TAIPEI 臺北

Global Perspective · Taipei Action


# 2019 Taipei City Voluntary Local Review

Sep. 2019

Global Perspective · Taipei Action

TAIPEI 臺北

# 2019 Taipei City Voluntary Local Review

Sep. 2019

# Contents


1 Mayor Ko's Preface

4 Executive Summary

10 The Path to Sustainability

14 Implementation Process and Review Methods

22 Prioritized Promotion Objectives and Outcomes

63 Future Prospect

66 Annex

# Mayor Ko's Preface

In 2015, the United Nations issued three global guidelines related to sustainable development and climate change. Among them, the 17 Sustainable Development Goals (SDGs) are the guiding principles for sustainable development for the next 15 years (to 2030), and the common strategies for promoting sustainable development in the world, replacing the Millennium Development Goals. The Sustainable Development Goals are based on the three major pillars of economy, society and environment, many of which are directly or indirectly related to each other. While emphasizing the promotion of social needs and pursuing the economic growth, it is necessary to incorporate the consideration of environmental protection to allow human society and the nature to continually coexist.

Under the influence of globalization of the modern world, cities often play a key role in the local areas, improving the competitiveness and sustainability of the region. The development of Taipei City lies not in the scale of urban construction, but in inclusiveness, diversity and emphasis on living standard, environmental protection and gender equality. Moreover, Taipei City aims to create a quality life and build the sustainable development foundation of "Engagement of Environmental Regeneration and Resource Circulation", "Promotion of Social Security and Sharing Society", and "Smart Growth of Economy and Technology".

Taipei City follows the guidelines of the UN Sustainable Development Goals, with the vision of "Livable and Sustainable City", obeying the principles of "From public to private sector". The public sectors are in the vanguard of demonstrating and then expanding to the private sectors, gradually making Taipei become a friendly, healthy and livable city, and achieving the 2030 Sustainable Development Goals through self-examination. With the theme of "Global Perspective, Taipei Action", Taipei City illustrates the link between sustainable development results and SDGs. Among the 17 SDGs announced by the United Nations, Taipei City has given priority to seven of them, and has made remarkable progress in SDG 7 (affordable energy), SDG 11 (sustainable cities) and SDG 13 (climate action), including transforming landfills into green energy parks. At the same time, we wish to connect the sustainable chain of the city with the green transportation and Taipei Clean Air Action Plan 2.0, and even take practical actions in improving urban resilience to respond to the climate change by means of effectively implementing policies such as the sponge city, the garden city, and the circular city.

In the future, we will continue to conduct assessment of our progress of implementation of the 2030 Agenda for sustainable development, adjust and revise urban governance strategies. The long-term vision is to hope that the results of sustainable development in Taipei City will continue to be shared internationally, so that Taipei City and our global partners can work together and progress on the path to achieve sustainability.

Mayor of Taipei City,

Wen-Je Ko


Panasonic

*Photo by Remi Yuan on Unsplash*

# Executive Summary

Photo by Franck V. on Unsplash

# Executive Summary

The 2030 Agenda for Sustainable Development, which was adopted at the UN Sustainable Development Summit on September 25, 2015, came into effect on January 1, 2016. The agenda which is comprised of 17 Sustainable Development Goals（SDGs）is further broken down into 169 targets and 232 indicators will serve as a guiding principle for sustainable development for the next 15 years（until 2030）.

Taipei City is the capital of Taiwan and has close contacts and exchanges in the fields of international trade, technology, and culture. The sustainable development goals of this city must therefore be brought in sync with international developments. International development trends must be reconciled with local demands to ensure realization of the 17 Sustainable Development Goals in line with the sustainable development strategies of this city. The following seven prioritized promotion goals have been identified through an assessment of the applicability of SDGs at the city level and tracking of development trends in line with sustainable development strategies and strategy map of the city :

1. SDG 3 Ensure healthy lives and promote well-being for all at all ages
2. SDG 6 Ensure availability and sustainable management of water and sanitation for all
3. SDG 7 Ensure access to affordable, reliable, sustainable and modern energy for all
4. SDG 11 Make cities and human settlements inclusive, safe, resilient and sustainable
5. SDG 12 Ensure sustainable consumption and production patterns
6. SDG 13 Take urgent action to combat climate change and its impacts
7. SDG 17 Strengthen the means of implementation and revitalize the global partnership for sustainable development

Promotion strategies and results are described below:

## SDG 3

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

This city has been implementing the Healthy City Project in accordance with the World Health Organizatio（WHO）of the United Nations since 2002 to fulfill its mission of serving its residents and promoting urban innovation and achieve the goal of "Health for All" set by the WHO in 1986. The healthy city and safe community concepts are implemented in six administrative districts respectively with reference to international indicators and the needs

assessment of city residents.As of 2011, the city was fully committed to participation in international organizations. In addition, the 12 administrative districts of the city started to jointly promote the Age-Friendly City concepts in response to the rapidly growing ageing population in 2012.

Community health building has been adopted as a pioneering model for the integration of the three major concepts of healthy city, age-friendliness, and safe community to successfully deal with problems associated with urbanization and population ageing. The initiative which aims to promote the healthy city concept and align with the global agenda is divided into the five dimensions of ecological sustainability, convenience and prosperity, safety and security, friendly culture, and health and vitality.

# SDG 6

## Ensure availability and sustainable management of water and sanitation for all

Relevant initiatives include the establishment of a safe water resource management system for the whole process from the stable supply of safe tap water to the proper treatment of sewage as well as the enhancement of existing water supply network facilities and monitoring systems. The goal lies in the reduction of water resource losses during the water supply process, the promotion of reclaimed water use and rainwater recycling, and advocacy of a spirit of effective use and water resource circulation.

# SDG 7

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

Photovoltaic systems are established and promoted through joint efforts of the public and private sector with a focus on model installations in idle spaces of the city. This includes the installation of PV systems at decommissioned landfill sites which are transformed into green energy eco-parks and public recreation areas. This initiative places equal emphasis on activation of idle landfill sites and development of renewable energy sources. In addition, subsidies are provided as an incentive for the private sector to install more PV systems and gradually increase green energy capacities year by year.

Efficient energy use is the key to sustainable energy. Social housing projects serve as a bellwether for the establishment of smart energy management systems that facilitate analysis and control of power use conditions and enhancement of energy use efficiency. In addition,

an Energy Conservation and Renovation Service Program for underprivileged families in communities has been adopted to maximize energy conservation effects and promote social welfare.

# SDG 11

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

Relevant initiatives include the establishment of a fast and convenient public transportation network and improvement of the quality and convenience of mass transit services which indirectly results in better air quality and reduction of environmental burdens. Diversified and intelligent transportation and information systems reduce public transport waiting times. In addition, free and accessible transit services and transportation subsidies are provided to underprivileged groups to give them access to convenient transportation services.

Disaster resilience and environmental sustainability are strengthened to enhance preparedness for natural disasters. This contains the formulation of district disaster management plans in consideration of disaster resilience and environmental sustainability to provide comprehensive planning and guidance for disaster prevention operations and to constantly promote and strengthen disaster risk governance. For the prevention and reduction of damage and losses caused by human-caused disasters, strong emphasis is placed on disaster prevention measures and evacuation drills.

# SDG 12

## Ensure sustainable consumption and production patterns

Cities are centers of human and economic activity and account for 60~80% of global energy consumption, 70% of global waste generation, and the major contributor of GHG emissions. Obviously, energy and resource circulation have become the key factors for sustainable development, making advancing circular economy crucial for the planning of long-term urban development. Prioritizing economic growth, the city government has therefore taken the initiative in integrating cross-departmental capabilities of the public sector in an effort to foster long-term urban development and create a livable environment for its residents. A Circular City Promotion Program has been adopted to realize circular economy concepts and to implement pragmatic and feasible measures.

The formulation of enforcement guidelines governing the banning of single-use and melamine tableware and implementation of plastic reduction policies is coupled with

educational efforts to increase the willingness of citizens to bring their own shopping bags and tableware. The follow-up introduction of dual-use bags combine shopping bags and city designated garbage bags (a two-in-one strategy) into one and thus helps reduce the amount of plastic bags. The delivery of goods bank services, on the other hand, realizes sustainable consumption. Finally, leftover exchange platforms are promoted in public markets to encourage the donation of overproduced food to underprivileged families on the same day and thereby maximize the benefits of such food surplus.

# SDG 13

## Take urgent action to combat climate change and its impacts

As a result of a high-level of urban development and the serious impacts of climate change, metropolitan areas all over the world face different risks and challenges of varying degrees associated with their aquatic environments and characterized by water scarcity or overabundance including flooding, heatwaves, torrential rains, and droughts. These extreme weather patterns not only pose a major threat to the lives and property of citizens but also have a negative influence on sustainable urban development. The creation of the sponge city helps effectively regulate the micro-climate of cities and minimize the impact of the urban heat island effect. The promotion of the garden city policy, on the other hand, reinforces food and agriculture education concepts, stimulates public participation, and helps create cities characterized by green health, education, and lifestyles. An effective management of GHG emissions is achieved through the adoption of green transportation, green power, and energy conservation strategies.

# SDG 17

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

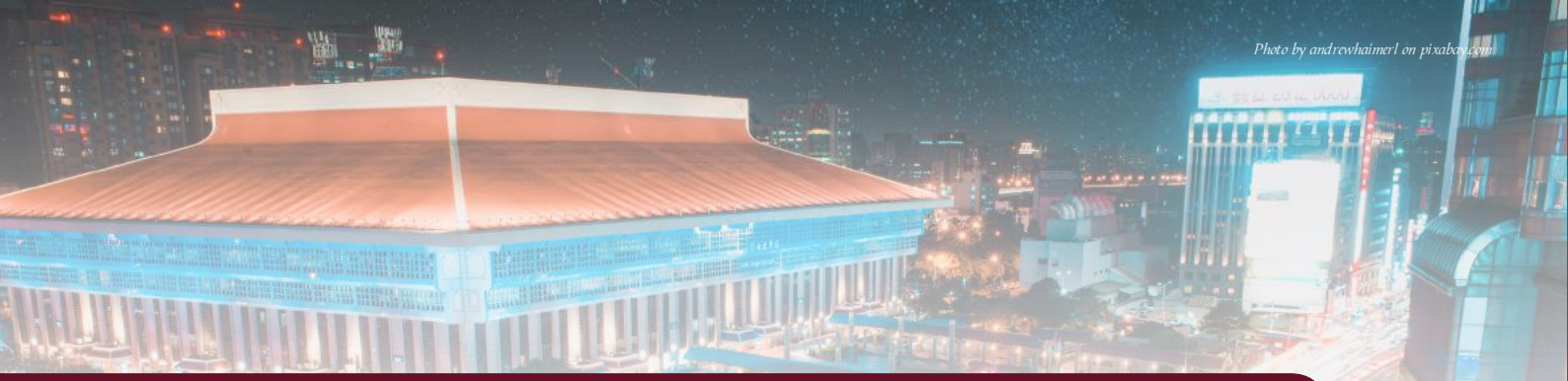
The creation of the Smart City Office enables policy coordination in departmental units, accelerate administrative progress and resource integration. Industry innovation and smart solutions are promoted through joint efforts of the public and private sector. Opportunities for cooperation and exchanges between cities are created through intensified links with international cities and formation of the "GO SMART" smart city alliances.

Abandoning the traditional top-down budgeting approaches, Taipei City Public Participation Committee was created with an aim to improve budget transparency, raise public awareness and increase citizen participation in public policies and affairs through the adoption of participatory budgeting, which provide citizens with a direct role in the government budget decision-making process, instead of the traditional top-down policy approaches.


愛
北上 Northbound / Eastbound Departure Time
臺北車站
TAIPEI STATION
自 動 售 票 機

# The Path to Sustainability

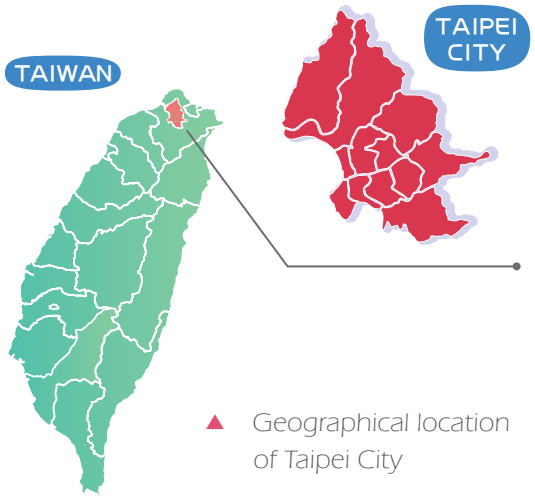

*Photo by Shupin Zeng on Unsplash*




# The Path to Sustainability

Taipei City is located in a basin surrounded by mountain ranges in northern Taiwan. The city covers a total area of around 271.8 $km^2$ and is divided into 12 administrative districts (As shown at right). It is one of the core metropolitan areas with a high-level of urban development in Taiwan. Taipei City has a population of roughly 2.66 million. It is not the largest city in Taiwan, but it has the highest population density. Its ethnic composition is diverse, including aborigines, Minnan, Hakka, mainlanders, new immigrants, and foreign nationals. It is therefore the epitome of a multicultural society and ethnic integration.

Due to its location near the 25 degrees north latitude, Taipei City has a monsoon-influenced subtropical climate with normal temperatures ranging from 16°C to 30°C. Annual precipitation amounts to 1,600 mm and the plum rain season from May to June tends to bring abundant rainfall. Due to the impact of climate change and global warming, Taipei City has been affected by extreme weather patterns in recent years. Summer temperatures are deeply affected by the City's basin topography and too much concrete construction, which traps the heat and causes the Urban Heat Island Effect (UHIE). Temperatures can exceed 35°C and frequently reach record highs. Short-duration intense rainfall events are becoming more common and precipitation is extremely unevenly distributed. Climate change therefore poses a serious challenge for sustainable development and governance in the city.




▲ Geographical location of Taipei City

In view of the mounting evidence of climate change, economic considerations are no longer the sole focus of urban development. Effective responses to climate change have turned into a key task of urban governance. Taipei City therefore established a Council for Sustainable Development (hereinafter referred to as "This Council") in 2004 to strengthen efforts in the fields of environmental protection, social equity, and economic development on the foundation of the global sustainable development framework. This council is

composed of government officials, experts and scholars, NGO and business representatives.It is divided into the following seven functional divisions : livable urban environment, sustainable education, sustainable society, sustainable transportation, energy and ecology, water and land resources, and sustainable development vision (As shown below). Council meetings are convened on a quarterly basis for the periodic adjustment and review of sustainable development related matters. The gradual creation of a friendly, healthy, livable,and sustainable city for following generations is achieved by dedicated performance of duties and joint efforts of the public and private sector.

In 2016, this Council approved a total of 47 sustainable development indicators (22 international and 25 local indicators) guided by the joint vision of a Sustainable and Livable Taipei to realize various dimensions of livability and sustainability including a visionary and progressive urban development, a rich and diversified urban culture, a fair and just urban society, a safe and comfortable urban life, digital and convenient urban services, and a healthy and charming urban environment. Implementation goals and strategies adapted to local conditions are formulated. Eight strategic themes at the city government level are defined with an equal emphasis on all development dimensions based on annual administrative strategy roadmaps to make constant progress toward urban sustainability. Implementation and linkage with international SDGs are based on these indicators and themes. Finally, concrete action plans encompassing healthy city, sponge city, garden city, circular city, and clean air strategies are formulated and implemented. In addition to top-down approaches, public participation in municipal administration is encouraged through the adoption of "open government" concepts to solicit public opinions and realize the goal of public participation in sustainable development initiatives.


