Target for 2030
Social housing construction project (households)	19,313	19,923	19,876	44,294	> 50,000
Formula: 2020-2030: no. of social housing, public housing, tiered rent subsidies, rental escrow, and other affordable housing units provided by integrating public and private resources[3].					
Occupancy rate of public housing (%)	94.64	93.07	97.95	99.16	≥ 95
Formula: (no. of tenant households in social housing / no. of social housing provided) x 100%.					
Average no. of public transportation by per capita	261.95	268.6	273.96	240.02	325
Formula: no. of trips by public transportation / (population of the Taipei City + population of New Taipei City). Definition: the statistics and analysis of passenger traffic volume of Bus, MRT, high-speed rail, trains, highway bus of Taipei City and New Taipei City.					
MRT length available per 100,000 population (km)	3.42	3.44	3.49	3.55	3.91
Formula: City MRT network length of the year (km) / population of the year.					
Promotion progress of accessible transportation facilities (%)	100	100	103.2	99.9[4]	100
Formula: (cumulative no. of actual subsidized wheelchair-accessible taxi / cumulative planned total of subsidized general use taxis x 50%) + (cumulative no. of actual buses replaced with low-floor buses / cumulative planned total of replacements x 50%)					
No. of electric-buses (vehicle)	0	22	22	48	≧3,500
Formula: no. of electric buses					
Penetration rate of intelligent bus stop signs (%)	36.1	48.5	56	63.86	80.8
Formula: no. of installed intelligent bus stop signs / no. of installable bus stop locations x 100%.					
Fire deaths per 100,000 people	0.819	0.6	0.567	0.922	0.263
Formula: fire deaths x 100,000/population of the city. Definition: number of people who died within 30 days from a fire.					

[3] 2017-2019: no. of social housing and urban renewal/joint development units built.
[4] Redefined calculation formula. The value does not exceed 100%.

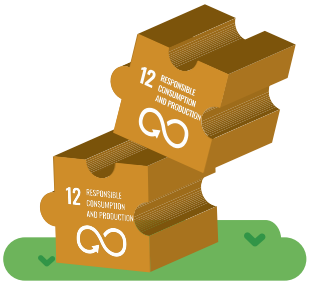
SDG 11 Make cities and human settlements inclusive, safe, resilient and sustainable



Indicators	2017	2018	2019	2020	Target for 2030
Annual average concentration of $PM_{2.5}$ ($\mu g/m^3$)	15.3	14.6	13	12.1	10
Formula: annual average monitoring value of $PM_{2.5}$					
Total municipal solid waste generation per capita per year (tons/ person-year)	0.463	0.462	0.461	0.46	< 0.45
Formula: (garbage arrival amount at incineration plants throughout the year + resource recycling amount + re-usage amount of large trash pieces + recycling amount of kitchen waste) / population Definition: amount of solid waste collected (domestic and commercial) / population of the administrative area					
Green areas per 100,000 persons (hectares) (Annual areas of green resources, hectares)	521.2 (13,985.01 hectares)	522.28 (13,937.38 hectares)	529.54 (14,006.46 hectares)	539.94 (14,051 hectares)	540.84 (14,075 hectares)
Formula: green area of Taipei City (hectares) / population x 100,000[5] Definition: average access to green spaces under municipal jurisdiction per 100,000 people, including developed parks, green spaces, squares, children's playgrounds, stadiums, education parks, riverside parks, MRT station parks, other green areas (like pedestrian islands, green public spaces, and green construction sites), and scenic areas, including protected areas and green areas (green resource area) under the jurisdiction of Yangmingshan National Park.					
Clearance rate of violent crime (%)	100	100	100	100	100
Formula: no. of cleared cases of violent crimes / no. of incidents x100% Definition: clearance rate of the City's violent crime incidents					

[5] This formula referenced the formula of the ISO 37120 indicator "UP19.1 green spaces per 100,000 persons" introduced by the City's Directorate-General of Budget Accounting and Statistics in 2016. Green spaces (hectares) / city population x 100,000. The source of the statistics for green area is the same as green resource area.

