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CDP Cities 2017 - Taipei City Government

Module: Introduction

Page: Introduction

0.1

Please give a general description and introduction to your city including your city's boundary in the text box below.

Administrative boundary	Description of city
City/Municipality	1. Taipei City is the capital, and also the political, economic, and cultural center of Taiwan. As the city works toward the target of becoming financial and trade center in Asia, its persistent efforts in developing low carbon city bears symbolic significance. 2.The amount of population increased slightly from 2,688,772 in 2010 to 2,695,704 in end of 2016. 3. The region covers an area of 271.8 square kilometers. 4. The service sector is Taipei City's largest industry, accounting for 80.92% of the total employment. Industrial sector follows second at around 18.91%. 5. The public transport network is well developed, which consists of city bus system, Metro, Taiwan high speed rail, and Taiwan railway system. By a survey conducted in 2015, public transportation accounts for a substantial portion for Taipei city residents with utilization rate at 58%. 6. The GHG emissions declared herein are based on all sectors of Taipei City and verified by the third party.

0.2

Emissions Accounting Choice

Reporting emissions is optional for all cities. By checking the boxes below you are indicating that you have fuel and/or greenhouse gas (GHG) emissions data to report at this time.

Select 'Government' to report emissions from your local government operations (sometimes referred to as 'corporate' or 'municipal' emissions).

Select 'Community' to report emissions from the entire city area over which the city government can exercise a degree of influence through the policies and regulations they implement (sometimes referred to as 'geographic' or 'city-wide' emissions).

Select both boxes to report fuel and/or emissions for both inventories.

IF YOU HAVE NO FUEL AND/OR GREENHOUSE GAS EMISSIONS TO REPORT DO NOT CHECK EITHER BOX.

Community

M0.0

Would you like CDP to use the responses provided in the main questionnaire as your city's submission to the Global Covenant of Mayors for Climate and Energy (Compact of Mayors)?

Yes - use my main CDP response as my Global Covenant submission

M0.1.

If registering intent of compliance with the Compact of Mayors, please attach your letter.

[Compact of Mayors Taipei \(Signed\).pdf](#)

Module: Governance

Page: City Details

0.3

Please provide information about your city's Mayor in the table below.

Leader title	Leader name	Current term start	Current term end	Total time in office (years)
Mayor	Wen-je Ko	2015	2018	3

0.4

Please provide details of your city's annual operating budget.

Annual operating budget	Currency	Budget year start	Budget year end
160312886401	TWD New Taiwan Dollar	Fri 01 Jan 2016	Sat 31 Dec 2016

0.5

Please provide details of your city's current and projected population.

Current population	Current population year	Projected population	Projected population year
2695704	2016	2809918	2030

0.6

Please provide details of your city's GDP.

GDP	Currency	Year of GDP	Source
529676000000	USD US Dollar	2016	Gross Domestic Product by Expenditures, National Statistics, R.O.C (Taiwan) (2016) There is no relation data of Taipei GDP.

0.7

Please provide further details about the geography of your city.

Average annual temperature (in Celsius)	Land area (in square km)	Average altitude (m)	Longitude (e.g. -120.9762)	Latitude (e.g. 41.25)
23	272	60	121.38	25.03

Page: Governance

1.0

Please describe the impact of national and/or regional climate change activities on your city's own climate change activities.

Taipei formulated corresponding emissions reduction targets in accordance with greenhouse gas reduction and energy efficiency targets drawn up by Executive Yuan, and developed relevant carbon reduction policies to enforce in accordance with Low-Carbon City Practices & Planning Dimensions

issued by Central Government. Meanwhile, keep persistent reviews on related performance and effectiveness in the process of implementation. Overall, Taipei City Government makes concerted efforts driving climate change policies based on central policy trend.

1.1

Please describe how your city manages overall responsibility for climate change mitigation (emissions reduction) and adaptation (climate risk reduction).

Taipei city has already formulated the "Taipei Greenhouse Gas Control Action ", which clearly defined the GHG reduction target and the responsibilities of each department. We promote the GHG reduction through the division of labor with various departments to gradually achieve our reduction target. In addition, Taipei city also drafted the "Taipei livable and sustainable city self-governance articles" to strengthen the city carbon reduction efforts and improve the city's resilience as the basic standard for livable and sustainable city.

1.2

Does your city incorporate desired sustainability goals and targets (e.g. GHG reductions) into the master planning for the city?