▲ Structure of the Taipei City Council for Sustainable Development

Photo by tillahrens on pixabay.com

# Implementation Process and Review Methods

Photo by Patrick Perkins on Unsplash

# Implementation Process and Review Methods

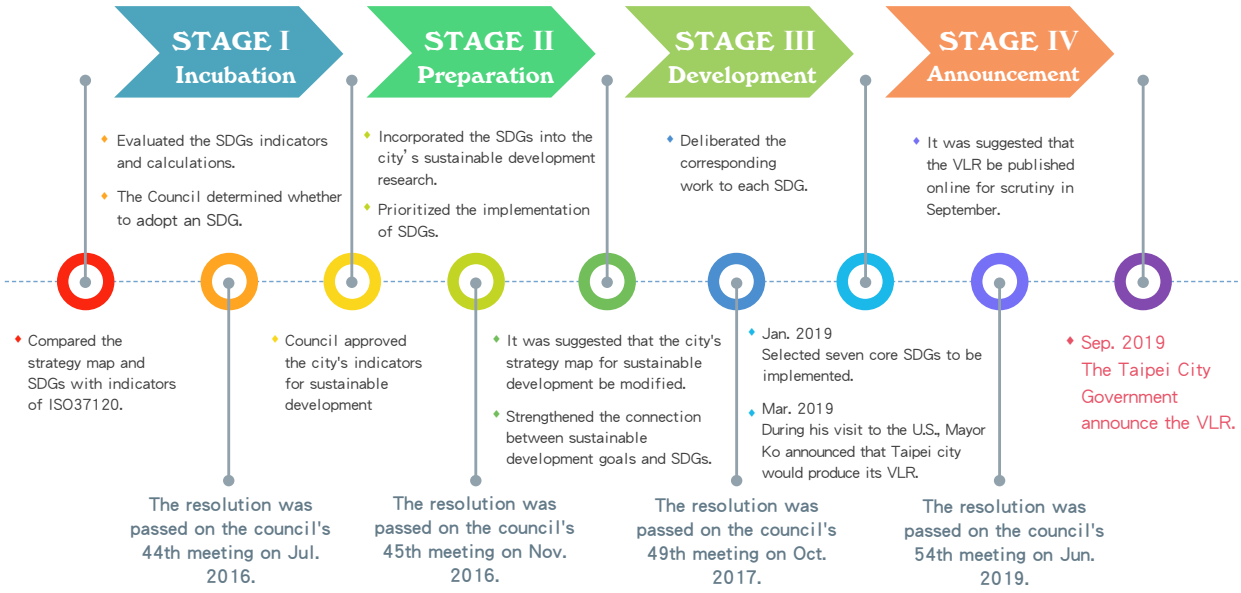
The compilation of the Voluntary Local Review（VLR）report was carried out by the Secretariat of the Council for Sustainable Development - the Department of Environmental Protection, Taipei City Government under supervision of the Council for Sustainable Development. The compilation of these reports was based on the 17 Sustainable Development Goals （SDGs）set by the UN and the existing SDGs and the strategy roadmaps of this City. The implementation process of these reports is shown in detail in the chart below.

## 【Implementation process】

### Stage I - Incubation stage

The compilation of a VLR report was based on a resolution adopted in the 44th session of the Sustainable Development Council in July, 2016. Comparison of existing sustainable development indicators formulated in accordance with the strategy roadmaps of Taipei City with the ISO 37120 indicators of the World Council on City Data（WCCD）and the UN SDG indicators was recommended by the council. It also suggested an in-depth assessment and analysis of all UN Sustainable Development Indicators to determine whether they should be adopted as indicators by this City in the future. Adjustments of the organizational structure of the council were carried out based on the results of this analysis.

▼ Taipei City VLR Report Implementation Process



## Stage II - Preparation Stage

The results of the evaluation of the 2015 sustainable development indicators for Taipei City were discussed in the 45th session of the Sustainable Development Council in November, 2016. The council recommended that it be determined whether all 232 indicators of the SDGs are quantitative indicators. It had to be deliberated on how to determine the order of priority of indicators as a reference for the adoption of said indicators by Taipei City. The Secretariat of the Sustainable Development Council therefore conducted a research project to plan sustainable development strategies of this City based on the SDGs and assess the applicability of SDG indicators and the feasibility of integrating existing sustainable development indicators of Taipei City.

The research findings indicated the correlation between the SDGs and Taipei city's development strategic planning, the indicators and action plans of the functional sections of the council, the strategy roadmaps, and Taipei city's other indicators （e.g., healthy city, gender indicators, urban indicators, and urban competitiveness indicators）. Since the sustainable development strategies were applied for a period of over 13 years from 2004 to 2016, the researchers recommended that the strategies be amended to strengthen the linkage with the SDGs and facilitate the revision of relevant work contents of the council sections.

An analysis of SDG implementation by international cities shows that SDGs are usually implemented at the national level. There are only few examples of implementation at the city level. In addition, not all SDGs are applicable to the city level. Based on the research findings, it was therefore suggested that this City focus on core SDGs initiatives.

## Stage III - Development Stage

Core SDGs for priority promotion were discussed and determined in the 49th session of the Sustainable Development Council in November, 2017. It was further recommended to deliberate corresponding tasks for SDG indicators and propose or revise strategies, visions, goals, and action plans with reference to the Sustainable Development Solutions Network （SDSN） and methods adopted by other international cities on the basis of existing sustainable development goals and strategy roadmaps of Taipei City. This marked the first step toward the composition of a VLR report.

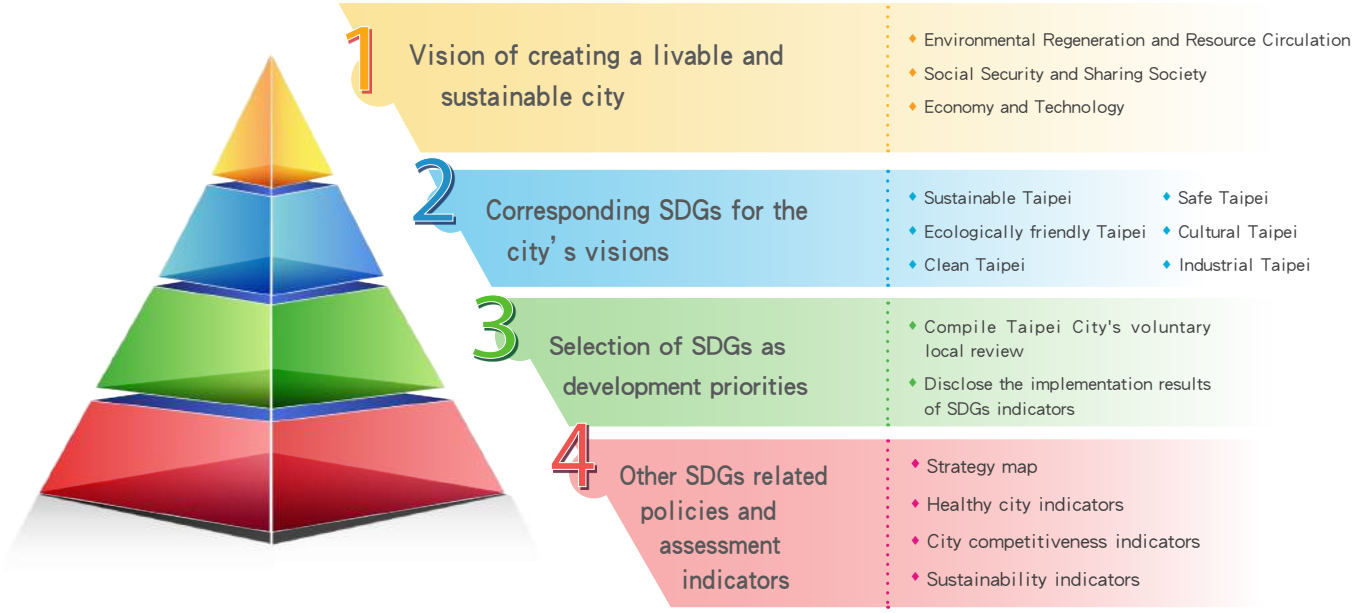
During a state visit to the US in March, 2019, Mayor Ko Wen-je presented relevant progress and achievements of Taipei City in the implementation of sustainable development and the SDGs at a meeting in New York. He also officially announced that Taipei City will follow in the steps of New York City by submitting the VLR report by year's end to make strides toward the goal of creating a livable and sustainable city based on the vision of "Global Perspective,Taipei Action".

## Stage IV - Announcement Stage

During the 54th session of the Sustainable Development Council in June, 2019, it was recommended to summit and officially present the completed Taipei City VLR report on the VLR platform this year. The Taipei City VLR report was made public in 2019, and it will be followed by continually revises and updates.

## 【Review methods】

Over 50% of the global population lives in cities. Urban areas and human settlements will therefore be crucial for the realization of SDGs. A report on how to implement SDGs in cities published by SDSN in 2016 stated that urban SDG will create strong partnerships and bring more resources to cities, Review methods for different layers of the VLR report （as shown in the chart） are introduced below.




▲ Taipei City VLR Report layers

## Layer 1 :

### *Overall vision of creating a livable and sustainable city*

The goal is to lay the foundation for urban sustainable development and formulate relevant strategies for implementation by embracing the spirit of "urban SDG". The planning of sustainable development strategies for this City began in 2004 in response to the impacts of climate change. The Sustainable Development Council was established in the same year to strengthen efforts in the fields of environmental protection, social equity, and economic development on the foundation of the global sustainable development framework. The promotion efforts by this Council over many years resulted in 6 core visions, 47 sustainable development indicators, 79 action plans, and 145 concrete works based on the overall vision of Livable and Sustainable Taipei city and the three major dimensions of "Engagement of Environmental Regeneration and Resource Circulation", "Promotion of Social Security and Sharing Society", and "Smart Growth of Economy and Technology".

## Layer 2 :

### *Corresponding SDGs for the city's visions*

This report aims to match the six core visions of sustainable, ecological, clean, safe, cultural, and industrial which are included in the overall vision of Livable and Sustainable Taipei city to corresponding SDGs. Only four goals (SDG 5 Gender Equality, SDG 10 Reducing Inequality, SDG 14 Life Below Water, and SDG 16 Peace, Justice, and Strong Institutions) out of 17 were not taken into account.

However, SDG 10 Reducing Inequality and SDG 16 Peace, Justice, and Strong Institutions are mentioned on the sustainable development strategy roadmaps of Taipei City. In addition, a gender equality office has been established to formulate gender indicators, and SDG 5 Gender Equality is taken into consideration for administrative practices. Only SDG 14 Life Below Water was therefore not taken into account.

## Layer 3 :

## *Selection of SDGs as development priorities*


At the goal level, international cities directly apply the 17 SDG goals and analyze the correlation between the 17 goals and existing sustainable development goals and plans of the city to determine the SDGs with the highest correlation or achievability. Drafts of development priorities for this City which have been formulated in accordance with the following procedures were submitted to expert consultation meetings and the Sustainable Development Council for final decision upon deliberation.

1. Research project : The Secretariat of the Sustainable Development Council conducted a research project to plan sustainable development strategies of Taipei City based on the SDGs and assess the applicability of SDG indicators
2. Analysis of the operations of each city government department: Analysis and organization of operations, functions, authorities, responsibilities, and policy and plan reviews of each department in cross-departmental meetings to conduct an assessment of development priorities
3. Feedback: Provision of feedback by responsible personnel of all departments upon completion of required training
4. Comparison of existing policies and indicators: Analysis of the correlation between the 17 SDGs and the city's current sustainable development vision, sustainable development plans, strategy roadmaps, or relevant plans to generate drafts of development priorities for Taipei City

The drafts were submitted to external expert consultation meetings for review upon deliberation. All goals were screened based on their importance and high priority goals were selected in accordance with the following principles.

1. Goals must be related and achievable
2. Goals must correspond to local government authorities and responsibilities
3. High-priority items are selected based on development differences

The seven high-priority development goals selected by Taipei City are shown below.

Target and Indicator items have been determined based on the selected goals. Concrete implementation results are compiled, organized, and disclosed in this report.

- SDG 3 Ensure healthy lives and promote well-being for all at all ages
- SDG 6 Ensure availability and sustainable management of water and sanitation for all
- SDG 7 Ensure access to affordable, reliable, sustainable and modern energy for all
- SDG 11 Make cities and human settlements inclusive, safe, resilient and sustainable
- SDG 12 Ensure sustainable consumption and production patterns
- SDG 13 Take urgent action to combat climate change and its impacts
- SDG 17 Strengthen the means of implementation and revitalize the global partnership for sustainable development


## Layer 4：

## *Other SDGs related policies and assessment indicators*

During the compilation of this report, comparisons and reviews were conducted based on the sustainable development strategic planning of this City in line with the SDGs spirit of "Leaving no one behind". In addition, other SDGs related policies and assessment indicators adopted by Taipei City were reviewed. Sustainable development strategies represent a principal axis of the administrative policies of the city. Eight strategic themes, 104 strategic goals, and 257 indicators have been determined based on the vision of "Livable and Sustainable Taipei city". This City has further formulated healthy city indicators, urban competitiveness indicators, and sustainable development indicators which can be linked to SDGs and are revisable in the future.

# Prioritized Promotion Objectives and Outcomes

Photo by tingyaoh on pixabay.com

# Prioritized Promotion Objectives and Outcomes

This chapter mainly presents Taipei City's promotion of sustainable development strategies and the results. According to the results by seven task forces set up by the city's Sustainable Development Council, the city's sustainable development is summarized and compiled, focusing on seven prioritized promotion goals described below.


## SDG 3

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

This city has been implementing the Healthy City Project in accordance with the World Health Organization（WHO）of the United Nations since 2002 to fulfill its mission of serving its residents and promoting urban innovation and achieve the goal of "Health for All" set by the WHO in 1986. The healthy city and safe community concepts are implemented in six administrative districts respectively with reference to international indicators and the needs assessment of city residents. As of 2011, the city was fully committed to participation in international organizations. In addition, the 12 administrative districts of the city started to jointly promote the Age-Friendly City concepts in response to the rapidly growing ageing population in 2012.

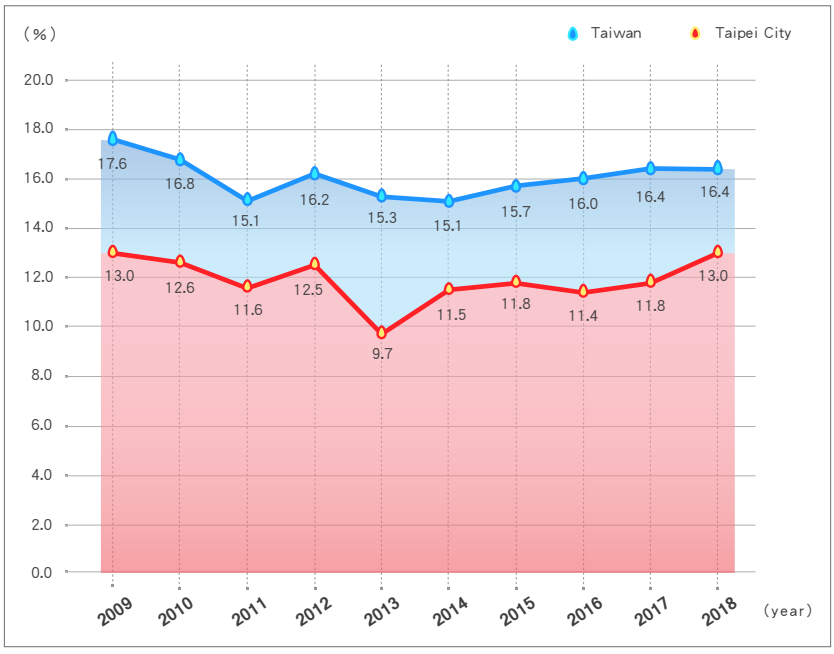
Community health building has been adopted as a pioneering model for the integration of the three major concepts of healthy city, age-friendliness, and safe community to successfully deal with problems associated with urbanization and population ageing. The initiative which aims to promote the healthy city concept and align with the global agenda is divided into the five dimensions of ecological sustainability, convenience and prosperity, safety and security, friendly culture, and health and vitality.