SDG 12 Ensure sustainable consumption and production patterns



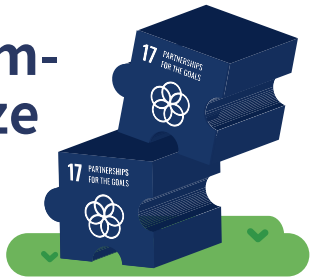
Indicators	2017	2018	2019	2020	Target for 2030
Green product procurement designated by government units: requiring the procurement of first level environmental label (%)	95	95	98	98.5	100
Formula: total cost of all designated procurement items with environmental labels / total cost of all designated procurements					
Declaration cost of green procurement of private enterprises and organizations (NT$ billion)	86.5	92.9	126	132	140
Formula: declaration cost of green procurement of private enterprises and organizations					
No. of establishments adhering to the ban of disposable tableware	-	-	400	513	1,500
Formula: no. of participating enterprises + night markets + colleges and universities + government offices + outsourced venues					
Resource recovery rate (%)	62.02	64.42	64.35	64.6	70
Formula: [(executive offices resource recovery amount)/waste production amount (including waste removal, recycling and re-usage amount of large trash pieces, amount of kitchen waste recycling, and executive offices resource recovery amount)] x 100% Definition: the percentage of recycled resources to processed waste					
Amount of hazardous waste collected per capita per year (kg/person-year)	3.22	3.49	4.48	5	6
Formula: removal declaration amount of hazardous wastes throughout the year / population Definition: hazardous waste refers to the hazardous waste disposed of by institutions (schools, hospitals, and government buildings)					

SDG 13 Take urgent action to combat climate change and it's impact

Indicators	2017	2018	2019	2020	Target for 2030
Annual reduction rate of greenhouse gas emissions compared with 2005 (%)	3.49	7.34	11.31	To be announced	30
Formula: (greenhouse gas emissions in 2005 - greenhouse gas emissions of the year) / greenhouse gas emissions in 2005 x 100%					
Cumulative area of permeable pavement of each year (m^2)	129,792	170,370	216,036	269,984	520,000
Formula: cumulative area of permeable pavement of each year Definition: cumulative areas of renewed and expanded sidewalks and park squares, parking lot parking spaces, and permeable pavements on campus.					
Cumulative water retention volume at the base (m^3)	37,470	67,101	112,079	144,022	167,022
Formula: cumulative water retention bodies completion in public-private land development.					
Cumulative pastoral site areas (m^2)	140,190	142,114	197,373	214,497	206,621
Formula: cumulative sum of new site areas of the year, and existing pastoral site areas.					
Amount of estimated damages caused by natural disasters (NT$1,000)	73,614	44,213	68,657.8	690.8[6]	62,162
Formula: sum of amount of estimated damage due to natural disasters of landslides, typhoons, earthquakes, and forest disasters. Definition: all damages to public constructions that are under the jurisdiction of the Public Works Department, Taipei City Government caused by landslides, typhoons, earthquakes, and forest disasters within the urban planning area of the City are subject to the statistics.					

[6] The amount of natural disaster damages paid out has decreased due to having a few typhoons this year

SDG 17 Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development



Indicators	2017	2018	2019	2020	Target for 2030
The average annual rate of increase in the consumer price index over the past 3 years (%)	0.62	0.95	0.81	0.54	< 2.0

Formula: [the cube root of (consumer price aggregate index of the year / consumer price aggregate index from 3 years ago) - 1] x 100%
Definition: average annual inflation rate over the past three years

Participation rate of participatory budget (%)	The City proposed the “no. of people promoting participatory budge” as an indicator in 2020 and began compiling statistics in the same year. However, after discussions with experts and scholars, the indicator was revised to “participation rate of participatory budget (%)” with statistics starting in 2021.	10

Formula: no. of persons participating in the City's participatory budget (including empowerment, proposal briefings, resident meetings, and i-voting) / population over the age of 16 with household registration in Taipei City.

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