# City's Current UN Sustainable Development Targets

- 3.4 By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being.
- 3.8 Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all.
- 3.C Substantially increase health financing and the recruitment, development, training and retention of the health workforce in developing countries, especially in least developed countries and small island developing States.

| Indicator | Latest Data | Past Data |
|---|---|---|
| Immunization coverage (%) | 40 (2018) | 38 (2017) |
| Physicians(per 100,000 population) | 546.6 (2018) | 546.4 (2017) |
| Suicide mortality rate (per 100,000 population) | 13.0 (2018) | 11.8 (2017) |

## Establishing a Government-Level Suicide Prevention Center

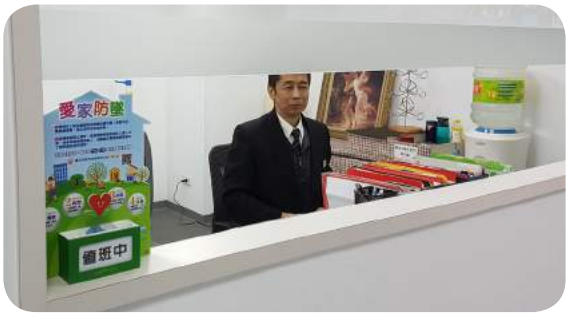



▲ Taipei City and Taiwan Suicide Mortality Rates per 100,000 Population from 2009 to 2018

In view of the extensive suicide causes, the city has established a government-level suicide prevention center to building capacity for suicide prevention, integrate the bureaus and offices and private resources, provide diverse planning and integrative measures, and set up a comprehensive network of suicide prevention to effectively curb suicide behaviors.

The suicide prevention strategies include conducting relevant activities to strengthen health education and promotion, continuing to develop the professional skills of center staff, strengthening care visitation services for attempted suicides and high-risk cases, coordinating professional private organizations to provide cases with continuous visitation services, compiling the "Safety Manual for Falling Prevention" to prevent suicides from jumping from heights while strengthening the promotion of community building fall safety in order to restrict access to lethal means.


▲ Safety Manual for Falling Prevention




◀ Set up Falling Prevention Control Label nearby Guard Office

Photo by kf uhlert on pixabay.com

## Providing Free Vaccination for High-risk Groups

Since vaccination proves to be the most effective intervention measure for infectious diseases, in order to enhance protection for infants, children, the vulnerable, elderly, and high-risk groups, the city has continued to carry out influenza vaccination, rotavirus vaccination, pneumococcal vaccination, routine vaccination policies to maintain high vaccination completion rates and gradually introduce new vaccination plans. At the same time, vaccination effectiveness, vaccination service quality, and related infectious disease prevention and control effectiveness have been comprehensively enhanced to protect citizen health and reduce the threat of disease.

▲ Vaccination

## Promoting the Community Integrated Care Service Plan

With the city's accelerating population ageing and increased long-term care and medical needs, the existing long-term plan services each have its own norms and service situations, lacking cross-disciplinary, cross-departmental, and cross-medical system integration. In order to integrate the expertise of health and social administrative units and properly carry out labor of division, new community integrated care service plans have been promoted. Through integrative medicine and mobile home services, the frequency of elderly hospital visits and repeated medication administration can be reduced to avoid medical resource waste, thereby providing more comprehensive and convenient medical and care services despite long-term care manpower shortages and limited subsidies.

Since the promotion of this plan in September 2016, cross-disciplinary teamwork, health and social administrative resources have been integrated. With the case service-centered single portal, integrative services are provided to people with disabilities. Since the readjustment of the community integration care system ABC service mode under the long-term care policy of the Ministry of Health and Welfare in December 2017 into the medical and care integrative services beginning April 2018, the complex cases requiring professional teamwork were targeted to provide integrative services, establish a family care support service mechanism, construct community resource networks, and advocate long-term care services.

The plan has set up bases in Datong, Songshan, Neihu, Zhongzheng, and Wenshan districts since 2017. Beginning April 2018, the service bases have been extended to all 12 administrative districts of Taipei City. In 2017, 453 people received services; in 2018, 1,081 cases of persons with disability were found through the mobile home service, the case-by-case service was offered to 1,448 persons, 6,762 persons accessed online inquiries. Service bases were set up within the consigned regions, and health promotion and family caregiver support activities were held three times a week, accounting for 1,417 sessions in total and 19,304 persons. In 2019, activities will continue to be promoted and conducted to benefit more long-term care service cases and their families.

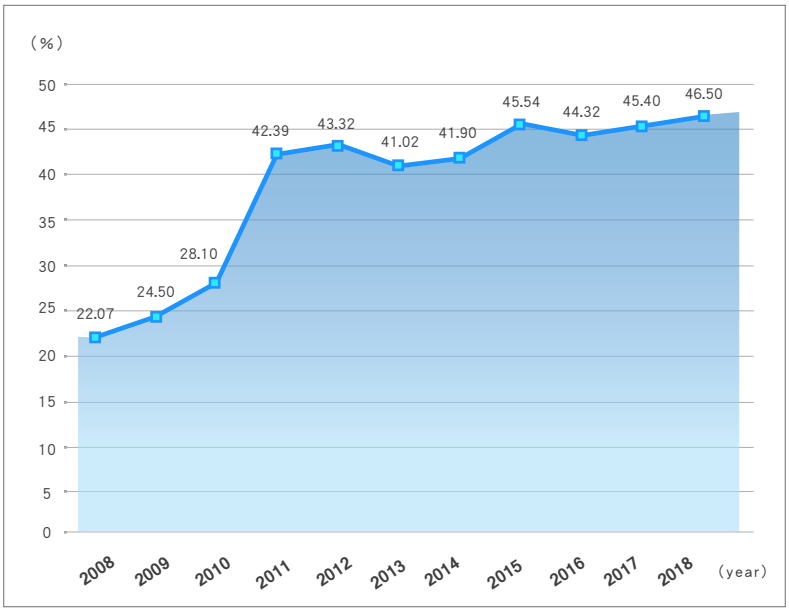
Press conference on the opening of the community integrated care services for the 12 administrative districts of the city ▼

# Cancer Screening and Advocacy

Cancer has ranked number one among the ten leading causes of death in Taiwan for 46 years. According to research data, large-scale pop smear can reduce the incidence and mortality of cervical cancer by 60-90%, while periodic mammography and fecal occult blood examination and oral mucosal examination can also effectively reduce mortality rates of breast cancer, colorectal cancer, and oral cancer. In order to protect the city residents from the threat of cancer and improve their health, the city continues to actively promote the screening of four cancers (cervical cancer, colorectal cancer, oral cancer, and breast cancer) in order to detect cancer early for early treatment.

The city has gathered the white power including medical institutions and medical associations, as well private resources such as non-governmental organizations (NGO) and groups to build health stations and link the strengths of the masses to "serve city residents and innovate for the city" in concerted efforts. A diversity of channels are used to actively provide city residents with cancer prevention health education advocacy, screening, referral, or health consultation services, including betel nut health hazard prevention advocacy, periodic screening reminder service for the city residents, the promotion of integrative community and workplace cancer screening, etc. Additionally, the "Cancer Screening Management Center" has been set up to carry out referrals after establishing cases tested positive, thereby effectively monitoring and evaluating the number of high-risk group screenings.


▲ Cancer screening activity




▲ Trend of screening rates of four cancers in Taipei city within 10 years

## Elderly Social Participation Services

In order to encourage the elderly to continue promoting and enhancing social participation to prevent or delay ageing, the communities provide local services, coupled with relevant welfare resources, the provision of care visitations, telephone greetings and inquiries, referral services, catering services, health promotion, and other diverse services, so as to establish a continuous care system. As of 2018, the number of care service bases totaled 395 locations. Through subsidies for private groups, bottom-up public participation, safe communities that safeguard elders have independently formed, which protect the living safety and mental and physical health of elders, which enhance their quality of life.

## Drug Use Prevention Strategy for Minors

In order to control the recidivism of juvenile drug offenders, the city has developed all-rounded services and multi-modal treatments to cope with the issue. The relevant bureaus and divisions have also been integrated to develop preventive strategies and cooperate in undertakings. The Ministry of Education adopts three levels of preventive measures, namely, prevention advocacy, inspection and screening, and community service counseling, to execute campus drug abuse prevention work; police stations also strengthen investigation on whole-class drug crimes, while the Juvenile Affairs Division of Taipei City Police Department（Juvenile Counseling Section）conducts juvenile crime prevention, counseling services for juveniles displaying deviant behaviors, counseling for juvenile groups, education advocacy, and so on; after the Department of Social Welfare, Taipei City Government receives related reports, the Juvenile Welfare Service Center and relevant private groups will provide services and disciplinary parenting education targeting parents whose children use drugs.

For more serious juvenile cases, "special youth: youth integrative drug addiction treatment and medical subsidy services" are provided. Through case management services, protection, assistance, and addiction abstinence medical resources are integrated to provide the youth with drug abstinence services, develop addiction prevention community building, set up a drug addiction prevention system, hold cross-bureau and cross-division meetings, set up communication software groups, establish referral mechanisms, strengthen contact and information exchange among police stations and schools, etc., thereby strengthening horizontal links.

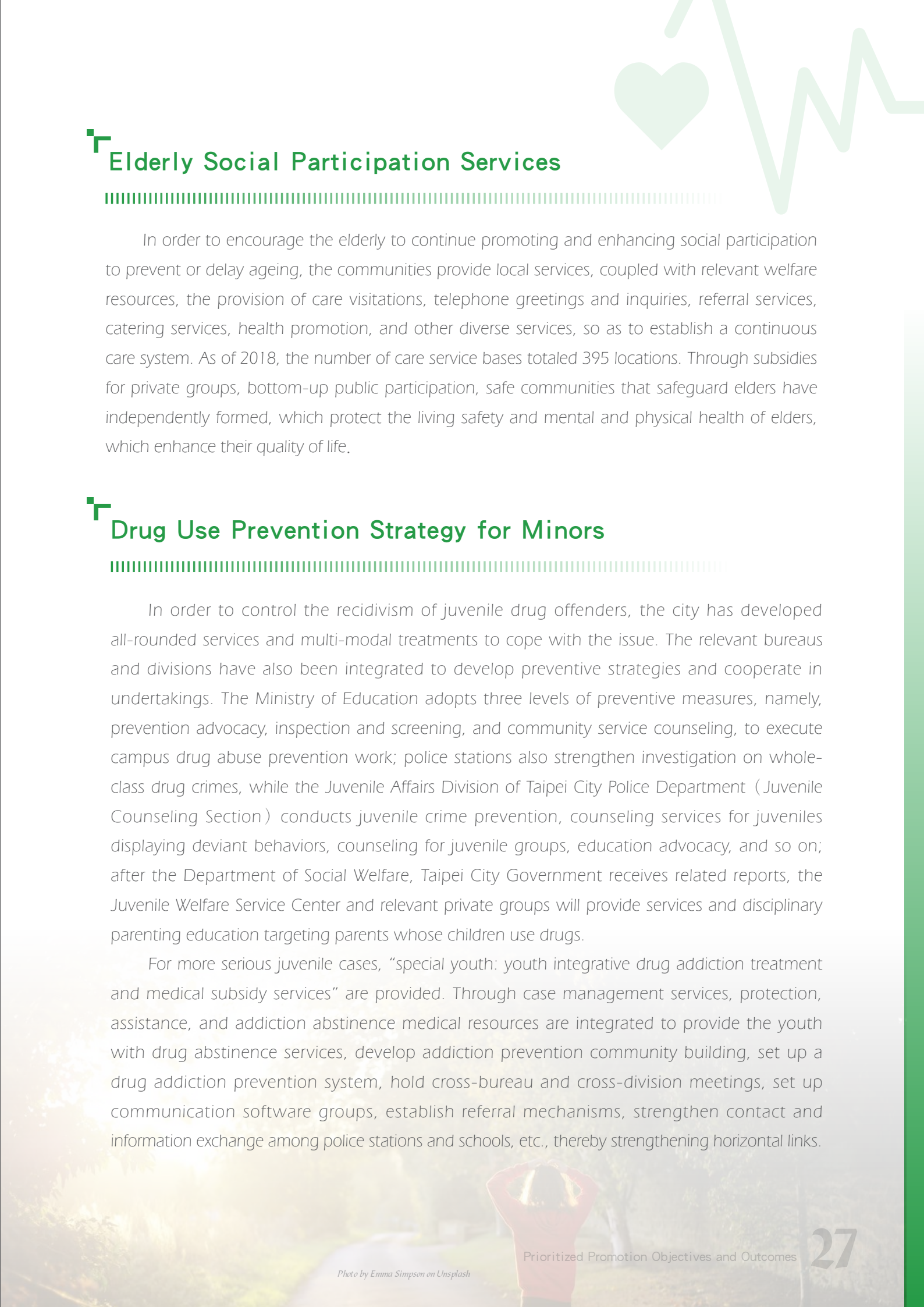


Photo by Emma Simpson on Unsplash

## Establishing a Dementia Support Network

In order to provide comprehensive, high-quality and high-accessibility medical services for dementia patients, the city's seven hospitals and united hospitals have signed a contract to provide dementia checkups, diagnoses, and related medical services to citizens aged above 65. Targeting suspected dementia cases, initial screening, confirmed diagnosis, case requirement assessment, and other services are provided to monitor the cases and log in the city's dementia case management system, in the hope of enhancing care and quality of life for patients with dementia and their families.

▲ City resident undergoing dementia screening

## Expand Nursery Service Model

Population growth is an important factor contributing to the sustainable development of a nation. An observation of Taiwan's demographic trends in recent years shows that the challenge of "low birth rates" has directly led to a population growth slowdown, resulting in a drastic decrease in the young and middle-aged population, affecting the country's future tax revenues, labor, and economic growth, which pose a threat to national development and competitiveness. It is the city's goal to resolve the problem of day care for double income families, encourage childbirth, and construct a friendly childbirth and child rearing environment.

In order to lessen the burden of child rearing and child care on parents and provide childbirth and child rearing incentives to encourage the population at the right age to get

married and have children. The city plans to through advancing construction expansion set up additional small and large public nursery facilities （including two modes: private management of public nursery centers and community public nursery homes）in social housings, campus free spaces, urban renewal feedback welfare facilities, and other bases. As of 2018, 70 locations were set up, accommodating 1,425 infants and toddlers and providing affordable, high-quality, community-based, high-accessibility preschool services and care to families with children rearing needs. At the same time, through multi-policy incentives, high-quality private nursery centers and home nannies are encouraged to join the city's publicization service units, construct public-private cooperative care, expand the city's overall nursery service supply momentum, and move toward the goal of making parents rest assured that they can send their children to nursery and go to work with peace of mind.

▼ Public nursery facility site educare activity


# SDG 6
# Ensure availability and sustainable management of water and sanitation for all

*Relevant initiatives include the establishment of a safe water resource management system for the whole process from the stable supply of safe tap water to the proper treatment of sewage as well as the enhancement of existing water supply network facilities and monitoring systems. The goal lies in the reduction of water resource losses during the water supply process, and the promotion of reclaimed water use and rainwater recycling in order to fully utilize water cycling and reuse.*

## City's Current UN Sustainable Development Targets

- 6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all.
- 6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.

| Indicator | Latest Data | Past Data |
|---|---|---|
| Tap water quality achievement rate (%) | 100 (2018) | 100 (2017) |
| Wastewater tertiary treatment ratio (%) | 0.90 (2018) | 0.67 (2016) |
| River biochemical oxygen demand in line with water classification benchmark achievement rate (%) | 93.05 (2018) | - |

## Providing Stable Tap Water Sources

*Taiwan ranks 18th among the world's most water-stressed countries. Water resources are very precious, and a water reservoir plays a very important role in storing water resources. How to effectively enhance reservoir water utilization rates and promote the sustainable management of reservoirs remain very important issues at hand.*



*Photo by Samara Doole on Unsplash*

Feitsui Reservoir is an important livelihood and public water source for the Greater Taipei metropolitan area. Currently, the water supply can accommodate up to five million people; in the future, it is expected to accommodate up to six million people. In order to ensure Feitsui Reservoir can meet water supply needs and construct Greater Taipei into an environment without water shortages. In the future, reservoir operations must continue to be improved so as to strengthen water resource utilization. An increase in reservoir water source utilization not only ensures water supply stability, but also reduces the flushing volume during typhoons and floods as well as the occurrences of reservoir downstream flooding. In order to increase reservoir water utilization, the "Feitsui Reservoir Stable Water Supply Plan", the "Feitsui Reservoir Intelligent Management Plan", and the "Feitsui Reservoir Operation Plan" have been drafted.

## Water Supply Pipe Network Improvement Strategy

In view of the water resources becoming increasingly scarce, in order to effectively use water resources, prevent system leakage, and reduce the water leakage rate, the city has planned 20-year "Water Supply Pipe Network Improvement and Management Plan" long-term strategic approach（Year 2006～2025）to be executed in four stages. At present, Stage 3 is in progress（Year 2016～2020）, thereby comprehensively promoting the "regional water quantity measurement" engineering method to control water leakage improvement effectiveness. In addition, according to the water leakage management strategy for pipe network water loss recommended by the International Water Association（IWA）, pipeline replacement, water pressure management, voluntary water leakage detection, and leakage rate quality serve as the four main directions for perfecting the water supply pipe network system and gradually reduce water leakage rates by taking a combination of measures.

## Proper Sewage Treatment Strategy

The city's proper sewage treatment strategy involves collecting family wastewater, business wastewater, etc., through the sewer system to the sewage treatment plant, which purifies and properly disposes wastewater until it meets the national effluent standard for discharge.

In 2019, the city actively conducted Phase 5 pipe network engineering and user discharge equipment engineering in respective administrative districts of Taipei City; the Phase 6 engineering project （Year 2020～2023） will continue to be conducted, with appropriate engineering methods adopted to continue promoting user pipe connection engineering and conducting pipe life extension

operations, in the hope of comprehensively enhancing household pipe connection rates and prolonging pipe life, as well as increasing the ratio of population entitled to wastewater treatment. The targeted number of household pipe connections is 10,000 in 2019 and 8,000 by 2020 and 2021. Additionally, based on the actual pipe connection statuses of respective years, periodic revision on targeted numbers of household pipe connections for respective years will be done, thus sequentially enhancing the ratio of population entitled to wastewater treatment.

## Improving Water Contamination Improvement Rates

The city's implementation of the water pollution source control permit system targets water pollution prevention measures for adoption by business entities, including: self-setup (wastewater) water treatment facilities, recycling and reuse, storage, inclusion for sewer system treatment, consigned treatment, and other methods. According to regulations, a permit application is required by law in order to fully grasp pollution source data. Water pollution source control requires periodic declaration of wastewater treatment facility operations, effluent water quality and quantity testing and electricity consumption records as provisioned, thereby supervising normal operations and maintaining wastewater treatment facilities, as well as strictly executing terminal inspection and control work.

## Creating Excellent Water Quality Actions

In terms of water pollution prevention, construction sites, the city's controlled businesses mainly focus on community sewer systems, hospital and medical institutions, and tourism-oriented hotels. In order to grasp business and community sewer system pollutant discharge, controlled business and sewer system pollution inspection will continue to be strengthened, with the controlled target inspection rate of 100% as the target. Moreover, effluent quality is timely sampled and tested, and traders are urged to implement the normal power-on, operation, and proper declaration of sewage treatment facilities, so as carry out water pollution prevention work.

The city promotes citizen participation in water environment patrols and river conservation, thus purifying rivers, reducing pollution, and expanding environmental education on water through citizen power. The city's water environment patrol consists of 19 teams whose total patrol range stretches 102 km, including the Jingmei River, Xindian River, Keelung River, and Danshui River and who forms a rigorous monitoring network covering rivers in Taipei City. River cleaning and river purifying activities are also regularly held to enable city residents to be closer to rivers and join to safeguard the water environment in concerted efforts.

Furthermore, at Guandu Natural Park, the Shuimokeng River wetland operation and maintenance are done. Water improvement is done through natural purification engineering methods, with the water treatment capacity exceeding 2,500 CMD.

▲ Recycled water intake at Neihu Sewage Treatment Plant

## Comprehensively Enhancing Recycled Water Usage

▲ Recycled Water Reuse

After sewage has been properly treated in the treatment plant, the city adhering by the spirit of the circular economy to enhance the "ratio of three levels of waste water treatment" to increase the comprehensive recycling and use capacity for use by other units free of charge. Recycled water for water plants, environmental cleaning, street cooling, and other non-human contact uses are actively promoted, which combined with environmental education courses promote the advantages of recycled water and the importance of water resource recycling and use.

Sewage treatment upgrade and recycled water quality and quantity enhancement continue to be promoted. The recycling capacities of the city's Dihua Sewage Treatment Plant and Neihu Sewage Treatment Plant account for 10,000 CMD and 20,000 CMD respectively. After treatment, water is provided for factory wash use, plant watering, road cooling, equipment cleaning, and secondary water use by the general public. From 2015 to 2018, the average monthly recycled water usage reached 216,201 $m^3$, equivalent to the saving about 36.04 million bottles of 600c.c. bottled water each month.

## Rainwater Recycle and Reuse

▲ Rainwater harvesting at Xiangshan Park

In order to promote the recycle and reuse of park rainwater, the Parks and Street Lights Office, Public Works Department, Taipei City Government promoted the setup of rainwater harvesting in 17 parks from 2015 to the end of 2018, with the total capacity of 996.43 $m^3$ for irrigation and secondary water resource uses. In addition, rainwater harvesting with the capacity of 467 $m^3$ were set up in 95 schools, including: Minsheng Elementary School, Dongmen Elementary School, Taipei Municipal Zhishan Elementary School, Guting Junior High School, etc.

7 AFFORDABLE AND CLEAN ENERGY

# SDG 7

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

*Photovoltaic systems are established and promoted through joint efforts of the public and private sector with a focus on model installations in idle spaces of the city. This includes the installation of PV systems at decommissioned landfill sites which are transformed into green energy eco-parks and public recreation areas. This initiative places equal emphasis on activation of idle landfill sites and development of renewable energy sources. In addition, subsidies are provided as an incentive for the private sector to install more PV systems and gradually increase green energy capacities year by year.*

*Efficient energy use is the key to sustainable energy. Social housing projects serve as a bellwether for the establishment of smart energy management systems that facilitate analysis and control of power use conditions and enhancement of energy use efficiency. In addition, an Energy Conservation and Renovation Service Program for underprivileged families in communities has been adopted to maximize energy conservation effects and promote social welfare.*

## Promoting the Solar Photovoltaic System Setup

*In order to achieve the goal of promoting "advanced energy efficiency & conservation cities", the city has actively installed solar photovoltaic equipment. The solar energy planning in public facilities, and open spaces enhances the rate of increase in renewable energy and creates sustainable energy development.*

*In order to accelerate the effectiveness of solar photovoltaic power generation equipment installation, solar photovoltaic power generation equipment has been extensively installed in both the public and the private sector. For the public sector part, the "Guidelines for city-*

▲ *Waste landfill converted into an energy hill*

owned public premise installation and use of solar photovoltaic power generation equipment" was promulgated in 2016. The respective agencies and schools may subsequently conduct "city-owned public premise installation and use of photovoltaic power generation equipment" tender operations. Beginning 2016, an additional 8,600 kWp has been installed. It is expected that at least an additional 10,000 kWp will be installed by 2019. A subsidy fund has been allocated for solar photovoltaic power generation equipment installation by city residents or businesses, which is expected to boost their willingness to do so.

From 2007 to 2014, 39 schools (48 locations), Taipei Municipal Lishan High School included, were assisted in installing the rooftop solar photovoltaic system, with the setting capacity of 871 kWp. From 2017 to 2018, according to the "Guidelines for city owned public premise installation and use of solar photovoltaic power generation equipment" 40 schools (40 locations), Lanya Elementary School included, completed the setting 6,474 kWp in total.

▲ Installation of solar photovoltaic system on school rooftop

## Energy Welfare Plan for Disadvantaged Families

The city has actively promoted work related to economizing on electricity. In addition to encouraging households to replace existing for energy-efficient equipment, targeting economically deprived families, the "Energy Welfare Plan for Disadvantaged Families" was launched in 2015. Targeting the mid- and low- income households listed in the manual, the professional team visited the household sites to evaluate their needs and replace their old lighting with energy-efficient lighting, not only economizing on electricity, but also enhancing electricity efficiency, thereby achieving the benefits of reduced lighting electricity consumption, energy efficiency & conservation, and carbon reduction.

From 2015 to 2018, 2,700 mid- and low-earning households received services, replacing about 20,000 lights in total, saving 970,000 kWh of electricity consumption annually. After the replacement, each household can on average save about NTD 1,200 on the electricity bill a year. The energy welfare plan will continue to carry on in 2019, expecting to serve 2,000 disadvantaged

families or a cumulative 4,700 households that will be benefited in four years, saving 2,000,000 kWh of electricity. Through environmental protection combined with care for the disadvantaged, the virtuous cycle of social goodness and love will be promoted.

◀ *Energy-efficient lighting replacement and installation in a disadvantaged family*

## Social Housing Smart Grid Flagship Plan

This city adopted nine locations, namely, "Hsinglung social housing in Wenshan District (Area 2)", "Youth social housing in Wanhua District", "Dongming social housing in Nangang District", "Zhongnan section social housing, Nangang District", "Phase 2 Youth social housing, Wanhua District", "Minglun social housing in Datung District", "Ruiguang social housing in Neihu District", "Liouzhangli camp area (A, B streets), and Xinyi District", "Guangtzuboai Park, Xinyi District", a total of 5,134 smart social houses, to jointly construct a large smart grid empirical flagship field. The accumulation of Hsinglung's smart community empirical experience will contribute to the creation of a new generation of smart social houses, and different levels of energy management systems and advanced information and communication technology (ICT) plans will be imported as the development vision to enhance social housing living and service standards. Additionally, through the analysis and control of smart grid and energy management systems, energy utilization effectiveness can be enhanced. It is also anticipated that the benefits of 10% household economizing on electricity and 20% peak load reduction can be achieved, thus saving electricity costs and stabilizing urban electricity supply. It is also expected that the overall benefits shown serve as a guide exerting an influence on other social houses and private houses.

It is expected that, under the promotion and guide of this plan, combined with research technology integration, the establishment of specifications and standards, government conduction experience sharing, and other package measures, the city's vision of promoting smart grid importation into houses can be gradually expanded to comprehensively implement smart grid development, effectively alleviate the risk of power shortages, and achieve the goals of energy conservation, carbon reduction, and power transmission and distribution system pressure.

In addition, in response to Taiwan Power Company's granting users access to participating in demand response measures. Through reasonable distribution, reward for reduced electricity consumption is given to users to encourage low-voltage users to take energy efficiency & conservation actions and promote metropolitan areas' promotion of demand response load management measure. The city will also carry out social housing integration, turning it into a virtual power plant and continuing to cooperate with Taiwan Power Company in promoting the "demand bidding test for small-scale low-voltage users". The energy efficiency & conservation strategies and practices in this plan are as follows :

ICT standard equipment manufacturers shall install digital meters behind Taiwan Power Company's meters and compile data information to building energy and community energy management systems through a signal interface in parallel with energy monitoring, control, and unloading functions of energy management systems and smart building integration management platforms. According to needs, demand control and equipment unloading mechanisms are provided, and a diversity of electricity consumption models and behaviors such as time of use (TOU) and time of bidding (TOB).

In the future, the family energy management system is expected to be imported into social housing, which will in turn promote joint participation by 100,000 private houses in the peripheral areas, thereby promoting the movement of "economizing on electricity by all". Social houses that import the family energy management system can on average save up to 10% electricity. From 2016 to 2019, 5,134 households in Taipei City have completed the importation. With the average electricity consumption of 4,836 kWh per household, it is estimated that about 2,482,802 kWh of electricity can be saved in three years.

## Housing Building Energy Efficiency & Conservation Strategy

Targeting new buildings, the city signed the "City Environmental Protection Agreement" in 2005, proclaiming the determination to promote a sustainable development by incorporating "green buildings" in the action plan. Additionally, the Municipal White Paper clearly stipulates "the Regulation of Green Buildings in Taipei City setup" as the work focus. In 2014, the said regulation was promulgated; from 2015 to 2017, the relevant sub-regulations and package measures were subsequently set up.

With regard to existing buildings, buildings situated within the city's jurisdiction, licensed for more than five years, and those not listed by Taipei City Revenue Service as high-end residential houses levied an additional house tax, building management committees should file applications. For those that have not set up the building management committee, after obtaining consent from over 80% of house owners, one person will be designated as the representative who will file an application and submit the report of assisted evaluation and diagnosis by the Taipei City Construction Management Office or the plan execution report proposed by the architect who registered commencement of business. An application for green roof or green energy facility improvement is to be filed during the acceptance period, and approved funds will be granted after review by the review team.


# SDG 11

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

*Relevant initiatives include the establishment of a fast and convenient public transportation network and improvement of the quality and convenience of mass transit services which indirectly results in better air quality and reduction of environmental burdens. Diversified and intelligent transportation and information systems reduce public transport waiting times. In addition, free and accessible transit services and transportation subsidies are provided to underprivileged groups to give them access to convenient transportation services.*

*Disaster resilience and environmental sustainability are strengthened to enhance preparedness for natural disasters. This contains the formulation of district disaster management plans in consideration of disaster resilience and environmental sustainability to provide comprehensive planning and guidance for disaster prevention operations and to constantly promote and strengthen disaster risk governance. For the prevention and reduction of damage and losses caused by human-caused disasters, strong emphasis is placed on disaster prevention measures and evacuation drills.*

## City's Current UN Sustainable Development Targets

- 11.2 By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons.
- 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.
- 11.7 By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities

| Indicator | Latest Data | Past Data |
|---|---|---|
| Annual number of public transport trips per capita | 463.24 (2018) | — |
| Numbers of fire related deaths per 100,000 population | 0.600 (2018) | 0.819 (2017) |
| Estimated damages by natural disasters (Unit: NT$1,000) | 44,213 (2018) | 73,614 (2017) |
| Total municipal solid waste generation per capita per year (ton/person-year) | 0.463 (2018) | 0.464 (2017) |
| Annual average concentration of fine particulate matter ($PM_{2.5}$) ($\mu g/m^3$) | 14.6 (2018) | 15.3 (2017) |
| Green space (hectares) per 100,000 population | 533.66 (2018) | 523.64 (2017) |

## Establish A Convenient Public Transportation Network

The backbone of the city's green transport network is Taipei Metro (comprehensive MRT routes), supplemented by buses (Taipei Metro Bus, transfer discounts, electric buses, low-floor buses, improved bus stop conditions and the "friendly bus movement") In addition, last mile service for biking and walking is provideds (better bike-friendly environment, YouBike program, bike lane, Neighborhood Traffic Improvement Plan and No Motorbikes on Arcades and Sidewalks Program). The city's public transportation system provides a high-quality and adequate public transport service . Various transport demand management measures have been implemented to reduce car/motorcycle usage.

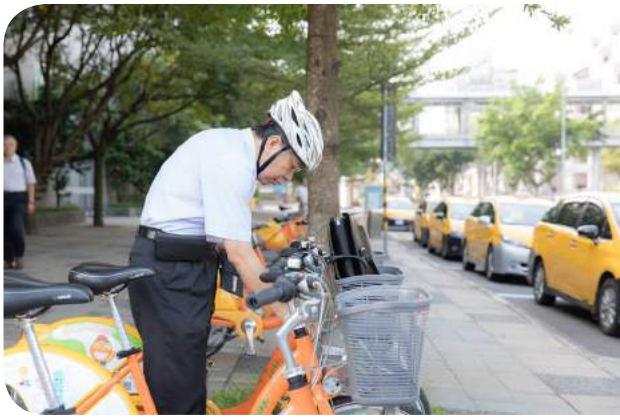
Currently Taipei Metro has 117 stations, 131.1 km in operating network length and a daily average of 2.16 million passengers. 14 bus companies operate on a total of 290 bus routes with a daily average of 1.3 million passengers. In addition, to improve operation efficiency and safety, 15 bus-only lanes have been put in place to provide better and more convenient public transportation experience for the citizens.

The city's "Neighborhood Traffic Improvement Plan" provides better and safer walking space for pedestrians by marking sidewalks in alleys and lanes. The plan's mid-term measure is to establish a bicycle shuttle network, which will be used for transfer and shuttle across all Metro stations. The long-term measure is to mandate the expansion of sidewalks or open space during urban planning and urban design review and implement such mandate in urban planning measures to achieve sustainable development and develop a high-quality city environment.

## Strategy to Promote Environment-friendly Green Transportation

In order to build a low pollution and emission city, Taipei City has promoted replacing old diesel engine buses with electric buses. As of the end of June 2019, a total of 22 electric buses are in operation. To encourage bus operators to quickly replace their old diesel engine buses with electric buses, Taipei City Government not only assists them in applying for bus purchase subsidy from Ministry of Transportation and Communications (MOTC), but also offers operators a mileage-based subsidy scheme (NT$ 5 per km per vehicle).

In order to reduce air pollution and encourage the usage of clean energy, public parking lots now have electric vehicle charging stations and priority parking spaces are being planned. These measures aim to make an Taipei City more electric vehicle-friendly, improve air pollution condition and achieve green transportation. Currently, 91 public parking lots in the city have charging stations installed. The city has also required private companies contracted to operate public parking lots to install a certain number of charging stations to provide charging service free of charge following the contract termination.



▲ Mayor of Taipei renting a YouBike

Taipei City considers public bicycles as part of public transportation. To reduce the usage of private vehicles and encourage wider usage public bicycles, passengers transfer between Metro and bus within one hour of returning YouBikes will receive a NT$5 discount beginning April 2018; passengers rent a YouBike in Taipei City within one hour of transferring between Metro and bus will have first 30 minutes free of bike rental. Furthermore, the monthly pass "All Pass Ticket" is introduced starting April 16, 2018（introduced on April 16, 2018）at the price of NT$1,280. All pass ticket holders are eligible for the 30-minute free rental for YouBike.

## Intelligent Management of Transportation Information

An intelligent transportation system can make transportation even more convenient for the general public. Taipei City has been actively promoting the development of Intelligent Transportation System（ITS）. With ITS, bus information was transformed from the never-changing schedule into the constantly updated real-time information. Such information is even transferred to the OPEN DATA platform where private companies can utilize such information with added value. This also means more ways for the public to obtain the estimated time of arrival for buses（smart signs, apps, webpage, PDA and audiotext）.

A survey shows that most people rely on smart signs for bus arrival information since they can provide such information to those without a cellphone, Internet access or access to the app. Anxiety level is reduced among commuters as these signs help them make informed choices on which public transportation to take. As of the end of June 2019, smart bus signs have been installed at more than1,661 bus stops, accounting for 79% of all bus stops. It is estimated that 2,100 stops will have smart signs installed by the end of 2020.

## Accessible Transportation Services

Wheelchair-accessible taxi provides ride service for the elderly, handicapped and disabled for the purpose of hospital visits school/work commute, or outing. As of the end of June 2019, wheelchair-accessible taxis have provided more than 490,000 trips to those in need. In the future, the city government will continue to expand the number of these taxis and encourage taxi drivers to provide accessible service.

In addition, to fully realize social welfare policies and take care of the handicapped, paratransit bus was presented in 1989, providing accessible transport services to the handicapped. There are 328 paratransit buses in Taipei City, which have provided approximately 300,000 trips from January to June, 2019. People with disabilities can reserve a ride online or by calling the hotline audiotext and voicemail. Contracted service providers will arrange vehicles and drivers based on the customer needs to provide accessible transport services to people with disabilities.

▲ Wheelchair-accessible taxi and paratransit buses

## Transportation Welfare System

Taipei City provides transportation subsidies to children from low-earning households attending school above elementary school. Applicants must apply for the subsidy for each semester. For junior high students, the subsidy is NT$500 each semester; for those attending high school students, the subsidy is NT$1000 each semester;vocational school in Taipei City, the subsidy is NT$1,500 per semester. A list of qualified applicants is compiled in each January and August and applications forms will be mailed to these applicants. Once they register for the semester, they can apply for the subsidy.

In order to encourage social participation among the elderly, transport fare subsidy was introduced in 1983, which was transformed into "Senior EasyCard" in 2003. A total of NT480 in credits are added to these cards each month automatically, which now can be used at Metro, Maokong gondola, certain public venues, YouBike and double-decker sightseeing bus instead of being restricted to bus and taxi rides. This measure aims to encourage the elderly to use the free credits in Senior EasyCard on public transport systems or visit various cultural/recreational venues to lead an active and healthy life with more social participation.


▲ Scope of Senior EasyCard Use

## Fire Prevention

Fire prevention strategies include promotion of fire prevention at home, continuously improving the professional skills of fire prevention promoters, conducting visits more frequently to areas/venues prone to fire and promoting and monitoring progress at high-risk areas and its surrounding areas. Various activities (for community members to participate) are conducted and booths (temporary or stationed) are set up for interactive promotion of fire prevention. In order to create effective disaster prevention promotion, works toward the goal of "prevention, reduction and response of disaster" are made, and "Disaster Preparedness Taipei manual" was compiled, which, with its simple and detailed information, helps raise disaster prevention awareness of all city residents.

With the city's budget and donation from civil groups, Taipei City has been promoting the installation of home fire alarm devices. As of July 2019, 383,794 households have installed fire alarm devices. Among them were 320 cases of successful escapes, thanks to the fire alarm devices that went off.

The city will continue to devote resources from departmental units of the city and use various prints and electronic media to promote the installation of home fire alarm devices to reduce fire casualty and protect citizens' lives and property.


Disaster Preparedness Taipei Manual ▶

## Clean air movement

In 2016, the "Clean Air Movement Whitepaper" was launched. Taipei City Government, based on this white-paper, worked to reduce air pollution and implement many action plans via cross-departmental collaboration. In 2018, the city introduced "Clean Air Movement 2.0", which includes 10 action plans to tackle air pollution from the three aspects: low pollution, green transport and regional collaboration. Encouraging the citizens to use low-polluting transport systems, reducing the usage of private vehicles and cross-county/city collaboration will give citizens cleaner, healthier air that they can enjoy breathing. The annual concentration of $PM_{2.5}$ of Taipei City dropped to 14.6 $\mu g/m^3$ in 2018, meeting the national average standard of 15 $\mu g/m^3$ for the first time.

## Source Reduction and Management of Waste

As more people commute to Taipei City for work and international events are increasingly being organized in the city, there are various policies and tools dedicated to source reduction in order to remain the same amount of solid waste. "The Per Bag Trash Collection Fee" Policy, an economic incentive to encourage citizens to reduce waste and recycle more. Another policy is restriction on single-use plastic, which controls the use of plastic bag to reduce the number of plastic bags, utensils and cups used. Furniture recycling and repair promotion aims to extend the lifecycles of furniture, making the amount of solid waste not rising and decline year by year.

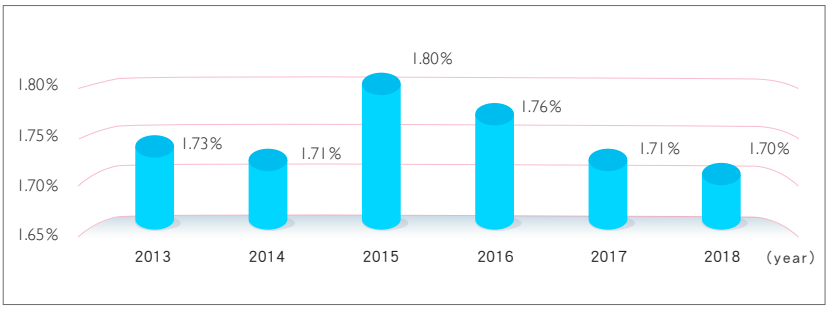
## Urban Green Space

Parks and green spaces are referred to "a city's lung", as they protect the ecological system, provide beautiful landscape, prevent disasters and provide a venue for leisure purposes. In addition to improving environmental quality, parks and green spaces are also the best outdoor leisure spaces. Therefore, parks and green spaces have become a crucial indicator for a city's development and environmental quality.

In response to the citizens' needs for higher environmental quality recreational purposes, it is crucial to continue to expand and maintain the parks, green spaces, squares, children's playgrounds, riverside parks, protected areas and scenic areas in the urban plan. Between 2015 and 2018, the city had increased approximately a total of 385,062 $m^2$ of green spaces in Jingqin No.1 Park, Zhoumei Xian Zai Gang Park, North Gate Square, Taipei Travel Plaza, Chien-Cheng Circle and other locations. In order to increase the average green spaces per capita year by year, the target value will increase by 3 hectares of green space per year.

## Low-income Assistance Program

There has not been much change in the poverty rate of Taipei City in the last five years, which is related to the slowly changing poverty threshold . Taipei City strives for an annual drop of 0.01% in its poverty rate while keeping it at the level of 1.70%. The city adjusts the minimum cost of living and amount of subsidy based on Public Assistance Act each year.




▲ Poverty Population Percentage Over the Years of the City

*Note: Based on Article 4 of the Public Assistance Act, low-income households (poverty population) shall qualify under the following conditions: average divided monthly income among each person in the household falls below the lowest living index (NT$16,580 in 2019); total household assets divided among each person falls below NT$150,000; real assets of the family fall below NT$7.4 million.*

According to the Public Assistance Act, households falling below the poverty threshold can apply for various low-income household living assistances and counseling. As of July 2019, 20,821 household and 44,537 people (accounting for 1.67% of the entire city) were registered as low-income households. Low-income household assistance includes family/children living subsidy, travel expense subsidy for children attending junior high or above, living subsidy for students above 18, childbirth subsidy, prenatal nutrition subsidy, holiday benefits, living subsidy for the handicapped and living subsidy for the elderly from mid and low-income households. In addition to financial assistance for low-income households, the city combines education, health and housing resources to meet the needs of the poor in schooling, medicine, employment and home care to maintain the fundamental life functions and dignity for the underprivileged. The city, to further assistance to the underprivileged, conducts counseling for the poor, provides measures to help them get out of poverty as well as provides employment transition counseling.

*Photo by tamaphotography on pixabay.com*

# Implement Strategies to Reduce Disaster Risks based on Sendai Framework for Disaster Risk Reduction 2015-2030

In order to build disaster resilience and environmental sustainability, Taipei City has formulated "Taipei City Regional Disaster Prevention and Response Plan" as the comprehensive guidelines for disaster prevention planning to continuously promote and enhance disaster risk management. The plan took into consideration the nature of the past disasters that struck the city. In addition, Taipei City, in 2019, followed Sendai Framework for Disaster Risk Reduction 2015-2030 and reviewed all disaster prevention policies and their results and formulated concrete objectives and strategies to comprehensively promote disaster prevention awareness and capabilities.

## Concrete Disaster Risk Reduction Targets

"Sendai Framework for Disaster Risk Reduction 2015-2030" proposed seven global targets. Taipei City Government, from the perspective of a local government, produced two major targets based on the framework's seven global targets, which are "disaster mortality reduction" and "disaster vulnerability reduction (reduce the number of people impacted by disasters)".

## Managing Disaster Risk with Disaster Risk Governance

Various disaster prevention and response units continue to develop disaster prevention/response technologies to improve the speed and accuracy in disaster evaluation, monitoring and early warning. These technologies also help develop, update and publish location-based disaster risk information to serve as reference for decision-makers, general public and communities with high disaster risk. Taipei City Government implements the most effective way by providing age and demographic-specific disaster prevention education to help all understand the disaster risks at their environment, allowing them to take adaptive measures.

## Understanding Disaster Risk

Being located in the Ring of Fire of the Pacific Ocean, Taiwan faces high disaster risks. On top of the threats from natural disasters such as typhoons, heavy rain and earthquakes, there are also threats from major traffic accidents, fires, plagues and other compound disasters. In light of this, disaster prevention and response requires much and immediate at tention as the city works toward sustainability. Disaster risk management policies and their implementation should be based on a comprehensive understanding of disaster risks, including vulnerability, capability, human/asset risks, disaster nature and the surrounding environment. Relevant knowledge can contribute to better estimates of disaster risks, disaster prevention and reduction, the development and implementation of suitable disaster preparedness and effective response.

## Invest in Disaster Reduction to Improve Disaster Resilience

Encourage both the public and private sector to improve the disaster resilience of the infrastructure and working areas through structural and non-structural measures. Promote disaster risk evaluation as a key component in the formulation and implementation of land policies. Promote disaster risk transfer insurance to enhance the disaster resilience of the society, community and personal property.

## Enhancing Disaster Preparedness to Improve Disaster Response and Achieve the Goal of "Build Back Better" During Reconstruction

With various disaster potential simulations and risk analysis, Taipei City, after taking into account the impact of climate change and previous disaster experiences, adopts a policy with periodic adjustment and formulates SOP and checklists for different operations. The city reviews and improves its disaster prevention/response policies at all times to ensure solid execution of disaster prevention, preparedness and response.

Taipei City has, based on the spirit of all-disaster prevention, established a universal response system, which considers the universal needs from all disasters from the "result management" perspective and has one agency that is responsible for all disaster responses to design a universal response procedure with coordinated efforts from and for all departments.

It is crucial to take necessary measures to help the impacted community rebuild after a disaster strikes. Therefore an integrated coordination platform has been established to help the private sector to participate in post-disaster reconstruction. Key infrastructure and public buildings that have been affected will be reinforced to achieve the goal of "Build Back Better", which makes the city and community more disaster resilient.

## Periodic Evaluation of Implemented Matters and Public Progress Report

Chapter Four of Taipei City's Regional Plan of Disaster Prevention and Response includes a disaster prevention and response evaluation mechanism as well as the annual disaster prevention budget chart. All agencies can, based on such information, formulate their specific short, mid and long-term implementation plans and operation guidelines, which will be included in the city government's comprehensive disaster prevention and response evaluation for reviews.


# SDG 12

## Ensure Sustainable Consumption and Production Patterns

Cities are centers of human and economic activity and account for 60~80% of global energy consumption, 70% of global waste generation, and the major contributor of GHG emissions. Obviously, energy and resource circulation have become the key factors for sustainable development, making advancing circular economy crucial for the planning of long-term urban development. Prioritizing economic growth, the city government has therefore taken the initiative in integrating cross-departmental capabilities of the public sector in an effort to foster long-term urban development and create a livable environment for its residents. A Circular City Promotion Program has been adopted to realize circular economy concepts and to implement pragmatic and feasible measures.

The formulation of enforcement guidelines governing the banning of single-use and melamine tableware and implementation of plastic reduction policies is coupled with educational efforts to increase the willingness of citizens to bring their own shopping bags and tableware. The follow-up introduction of dual-use bags combine shopping bags and city designated garbage bags (a two-in-one strategy) into one and thus helps reduce the amount of plastic bags. The delivery of goods bank services, on the other hand, realizes sustainable consumption. Finally, leftover exchange platforms are promoted in public markets to encourage the donation of overproduced food to underprivileged families on the same day and thereby maximize the benefits of such food surplus.

## City's Current UN Sustainable Development Targets

- 12.4 By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment.
- 12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse

| Indicator | Latest Data | Past Data |
|---|---|---|
| Annual average amount of collected hazardous waste per capita (kg/person-year) | 3.49 (2018) | 3.22 (2017) |
| Recycling Rate (%) | 64.42 (2018) | 62.02 (2017) |

## Promoting Plastic Reduction and the Dual-use Shopping Bags

In light of this policy, Taipei City rolled out the policy to encourage these venues to use the dual-use shopping bags Hypermarkets, supermarkets and convenience stores can only sell these bags that can be used as both shopping bags and trash bags. For each one of these bags sold, one bag less will be used. Promotional materials (“Help reduce plastic bag usage by brining your own bags, borrowing bags or buying the dual use bags”) have been posted at these stores to encourage the citizens.


▲ Promoting re-use of the dual use bags

## Ban on Single-use Tableware

In response to the over use of melamine tableware, its hazardous effect on the environment and its possible health risks, guidelines of the ban on single-use and melamine tableware were formulated and provided to all organizations and schools, as an effort to promote waste reduction, energy efficiency & conservation, and carbon reduction, and environmental protection and safeguard the health of school faculty members, students and guests. Taipei City Government hopes that, by leading by example and promoting corporate social responsibility, the general public will also follow suit.

## Promoting Used Book Exchange Platforms

To reduce waste from the source, promote recycling, prolong books’ lifecycles and help the underprivileged, the first “Yenhuei (Extension of wisdom)” book bank for used books was established in Neihu in 2013. A cloud platform was established where people can apply online for book pickups and donations, helping them conserve time, maximize the value of old books and reduce waste paper. Since these free books can help underprivileged children obtain new knowledge, the government continues to encourage businesses, schools, NPOs and citizens to donate books to help the book bank deliver to more areas.

# Reduce Waste

## Free Meal Plan

"Free Meal Station" Plan is implemented starting 2009. With private donations, the social welfare center works with partners（lunchbox restaurants, noodle stands and eateries, etc.）where food vouchers（prepared by social workers and distributed to underprivileged families in need）can be redeemed. Social workers will collect the redeemed vouchers periodically for accounting purposes and pay these partners using the aforementioned donations.

## Goods Bank Project

It has been discovered that most underprivileged families allocate most of their income for rent, utilities and education and leave little for food.

Goods Bank was established in Goods Bank was established in 2011 with a total of 23 collection points. It collects donations from various sectors, including goods and money from private organizations, businesses and individuals. Food（including noodles, instant cereal, nutrition supplements and milk powder）and daily necessities（including diapers and toiletry）account for the majority of donations. Social workers will evaluate these donated items to deliver them to underprivileged families in need.

▲ Goods collection storeroom at the Wenshan Social Welfare Center

## Overproduced Food Exchange Platform

For environmental protection and waste reduction, Taipei City Government partnered with the Market Administration Office and launched the "Overproduced Food Exchange Platform". (2017) Market stands are encouraged to donate such food surplus of the day to the platform. Matched social welfare units for the elderly, people with disabilities and young children can pickup these food/ingredients at the market at a specific time, cook them and serve it to their clients. Social workers can, after evaluation, give these food/ingredients to family in need so that they can cook at home themselves. Currently six public markets have partnered to promote the platform. In 2019, the platform started working with Taipei Agricultural Products Marketing Co., Ltd and receiving the company's donations of inglorious fruit and vegetables.

▲ Shidong Market became the platform's first partner


# SDG 13
# Take Urgent Action to Combat Climate Change and Its Impacts

*As a result of a high-level of urban development and the serious impacts of climate change, metropolitan areas all over the world face different risks and challenges of varying degrees associated with their aquatic environments and characterized by water scarcity or overabundance including flooding, heatwaves, torrential rains, and droughts. These extreme weather patterns not only pose a major threat to the lives and property of ordinary citizens but also have a negative influence on sustainable urban development. The creation of the sponge city helps effectively regulate the micro-climate of cities and minimize the impact of urban heat island effect. The promotion of the garden city policy, on the other hand, reinforces food and agriculture education concepts, stimulates public participation, and helps create cities characterized by green health, education, and lifestyles. An effective management of GHG emissions is achieved through the adoption of green transportation, green power, and energy conservation strategies.*

## Promoting A Sponge City Policy

*Due to climate change, this city is also facing pressing challenges that come with it. In terms of addressing climate change and regional extreme weather, this city has put flood control and river regulation at the core of the city's long-term climate action plan to make this city a safe and habitable waterfront city for the citizens. However, considering the challenges from extreme climate and competition for water resources in the future, currently Taipei City has formulated its water environmental policy based on the concept of the sponge city. With "Resilience and Adaptation", "Sustainable Water Usage" and "Vibrant Water Environment" as the visions, the city government will build a safe, sustainable, accessible and eco-friendly water environment.*

*The 3 visions of a sponge city include the following 6 goals: "Restoring Urban Water Cycle", Increasing Flood-Resisting Capacity", "Diverse Water Reuse Sources", "Stable and Efficient Water Supply", "Livable Natural Habitat" and "Promoting Waterfront Activities". Thirteen strategies and 170 plans have been formulated accordingly with a 4-year budget of NT$22.7 billion.*

*Photo by Chang Qing on Unsplash*

Construction and management will ensure permeable pavement on roads and squares, promote green roofs, increase the city's flood retention capacity, upgrade wastewater processing, ensure diverse reuse of recycled water, conserve and protect water environment and build a leisure environment with great water accessibility. These measures will help the city retain water, adjust the microclimate via transpiration and build disaster tolerance and resilience facing extreme rainfall, transforming the city into a sustainable sponge city that is resilient, capable of dissipating heat via water and adaptive to all future challenges.


▲ Three Visions and six Goals for the Sponge City Policy for Taipei

Under the three visions, six goals, thirteen strategies and 170 plans, the city has implemented the following key projects from 2015 to 2018.

### Vision 1 : Resilience and Adaptation – Restoring urban water cycle and strengthening flood-resisting capacity

A. Permeable pavement: 173,819 $m^2$ of permeable pavement installed at public facilities.

B. Increase green resources: Approximately 385,062 $m^2$ of green spaces added.

C. Increase flood retention capacity: 79,000 $m^3$ increased in public facilities. Runoff distribution 119,564 $m^3$ through public-private collaboration

### Vision 2 : Sustainable Water Usage – Diverse water reuse sources and stable and efficient water supply

A. Recycle and reuse of wastewater: Monthly average of recycled wastewater reached 216,201 $m^3$.

B. Recycle and reuse of rainwater: Approximately 1,463 $m^3$ of rainwater collected from rainwater harvesting in parks and campuses

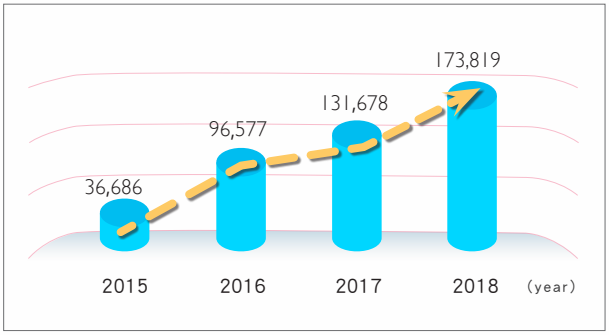
C. Promote tap water and reduce bottled water consumption: Tap water fountains installed at 536 locations.

## Vision 3：Friendly Water Environment - Livable natural habitat and waterfront activities

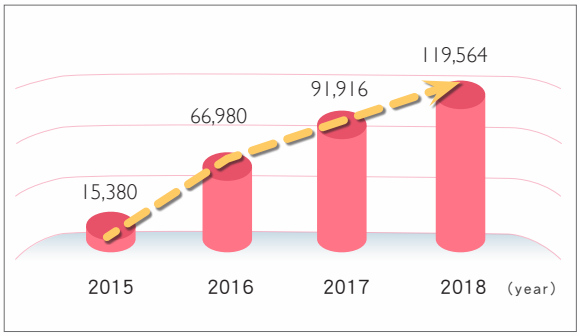
A. Sewer pipe connections: Another 45,128 households connected to the sewer pipe.

B. Waters ecological environmental education: Hundreds of seminars held with an approximate total of 308,393 people in attendance.

C. Waterfront and water activities promotion: More than 2.6 million participated in the eight key events with the blue highway theme.




▲ Accumulated area of permeable pavement by year ($m^2$)




▲ Accumulated runoff distribution by year ($m^3$)

Facing the challenges of climate change, Taipei City will continue to work toward becoming a water-friendly and green city by increasing the percentage of green infrastructure at the city's public facilities. The city plans to, by 2030, reach 80% in green infrastructure at the public facilities and increase water retention capacity by 1.15 million $m^3$ (same level as parks and green spaces). Another goal is to reach 16% in water recycling in wastewater processing. Through an open government, citizen participation and public-private collaboration, this city can retain more water to reduce floor risk when facing extreme rainfall, dissipate heat to mitigate urban heat island effect at high temperature and provide a stable and diverse water supply to the public and businesses when water resources are in short supply. These will transform Taipei City into a sponge city that provides citizens with great water accessibility and a diverse aquatic ecosystem.

▲ Permeable pavement on bike lanes

## Promoting installation of permeable pavement at public facilities

*Limited land and high population density of the city make it hard to find space for detention basins. Therefore the city government has actively promoted the installation of rainwater outflow suppression facilities at private buildings to increase flood resilience and reduce flood risks during heavy rains. The government also promotes other water retention measures during the development of public facilities (schools, parks, parking lots, etc.). Green space and other measures with better water permeability can be used to mitigate the urban heat island effect, improve water environment resilience and distribute rainwater runoffs in the catchment area. For private buildings, install rainwater outflow suppression facilities, increase rainwater detention capacity and reduce peak runoff volume and thus the sewage load is lower during heavy rains. These will prevent an increase in runoff volume during the development of a building's foundation.*

*Taipei City also aims to gradually restore the natural water cycle in the city and allow rainwater to replenish groundwater with the "pedestrian environment improvement plan", which updated and expands parks, squares, parking lots and school campuses. A total of 173,819 $m^2$ of permeable pavement was installed during 2015 to 2018, equivalent to 417 standard size basketball courts. An on-site test at these permeable pavement showed that the peak surface temperature dropped by 2.05 to 3.53 ℃ and runoff dropped by 7.3% to 17.85%, proving that these pavements can adjust the city's microclimate and mitigate the urban heat island effect.*

▲ *Permeable pavement at the North Gate Square*

## Public-private collaboration on disaster prevention and the increase in flood detention capacity

Public-private partnership is promoted to gradually increase the city's flood-resisting capacity by installing rainwater outflow suppression facilities at building foundations, which retain a total amount of 113,456 $m^3$ of water. The city government also implements the concept of comprehensive drainage basin planning. In 2015, Jinrui Flood Management Park was built with a total of 27,000 $m^3$ in flood regulating capacity. A flood detention pond with a capacity of 6,000 $m^3$ was built in the Wenshan Sports Center in 2017. Another flood detention pond with a capacity of 46,000 $m^3$ was built in a military police camp in January 2019. The three combined give the city a total of 79,000 $m^3$ in detention capacity, which has boosted its regional flood resilience dramatically.

▲ Flood detention pond at the military police camp on Xinhai Road, Wenshan District

## Promoting the Garden City Policy

Garden city is not another green project in the traditional sense. Instead, it encourages people to find any idle space, rooftops, campuses and any interesting corners in a community to grow edible plants and create a friendly urban view based on the diverse value of food/agricultural education, community exchanges, spatial creativity, social welfare, sustainable ecosystem and urban landscaping. More green spaces can help mitigate the urban heat island effect and reduce heavy rain runoffs. Therefore the city government encourages people to build gardens on government-owned idle land, private/public buildings and private business buildings.

▲ First garden city park – Jingqin No.1 Park

Regarding education, students will learn about farming and develop a habit of labor via hands-on experience. They will also learn about plants growing. These activities will encourage students to eat locally grown food and give both students and teachers an opportunity to be close to the nature. As they learn to co-exist with the nature, they will be more willing to protect the environment and follow the concept of a green campus and garden city.

## Greenhouse Gas Emission Management Strategies

The city has set its GHG reduction targets based on the emissions of 2005（13.0736 million metric tons), which are 25% reduction by 2030（to 9.8052 million metric tons）and 50% reduction（to 6.5368 million tons）by 2050 respectively. Emissions reduction strategies include the introduction of "Greenhouse Gas Emissions Reduction Supervisory Briefing", periodic updates of the greenhouse gas emissions information and the promotion of greenhouse gas reduction strategy. Taipei City Government works with other counties and cities in the home/business energy conservation project to encourage the general public to replace non-energy efficient and old appliances with smart energy, increase renewable energy generation, develop electric vehicles and increase green transport. A review on the reduction goal is convened every five years to allow the city to achieve the goal at a steady pace.

## Enhance Disaster Reduction/prevention measures

As the impacts of climate change are getting worse day by day, various types of disaster risks have escalated accordingly. On top of this, past disaster response experience shows that further disaster prevention and preparedness enhancement are needed to ensure proper response and recovery at all levels after actions toward expected disaster events.

Therefore, Taipei City Government, through disaster potential simulations and risk analysis, formulates annual stage goals and key disaster prevention projects, such as enhancing the speed and accuracy of disaster monitoring and early warning systems as well as compiling, updating and publishing location-based disaster risk information to serve as reference for decision-makers, the general public and communities with high disaster risks. Taipei City Government implements the most effective way by providing age and demographic-specific disaster prevention education through a diverse array of channels to help all understand the disaster risks at their environment. A comprehensive city disaster prevention plan, evacuation shelters and route planning, periodic maintenance and reinforcement of disaster prevention facilities(retaining wall, embankment, storm water sewer, water pumping station, etc.） have all been implemented. The city government also, based on previous disaster experiences. periodically adjusts disaster prevention strategies, formulates SOPs and checklists, reviews and improves disaster prevention and response policies to ensure the execution of emergency response tasks.

# Post-Disaster Recovery and Reconstruction

In order to ensure effective post-disaster recovery planning, protect citizens' lives and property and pursue sustainability of the city, Taipei City Government has included the following in Chapter Four of Taipei City's Regional Plan of Disaster Prevention and Response: post-disaster recovery plan and SOP, necessary financial measures for post-disaster recovery, victim reliefs and compensation, victim placement, reconstruction of infrastructure and public facilities, environmental rebuild, industrial revitalization and stabilization of prices and psychological and life rehabilitation for the victims. Taipei City's primary institutions and public utility have compiled their responsibilities in "Disaster Prevention and Response Execution Plan" and allocated relevant budgets. To accelerate the post disaster recovery plan and boost the efficiency (since there are so many divisions of labor for post-disaster recovery), Taipei City Government drafted the "Taipei City Post-Disaster Recovery Guidelines", which divides the post-disaster recovery into the following items in its nine chapters and 51 sections: disaster investigation and management, necessary financial measures for recovery, victim assistances, victim placement, environmental recovery, reconstruction of infrastructure and public facilities, industrial recovery and revitalization and psychological and life rehabilitation for the victims.

For post-disaster recovery planning, Taipei City Government will evaluate the disaster scale and needs and establish a recovery tasking commission based on Article 37 of Disaster Prevention and Protection Act and Article 7 of Taipei City Disaster Prevention and Protection Rules, with commission members from various city government agencies. In response to Typhoon Nari, Taipei City Government established the "Taipei City Government Typhoon Nari Post-Disaster Recovery Tasking Commission" in 2001 to conduct a full review of the cause of the typhoon and any deficiency in prevention, response, relief, assistance and recovery system. The commission compiled specific advice for improvement, provided counseling and coordinated the recovery efforts. For any major disasters in the future, Taipei City Government will follow the aforementioned protocols and establish a recovery tasking commission to conduct post-disaster recovery planning.


# SDG 17

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

The creation of the Smart City Offices enables policy coordination in departmental units, accelerate administrative progress and resource integration. Industry innovation and smart solutions are promoted through joint efforts of the public and private sector. Opportunities for cooperation and exchanges between cities are created through intensified links with international cities and formation of the "GO SMART" smart city alliances.

Abandoning the traditional top-down budgeting approaches, Taipei City Public Participation Committee was created with an aim to improve budget transparency, raise public awareness and increase citizen participation in public policies and affairs through the adoption of participatory budgeting, which provide citizens with a direct role in the government budget decision-making process, instead of the traditional top-down policy approaches.

## City's Current UN Sustainable Development Targets

17.13 Enhance global macroeconomic stability, including policy coordination and policy coherence

| Indicator | Latest Data | Past Data |
|---|---|---|
| Annual Average Growth in CPI for the past 3 years (%) | 0.95 (2018) | 0.62 (2017) |

## Taipei Smart City PMO Founded

Definitions of a smart city by international organizations all emphasize that a sustainable and livable city is only attainable by integration. Beginning 2003, Taipei City has formulated the "digital city" and "Mobile Taipei" policies and installed broadband infrastructure and wireless application services across the city. In 2007, with vision to build a "Smart City & Quality Life", Taipei City Government upgraded the broadband infrastructure and made its services even more user-friendly.

With the current development as foundation and the continuous implementation of the "Smart City" policy, Taipei City Government established the Taipei Smart City PMO (TPMO) to encourage

the citizens to provide their creativity. The office functions as a platform and aims at strengthening cross-disciplinary, cross-departmental, integration, policy coordination in departmental units, which accelerates the implementation of policies and forms  the top-down and bottom-up mechanisms. An additional use of the PoC (proof of concept) provides the environments and opportunities to help industries implement their innovative smart solutions and offer smart services. Public-private partnership and the PoC mechanism have resulted in more than 170 pilot projects, which can promote citizens' welfare with their smart services. Development of long-term and quality service models are the keys to a smart city's sustainability. Therefore, smart services should, during the planning, take into account their future business model, which should assure their sustainability and sound finances. They should also adjust their services in line with technological advancements. Therefore, Department of Information Technology of Taipei City Government has partnered with TPMO and referred the relevant agencies to businesses applying for subsidy/assistance from the central government. The two agencies also encourage these businesses to develop a sustainable business practice to prevent history from repeating itself. Businesses that participated in the smart city projects under local and central government collaboration in the past may solely rely on the subsidy and would shut down operation if the subsidies were ended with no more budgets allocated from the central government. This is why Taipei City Government is doing things differently to ensure that future public services can be sustainable and continue to innovate.

In addition, the Smart City project aims to transform Taipei City into a livable and sustainable city by facilitating public-private collaborations and solving the city's problems with smart technologies. In view of climate change, "change" and "transformation" of lifestyles are the two issues every city has to face. The concept of a "resilient city", which has great disaster tolerance and recovery, has started to gain recognition. Taipei City Government has combined the promotion of smart city and the resilient city concept. Taipei City is set to become a leading city in embracing smart technology applications , and making it livable, sustainable and smart in response to the changes in the urban environment,.

Successful or not, the city will learn precious lessons from the implementation of these policies, which will only make the city better.

## Taipei Smart City Industrial Field Pilot Program

The nature of government makes it difficult to stay up-to-date with the industrial technology and information, which resulted in ineffective policy-making to the fullest in terms of information technology planning. In the interim, a lack of platform that enables effective communication between the private and public sector, complicating the process of making innovative proposals for the private sector. In addition, regulatory and procedural restrictions hinder innovative services of private sector from accessing the public sector. In light of the global trend of smart city, Department of Information Technology has established Taipei Smart City PMO （TPMO）to encourage businesses with ICT expertise to provide consultation and advice for the smart city related projects of Taipei City Government. TPMO implements the bottom-up model and coordinates with agencies to open their fields and establish an innovative technology matching platform, allowing businesses to experiment with their innovative solutions in Taipei.

When it comes to businesses proposing to implement their smart city applications in Taipei, proof of concept can help them use their proven results as the foundation for the development of future business model and share their experience. Through proposals, business matching and proof of concept, public and private resources can be integrated to propel city construction and other services, allowing Taipei City to be the first city in Taiwan to provide smart services.

# GO SMART (Global Organization of Smart Cities)

For years, Taipei City has been working hard to facilitate PoC projects, including the AI electronic fence project, which led local startup teams to go global by conducting empirical testing in Amsterdam. The Air Box project, after gathering empirical evidence in Taipei, was duplicated to other cities in the nation and even exported to South Korea, Malaysia, India and other markets. A French company used its innovative technology that was used to monitor nuclear power plants and the Eiffel Tower to obtain EU subsidy and came to Taiwan to work with a local company and install bridge structure monitoring system at the Shezi Bridge. These successful cases are true testament to the benefits of inter-city PoC. Therefore, Taipei City proposed "GO SMART" in 2018 as an international platform for exchanges and collaborations for smart cities. This platform connects local governments, industries, the academia, institutes and corporate bodies both domestic and abroad. With local governments providing the fields, policies and even subsidies, the industry, academia, institutes and corporate bodies can provide their innovative technologies, services, and empirical budgets. Intercity PoC projects under public-private partnership can promote the development of a smart city, allowing more innovative applications solve the city's problems and improve citizens' quality of life.

Taipei City, as the founder of the Global Organization of Smart Cities, has invested many resources in this organization. The city, based on the resolution of the GO SMART Preparation and Advisory Commission, became the first chairman of GO SMART（two-year term）. GO SMART Secretariat convened the inaugural meeting（180 in attendance）, the first general assembly and Strategy Committee meeting on March 27, 2019. The Secretariat, during the meeting, signed a MOU with Local Government Association of Queensland（LGAQ）.

Membership application started officially for GO SMART on December 28, 2018. As of June 19, 2019, there are 151 members, with 91 city members from the six major cities in Taiwan, Australia, England, France, the Netherlands, Japan, Brazil and other countries; 54 industry members from Taiwan, France, Hong Kong and Singapore; 5 academic and corporate body members from Amsterdam, Okinawa and other countries. Charles Reed Anderson, current IoT consultant for McKinney & Company and former vice president Asia for International Data Corporation, was invited to be the organization's honorary member. The platform certainly is carrying a lot of global expectations and energy.

As a matching platform for smart cities, GO SMART will continue to play close attention to the latest development trends and enhance public-private partnership to fully utilize the resources, maximize collaborative synergy and connect global partners to build sustainable and mutually-beneficial partnerships.


▲ GO SMART Preparation Office inaugural press conference

## Taipei Citizen Participation Committee founded

*Participatory budgeting can be traced back to late November in 2014 when Mayor Ko, right after elected, proposed the political ideal of "open government and citizen participation. To a certain extent, this shows how passionate young people in Taipei are about public affairs. The applications of information networks have also been proven effective and powerful in this area.*

*In order to fully realize the political ideal of "open government and citizen participation", Taipei Citizen Participation Committee was founded on February 24, 2015. The committee has 3 groups: citizen participation, open data and data mining and Participatory Budgeting. The 3 groups work hard to formulate and execute relevant plans projects, from proposal briefing, resident assembly, proposal review and i-Voting, all done by the government instead of being outsourced to contractors. This allows public servants more opportunities to interact with the citizens and ensures a smooth transition between budget allocating and progress updates after a proposal is approved, which has become a main feature of participatory budgeting of Taipei City Government.*

## Participatory Budgeting

*Citizen participation has become a main component of the democratic politics in the 21st century. Participatory budgeting, which combines "citizen participation" and "deliberative democracy", has become popular worldwide. With participatory budgeting, the conventional top-down policy decision-making no longer applies. In addition, it allows government departments, who have the resources, look at things from an angle they otherwise will not with their regular administration processes, which is another step forward for democracy. Participatory budgeting has been promoted for over 20 years. Since 2010, more than 1,500 have been promoting participatory budgeting. The promoters hope that, with citizens participating in certain budget decision-makings of the government, government budget allocation can be more transparent, making the government accountable to the citizens.*

*Participatory budgeting is a brand new adventure for Taiwan. Taipei City, as a model city, has introduced and been promoting it to further democracy in its operation and realize the ideal of "open government and citizen participation". Moreover, it also helps the city government make policy decisions that better meet citizens' expectations. Participatory budgeting can also facilitate face-to-face communications between the city government and the citizens, helping the former formulate policies from citizens' perspective and the latter understand how an administrative organization operates, a win-win for both sides.*

*By promoting participatory budgeting, Taipei City wants to awake civil consciousness, encourage citizens to generate opinions toward public policies and affairs and thus voluntarily propose better ideas regarding their own environment and public systems, which can help quality of life in Taipei City*

to move closer to citizens' expectations. Taipei City's participatory budgeting is based on "enhancing citizen empowerment", "procedure modularization" and "combined budgeting". The "Citizen Proposal & Participatory Budgeting Information Platform" (https://pb.taipei/Default.aspx) was established, which includes participatory budgeting introduction, government-academia alliance, event registration, proposal online and scopes of all the proposals by year. The website helps citizens better know about the city's participatory budgeting. Its key operations and efforts are as follows :

### SOP Established

October 22, 2015, Taipei City Government promulgated "Taipei City Participatory Budgeting and Citizen Petition Promotion and Review Operating Procedure", which is the SOP for participatory budgeting. Taipei City is the only city across the nation that has established a participatory budgeting system and then implements it throughout the city.

### Government-Academia Alliance

For further and continuous promotion of participatory budgeting, Taipei City Government was the first to form the "Government-Academia Participatory Budgeting Alliance", which includes 9 related departments from public and private universities in Taipei City, 3 premium community colleges in Taipei City, Department of Civil Affairs and various district offices. The alliance combines theory and practice and continues to promote participatory budgeting with the ideal of "locally available, proactively assisting and sustainable operation". The alliance aims to, with professional consultation, promote participatory budgeting to more areas to realize the goal of grassroots democracy.

### Education Promotion

In order to help the citizens gain a basic understanding of participatory budgeting and deliberative democracy, develop literacy in deliberative democracy, learn how to file a petition and the core abilities of a reviewer (hosting, keeping meeting minutes and reviewing petitions), Taipei City Government has offered preliminary, advanced and reviewer training courses. These courses combine theory and practice and allow citizens and public servants of Taipei City to learn and grow based on their interests and capabilities. Those who finish required courses can become seeded members of the policy's promotion. Approximately 140 courses were organized between 2016 and 2017 with 6,400 participants.

### Consultation desk

In order to make participatory budgeting become part of citizens' daily lives, a special "participatory budgeting consultation desk" was set up at various district offices in Taipei on February 8, 2017. These district offices and the schools in the Government-Academia Alliance will work together to provide six major services, including petition acceptance, drafting of pre-proposal, drafting of proposal, conference registration, course registration and system consultation.

## Campus promotion

Campus education is a crucial and indispensable part when it comes to civil development. Department of Civil Affairs, Bureau of Education, various district offices, Government-Academia Alliance schools, public/private colleges and universities, public/private high/vocational schools and community colleges all work together to offer "preliminary course" or "preliminary course about resident assembly" at schools that are interested. Students at these schools can, by taking these courses and personal participation, learn about the spirit of deliberative democracy and participatory budgeting. These courses can further civil development and democracy literacy.

## Cultural Tour

Cultural tour aims to help citizens learn about their local culture, history, and ecosystem and develop a vision for the future of the environment. In 2018, the tour included participatory budgeting and held 3 events per district. The wonderful speakers were able to help citizens become more interested in participating in public policies and issues.

▲ Petition group discussions

Participatory budgeting was implemented in 2016 and each year, the city government reviewed its measures in promoting citizen participation to ensure that its policies could meet citizens' needs. For instance, resident assembly was convened for multiple times in each district in 2017, where the process of petition filing for review workshops were simplified to make it easier for citizens to participate. It also made petitions represent their own districts and increased the opportunities for citizens to participate in public decision-making. I-Voting was introduced in 2017 and a total of 93 district-level petitions were submitted via i-Voting and entered the voting process. Statistics show that a total of 57,486 people voted for 71 petitions. In order to make petitions work, the "enforced execution" mechanism was introduced in 2018. With this mechanism, the responsible agency of the city government can start processing a petition without going through the participatory budgeting procedure, thus reducing the burden on the petitioner.

The city government hopes that, by promoting the participatory budgeting system, it will give citizens in Taipei a way to participate in public decision-making and create a wonderful opportunity for effective communications between citizens and the city government. Therefore, other than helping the city government formulate policies that better meet citizens' expectations through public participation in policy-making, Taipei City Government also hopes to build a citizen participation platform that is fair, just and open. Hopefully this platform enables seamless interaction between government and citizens and makes government to understand citizens' needs directly, which is the core spirit of democratic politics.

# Global Partnership

In 2005, Taipei City signed the Urban Environmental Accords (UEA) with San Francisco, the United States. The Accords aims to promote the sustainability of an urban environment by proposing 21 actions on 7 issues, including energy, waste reduction, urban design, urban nature, transportation, environmental health and water. Since 2011, a summit is held every two years to allow members discuss their progresses and results in implementing the accord.

Taipei City attended UEA Summit in Iloilo in the Philippines (2015) and Melaka in Malaysia (2017) with "Green City, Livable City" and "Green City, Sustainable City" as the respective themes.

Furthermore, UEA presented the winners for its first City Award during its Summit in 2017. City Award is given to cities that promote best practices in green and sustainable measures. Among 13 topics, Taipei City was able to share its experience on recycling, source reduction, landfill restoration and converting waste into energy as well as the success story with "Taipei Energy Hill", all of which were well received by the participants and recognized by all judges. As a result, Taipei City was awarded with the "Best Practice Award" of the first ever UEA City Award.


▲ Taipei City awarded with "Best Practice Award" of the first UEA City Award

# Future Prospect

The Taipei City Government has been formulating its development plans and policies based on "Livable and Sustainable Taipei City", the city's ultimate goal for sustainable development. During the compilation of the Taipei City Voluntary Local Review (VLR), existing sustainable development strategies, the progress of the Council for Sustainable Development and sustainable development indicators were reexamined while aligning its priority objectives, which provided by departmental units of Taipei City, policies, current development and operations with the Sustainable Development Goals (SDGs).

Taipei City will continue devoting its efforts to the three major dimensions of "Engagement of Environmental Regeneration and Resource Circulation", "Promotion of Social Security and Sharing Society", and "Smart Growth of Economy and Technology." The city will concentrate its resources on seven high-priority goals and align its sustainable development progress with the associated targets and indicators of the Sustainable Development Goals. The city government has also been keeping track of the progress to be accountable to its citizens, which is also published on international platforms to further the city's contribution to global sustainable development.

In the future, the city will first enhance the exchanges between its administrative departments and stakeholders in order to work with them systematically in overcoming various challenges of the Sustainable Development Goals. Taipei city hopes that, via these exchanges, it will be able to provide relevant information for both local and global sustainable development.

The civil society and private enterprises are the city's key partners when it comes to achieving various Sustainable Development Goals. The VLR aims to encourage citizen participation in the formulation of high-priority goals as well as selection and evaluation of associated targets and indicators. In the future, the periodic reviews and updates for VLR will expand the involvement of the civil society and private enterprises, and include their opinions on the SDGs as a whole.

The Taipei City Government will continue to update and submit VLR periodically with adjustment for its governance strategies. Taipei City looks forward to working with its global partners toward sustainability.

SUSTAINABLE DEVELOPMENT GOALS

# Annex

Photo by Samuel Toh on Unsplash


# SDG3

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

### Taipei City's Index Corresponding to United Nations SDG

| | Latest Data | Past Data | Target for 2030 |
|---|---|---|---|
| Indicator：Immunization coverage (%)<br>Definition：Immunization coverage is the ratio between those who have received and those who should receive immunization for each vaccination.<br>Calculation method：(Flu + rotavirus + elderly streptococcus pneumonia immunization coverage)/4. | 40 *(2018)* | 38 *(2017)* | 54.25 |
| Indicator：Physicians (per 100,000 population)<br>Definition：The City Development Index and ISO 37120 both consider the number of physicians per resident an indicator to a city's health and progress.<br>Calculation method：Registered professional physicians/per 100,000 registered residents of the city | 546.6 *(2018)* | 546.4 *(2017)* | 526.8[1] *(2020)* |
| Indicator：Suicide mortality rate (per 100,000 population)<br>Calculation method：(Annual suicide mortality/mid-year population) × 100,000 | 13.0 *(2018)* | 11.8 *(2017)* | <13 |

[1] *Number of Registered professional physicians/per 100,000 registered residents of the city is increasing year by year and remains the highest in the nation. Taipei City is ranked only preceded by 4 countries (Qatar, Monaco, Cuba, Greece) for the highest numbers of physicians per 100,000 people. The city's target for number of physicians per 100,000 is 526.8 since the number of actively registered physicians each year fluctuates. The target number has retained the same since it reached the number in 2017 (number of physicians per 100,000 is 526.8)*

[2] *This indicator is revised in 2018.*

## Taipei City's Index Related to United Nations SDG

| | Latest Data | Past Data | Target for 2030 |
|---|---|---|---|
| Indicator：Recidivism rate of drug user under 20 within 1 year (%)<br>Definition：（Number of drug users under 20 that have been reported with an established case or have received judicial treatment in judicial intervention within 1 year of prior offense/Number of drug users under 20 that have been reported with an established case within 1 year）× 100% | 5.36 (2018) | — [2] | <6 |
| Indicator：Dementia diagnosis rate (%)<br>Definition：Dementia patients diagnosed by contracted hospitals/Number of people receiving dementia screening | 66.63 (2018) | 53 (2017) | 95 (2020) |
| Indicator：Cancer screening coverage rate (%)<br>Definition：Sum of screening coverage rate of colon caner, breast cancer, cervical cancer and oral caner /4 | 46.5 (2018) | 45.4 (2017) | 50.5 |
| Indicator：Average life expectancy (year)<br>Definition：Refers to average life expectancy of a baby after encountering the death risks of each age group. For life expectancy of age X, it's called "life expectancy of an X-year-old". Average life expectancy usually refers to the life expectancy of 0-year-olds. Countries worldwide consider life expectancy a key indicator for the country's basic health, overall social welfare and national competitiveness<br>Calculation method：Stationary population of the age of 0/Number of people living past the age of 0 | 83.57 (2017) | 83.57 (2016) | 86 |
| Indicator：Standardized mortality rate (per/100,000 population)<br>Definition：By combining different factors (gender, age, city/country, income, occupation, marriage and race) of two countries/regions, it allows an objective observation of how changes of lifestyle and medical care quality truly affect citizens' mortality rate.<br>Calculation method：｛Σ（Mortality rate by age × Standard population of the age group）｝/Total standard population | 316.5 (2017) | 332.8 (2016) | 240 |
| Indicator：Growth rate in the number of the elderly population with social participation (%)<br>Definition：Measured by comparing the current year's number of the elderly using the service at community care centers with the number from the previous year.<br>Calculation method：(Number of participants of this year-number of participants of last year）/number of participants of last year × 100% | 2 (2018) | 2 (2017) | 5 (2021) |
| Indicator：Day care service rate (%)<br>Calculation method：Approved number of children under the age of 2 to be admitted to registered daycare centers and the actual number of children under the age of 2 admitted to family childcare service agencies (babysitters) /number of children under the age of 2 in the city × 100% | 19.33 (2018) | 15.06 (2017) | 20 (2019) |


# SDG 6

## Ensure availability and sustainable management of water and sanitation for all

## Taipei City's Index Corresponding to United Nations SDG

| | Latest Data | Past Data | Target for 2030 |
|---|---|---|---|
| Indicator : River biochemical oxygen demand in line with water classification benchmark achievement rate (%)<br>Definition : Biological oxygen demand (BOD) is a representative indicator measuring a river's water quality. In addition to showing the content of biodegradable organic matter in a river, BOD also indicates the river's level of pollution with organic matter. The higher ratio of river biological oxygen demand meeting the baseline value of its water classification, the more likely the city's water environment can become sustainable<br>Calculation method : Number of monitoring stations showing the river biological oxygen demand meeting the baseline value of its water classification in the city /Number of monitoring stations × 100% | 93.05 *(2018)* | — [3] | 95 |
| Indicator : Tap water quality achievement rate (%)<br>Definition : The percentage of qualified samples of tap water to the total number of samples tested.<br>Calculation method : (Number of qualified tap water samples/number of tap water quality samples) × 100% | 100 *(2018)* | 100 *(2017)* | 100 |
| Indicator : Wastewater tertiary treatment ratio (%)<br>Definition : The ratio between the wastewater that has received three-stage treatment and the total amount of wastewater collected.<br>Calculation method : Wastewater that has received three-stage treatment/total amount of wastewater collected × 100% | 0.90 *(2018)* | 0.67 *(2016)* | 0.90 |

## Taipei City's Index Related to United Nations SDG

| | Latest Data | Past Data | Target for 2030 |
|---|---|---|---|
| Indicator : Amount of wastewater with diverse treatment ($m^3$)<br>Calculation method : ◆ As this indicator declines, it means that the percentage of dry-weather flow of wastewater is reduced gradually and the flow is redirected to water treatment facilities for processing.<br>◆ Calculate the annual amount of processed wastewater at on-site contact bed treatment facilities. | 9,412,665 *(2018)* | — [4] | 14,155,800 |

[3] *The data in 2017 is from the Taipei City public transportation statistics, while it was changed to Greater Taipei public transportation statistics as a data source in 2018, leading to no data available in 2017.*

[4] *This indicator is a new one added in 2018.*

| | Latest Data | Past Data | Target for 2030 |
|---|---|---|---|
| **Indicator：Tap water supply system leakage rate (%)**<br>Definition：The ratio between tap water leaked (due to broken/burst pipes as the result of fragile soil, old pipelines and excessive traffic load) and total water supply.<br>Formula：Amount of water leaked/Total water supply × 100% | 13.52 *(2018)* | 14.18 *(2017)* | 10 *(2025)* |
| **Indicator：Reservoir water utilization rate (%)**<br>Definition：◆ The ration between the total amount of water utilized from Feitsui Reservoir and the total amount of water discharged from the reservoir.<br>◆ "Water utilized" refers to the water discharged to supply the public or for power generation.<br>Formula：Amount of water from Feitsui Reservoir utilized/amount of water discharged by Feitsui Reservoir × 100% | 89.86 *(2018)* | 89.66 *(2017)* | 89.79[5] *(2030)* |
| **Indicator：Percentage of city population served by wastewater collection (%)**<br>Definition：The sum of households connected to the public sewage systems, number of buildings with their dedicated sewage treatment facilities and the number of buildings with regular wastewater treatment facilities *household sizes/population<br>Formula：Total population served by wastewater collection/Total city population × 100% | 82.81 *(2018)* | 81.43 *(2016)* | 86.98 |

[5] *This target number uses as the annual mean (89.68) from 2016 to 2018 as baseline value, and it is set as 89.68 in 2019, which increases 0.01 each year till it reaches 89.79 by 2030.*


# SDG 7

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

### Taipei City's Index Related to United Nations SDG

| | Latest Data | Past Data | Target for 2030 |
|---|---|---|---|
| **Indicator：Annual increase in photovoltaic installed capacity (kWp)**<br>Definition：Annual increase in installed capacity for photovoltaic power generation equipment (including organizations, schools, the central government and private sector) | 9,951 *(2018)* | 3,572 *(2017)* | 3,100 *(2022)* |
| **Indicator：Annual photovoltaic power generation (kWh)**<br>Calculation method：Annual photovoltaic power generation (kWh) | 17,174,162 *(2018)* | 8,094,221 *(2017)* | 27,375,000 *(2022)* |


# SDG 11

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

## Taipei City's Index Corresponding to United Nations SDG

| | Latest Data | Past Data | Target for 2030 |
|---|---|---|---|
| **Indicator：Annual number of public transport trips per capita**<br>Definition：Transport trips of buses, MRT, HSR, Taiwan Railways, highways and highway buses.<br>Calculation method：Number of public transport trips/city population | 463.24 *(2018)* | — [6] | 486.62 *(2021)* |
| **Indicator：Numbers of fire related deaths per 100,000 population**<br>Definition：Number of fire deaths within 30 days<br>Calculation method：Fire related deaths × 100,000/city population | 0.600 *(2018)* | 0.819 *(2017)* | <0.249 |
| **Indicator：Estimated damage by natural disasters** (NTD$1,000)<br>Calculation method：The sum of estimated damage resulting from mud slides, typhoons, earthquakes, forest disasters and other natural disasters. | 44,213 *(2018)* | 73,614 *(2017)* | 72,160[7] |
| **Indicator：Total municipal solid waste generation per capita per year** (ton/person-year)<br>Calculation method：(Annual amount of waste processed by the incinerators +Amount of recycled waste+ amount of reused bulky waste + recycled kitchen waste)/annual average population of the city | 0.463 *(2018)* | 0.464 *(2017)* | <0.452 |
| **Indicator：Annual average concentration of fine particulate matter** ($PM_{2.5}$)($\mu g/m^3$)<br>Calculation method：The average number from 24-hour monitoring of $PM_{2.5}$ at the two air quality monitoring stations. | 14.6 *(2018)* | 15.3 *(2017)* | 10 |
| **Indicator：Green space (hectares) per 100,000 population**<br>Definition：Green space (including natural, semi-natural, parks and other open spaces (larger than leisure spaces by definition) regardless whether or not accessible to the general public or is part of a protected area) accessible for each 100,000 citizens of the city.<br>Calculation method：〔Developed park, green space, children playgrounds, squares, riverside parks, protected areas, scenic areas, area of the Yangmingshan National Park in the jurisdiction of Taipei City and other areas/city population × 100,000 | 533.66 *(2018)* | 523.64 *(2017)* | 508.09[8] |

[6] *The data in 2017 is from the Taipei City public transportation statistics, while it was changed to Greater Taipei public transportation statistics as a data source in 2018, leading to no data available in 2017.*

[7] *An estimated number of averages for the last 3 years (2016-2018).*

[8] *An estimate using the estimated population in 2030 (2,809,918) from Department of Civil Affairs.*

## Taipei City's Index Related to United Nations SDG

| | Latest Data | Past Data | Target for 2030 |
|---|---|---|---|
| Indicator：Number of public bicycles used (10,000 times)<br>Calculation method：The sum of the number of public bicycles used per year | 2,625 *(2018)* | 2,195 *(2017)* | 2,835 *(2022)* |
| Indicator：Percentage of days with excellent air quality index (AQI) (%)<br>Calculation method：Number of days of station with excellent air quality/number of effective days of station | 55.6 *(2018)* | 57 *(2017)* | 56 *(2022)* |
| Indicator：Number of electric buses<br>Definition：Number of electric buses running in the city | 22 *(2018)* | —[9] | 400 *(2022)* |
| Indicator：Penetration rate of smart bus stop signs (%)<br>Definition：Smart bus stop signs provide bus information to passengers who have no access to smart phones.<br>Calculation method：Number of bus stops with smart signs/Number of bus stops that can install smart signs × 100% | 76 *(2018)* | 61.1 *(2017)* | 100 *(2020)* |
| Indicator：Number of trips of wheelchair-accessible taxi per year<br>Definition：Number of trips of wheelchair-accessible taxi to assist the elderly, disabled and handicapped to go to the doctor, get to the office, go to school, go out for fun or go shopping, which is a key component of all-accessible transport. | 161,634 *(2018)* | 104,620 *(2017)* | 220,000 |
| Indicator：Number of trips by paratransit buses per year<br>Definition：To further social welfare and take care of the handicapped, paratransit buses provides accessible transport for the handicapped. | 677,525 *(2018)* | 691,755 *(2017)* | >670,000[10] |
| Indicator：Percentage of children of low-income household receiving school commute subsidy (%)<br>Calculation method：Number of subsidy recipients of the year/Number of qualified people of the year × 100% | 65.90 *(2018)* | 66.88 *(2017)* | 50[11] |
| Indicator：Number of the elderly using the public transport<br>Definition：Elderly card (of Easy card) holders have 480 credits each month for riding buses, MRT, taxi, YouBike, double-decker sightseeing bus and other transportation tools. This indicator measures how many elderly people use public transportation systems each month. | 114,857,331 *(2018)* | 92,042,896 *(2017)* | 164,022,680 |
| Indicator：Low-income population percentage (%)<br>Calculation method：Low-income population of Taipei City/Total population of Taipei City × 100% | 1.70 *(2018)* | 1.71 *(2017)* | 1.7 |

9 *The city's electric buses have hit the road and started operation beginning 2018, therefore no data available in 2017.*

10 *In order to follow the city's policy of retaining the number and the scale of paratransit buses, a target of 670,000 trips per year has been set.*

11 *This target number of subsidy-recipients Taipei City-born children for the following 10 years is estimated using the city's birth rate.*


# SDG 12

# Ensure Sustainable Consumption and Production Patterns

## Taipei City's Index Corresponding to United Nations SDG

| | Latest Data | Past Data | Target for 2030 |
|---|---|---|---|
| Indicator：Annual average amount of collected hazardous waste per capita (kg/person-year)<br>Definition：Hazardous waste refers to the hazardous waste disposed by institutions (schools, hospitals and government buildings)<br>Calculation method：Amount of hazardous waste reported for collection/Taipei City annual average population | 3.49 (2018) | 3.22 (2017) | 3.9 |
| Indicator：Recycling Rate (%)<br>Definition：The percentage of recycled resources to processed waste. | 64.42 (2018) | 62.02 (2017) | 65.5 |


# SDG 13

# Take Urgent Action to Combat Climate Change and Its Impacts

## Taipei City's Index Related to United Nations SDG

| | Latest Data | Past Data | Target for 2030 |
|---|---|---|---|
| Indicator：Area with permeable pavement ($m^2$)<br>Definition：Total area with permeable pavement on sidewalks, parks, squares, campuses and parking lots.<br>Calculation method：The total area with permeable pavement in a year. | 44,027 (2018) | 33,221 (2017) | 44,000 |
| Indicator：Greenhouse gas emission (ten thousands tonnes of $CO_2$ equivalent)<br>Definition：Update Taipei City's greenhouse gas emission number based on EPA's "County/City Level Greenhouse Gas Inventory Guidelines". The emission factor is based on 6.0.3 version of the "Greenhouse Gas Emission Factor Table" published on the EPA's national GHS registry platform. Electricity emission factors are based on Bureau of Energy's published numbers. | 1,211.36 (2018) | 1,261.64 (2017) | 980.52 |

Indicator：GHG Annual Reduction Rate (%)

Definition：Greenhouse Gas Reduction and Management Act was promulgated in 2016, which aims at a 50% reduction in GHG emission by 2050, with 2005 as the baseline. Taipei City mid-term goal is to have 25% reduction by 2030 and 50% reduction by 2050 (both compared to 2005).

Calculation method：
- (2005 GHG emission – GHG emission of the year)/ 2005 GHG emission × 100%
- 2005 GHG emission：1,307.36 (ten thousands tonnes of $CO_2$ equivalent).

| Latest Data | Past Data | Target for 2030 |
|---|---|---|
| 7.34 (2018) | 3.49 (2017) | 25 |

Indicator：Total farm base area ($m^2$)

Definition：
- The area of newly built farm bases and added area to existing farm bases.
- Total added area to farm bases in the year.

| Latest Data | Past Data | Target for 2030 |
|---|---|---|
| 142,114 (2018) | 140,190 (2017) | 214,120 |

Indicator：Water retention of base ($m^3$)

Calculation method：Water retention of all the developed public and private land.

| Latest Data | Past Data | Target for 2030 |
|---|---|---|
| 6,488 (2018) | 1,700 (2017) | 2,000 (2020) |


# SDG 17

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

### Taipei City's Index Corresponding to United Nations SDG

Indicator：Annual Average Growth in CPI for the past 3 years (%)

Definition：Average annual inflation for the past 3 years

Calculation method：{(Consumer price index of the year/Consumer price index 3 years ago) cubed-1} × 100

| Latest Data | Past Data | Target for 2030 |
|---|---|---|
| 0.95 (2018) | 0.62 (2017) | ≦ 2.00[12] (2020) |

[12] *National Development Council set average consumer price index rate below 2.0% by 2020, therefore the annual inflation rate is also set below 2.0%.*

Directed by：Taipei City Government and Council for Sustainable Development

Edited by：Department of Environmental Protection

Information collected by：Department of Urban Development
Public Works Department
Department of Economic Development
Department of Transportation
Department of Civil Affairs
Department of Education
Department of Social Welfare
Department of Health
Department of Information Technology
Taipei City Fire Department
Department of Budget, Accounting and Statistics
Research, Development and Evaluation Commission
Taipei Water Department
Taipei Feitsui Reservoir Administration
Taipei City Police Department
Department of Cultural Affairs
Taipei City Public Transportation Office
Taipei City Parking Management and Development Office
Taipei City Traffic Engineering Office
Taipei City Construction Management Office
New Construction Office, Public Work Department
Park and Street Lights Office, Public Works Department
Hydraulic Engineering Office, Public Works Department
Sewerage Systems Office, Public Works Department

Partner：Foundation of Taiwan Industry Service


TAIPEI
臺北