Response	Description
Yes	<p>a. International Communication 1. Handle the activities of "Promoting the reduction of greenhouse gases" 2. Reviewing GHG inventory every year. 3. Participate the activities of ICLEI and COP. 4. Participate the Global Covenant of Mayors for Climate & Energy. 5. Formulated the "Taipei Greenhouse Gas Control Action ", clearly defined the GHG reduction target. b. Government Agencies & Schools 1. Encourage and carry out the save energy policies in every agency. 2. Replace the old fleet with new hybrid vehicles. c. Residence and Business 1. Establish an "Energy Saving for Community" committee to provide the consultation. 2. Encourage the every organization or community to set up renewable energy facilities for demonstration. 3. Encourage the industrial and commercial buildings to install the renewable energy facilities. 4. Develop and implement "Taipei City Industrial and Commercial Business Self-Controlling Saving Energy Program." 5. Develop and Implement "Taipei Green Building Ordinance." 6. Establish a group of "Saving Energy Services" to provide consultation to the citizen about how to save energy at the individual level. 7. Promote the LED Traffic Lights. d. Transportation 1. Enlarge the public transportation network and coordinate and integrate the bus lines. 2. Replace the old fleet with low energy use and low pollutants buses. 3. Develop and deployment an intelligent metropolitan bicycle trails. 4. Promote the bicycle rental system in the city. 5. Add more taxi stations. 6. Reorganize the traffic signal 7. Promote share economic model by establish the electric locomotives, electric vehicles rental system. e. Waste 1. Install more facilities to capture the natural gas from landfills and use it to produce the power. 2. Use the co-generation CHP in the incineration to recover the wasted heat. 3. Promote waste reducing and recycling f. Agriculture & Forestry 1. Enlarge the public green space and promote the beautiful environment surrounding the city. 2. Plant more trees. 3. Increase the plants on the both sides of the road; planting 800-1000 trees annually. 4. Hold an annual meeting to explain the plotting of park and the importance of greening space. 5. Protect the green resources by means of maintaining from volunteers. 6. Push the reconstruction of public toilets to save energy and water. 7. Hold floral expo or activities to increase the public interests in participation and obtain the purpose to educate them. 8. Strengthen the city's main road greening. 9. Free citizens saplings and planting event . g. Save Water 1. Improve the pipelines of water to promote the efficiency of water use. 2. Raise appliance efficiency standards and give the tariff discount incentive measure on water conservation. h. Business Propaganda and Marketing 1. Promote Green Labels products. 2. Hold a training class to educate the travel agencies to learn how the concept of saving energy and carbon reduction can be used in a trip. 3. Promotion of energy-saving products in cooperation with local retail stores.</p>

Module: Risks & Adaptation

Page: Climate Hazards

2.0

Has a climate change risk or vulnerability assessment been undertaken for your local government area?

Yes

2.0a

Please attach and provide details on your climate change risk or vulnerability assessment. Please provide details on the boundary of your assessment, and where this differs from your city's boundary, please provide an explanation.

Publication title	Year of publication	Attach the document	Web link	Bound of assessment relative to city boundary (reported in 2.0.1)
Taipei-City_Adaptation-Action Plan	2011	Taipei City Climate Change Adaptation Action Plan.pdf	http://www.dep-tds.gov.taipei/lp.asp?ctNode=68058&CtUnit=36746&BaseDSD=7&mp=11000C	Same – covers entire city and not otherwise

2.0b

Please select the primary process or methodology used to undertake the risk or vulnerability assessment of your city. If your city uses a combination of methodologies, please select the main methodology used.

Primary methodology	Description
IPCC climate change impact assessment guidance	The main project content are: (1) To establish the climate change adaptation planning framework and platform. (2) To analyze the trends and the impact of climate change. (3) To clarify the impact of climate change in key sector with the concept of vulnerability. (4) Analysis the impact of climate change vulnerability. (5) Analysis of the key issues. (6) Review both policy and related programs. (7) Proposal of climate change adaptation strategy and action plan.

M2.3b.

If your city has a climate risk or vulnerability assessment, please describe how your city's climate change risk or vulnerability assessment addresses the following key areas, and provide details on the location of this evidence within your assessment.

Key requirements	Proof statement	Page number	Publication title
Assessment of impact of current hazards	Flooding and landslides disaster are the highest climate change risks in Taipei	27	Key areas of focus
Assessment of impact of future hazards	We analyzed historical climate data in Taipei, such as precipitation, temperature, extreme weather events and their impacts and simulate those data according to IPCC A1B scenarios to estimate future trends in climate change and hazards.	12	Climate Change Trend Analysis

2.1

Do the current and/or anticipated effects of climate change present a significant risk to your city?

Yes

2.1a

Please list the most significant climate hazards currently faced by your city and indicate the probability and consequence of these hazards.

Climate hazards	Probability of hazard	Consequence of hazard
Extreme hot days	High	Medium
Cyclone (Hurricane/Typhoon)	Medium High	High
Rain storm	High	Medium High

Climate hazards	Probability of hazard	Consequence of hazard
Other: Greater temperature variability	High	Medium Low
Other: Increased urban heat island effect	Medium High	Medium

2.1c

Please identify how you expect climate change to affect the frequency and intensity of the hazards faced by your city and when you expect to experience those changes.

Climate hazards	Change in frequency	Change in intensity	Anticipated timescale
Extreme hot days	Increasing	Increasing	Current
Cyclone (Hurricane/Typhoon)	Increasing	Increasing	Short-term
Rain storm	Increasing	Increasing	Current
Other: Greater temperature variability	Increasing	Increasing	Short-term
Other: Increased urban heat island effect	Increasing	Increasing	Current

Page: Climate Hazards II

2.1d

Please describe the magnitude of the impact of these hazards and identify three critical assets or services that may be most impacted.

Climate hazards	Magnitude of impact	Impact description	Asset or service	Asset or service	Asset or service
Extreme hot days	Serious	According to the data of 1897-1999 in Central Weather Bureau, the results indicate that the number of days which the daily maximum temperature greater than 28 degrees was increasing.	Food and agriculture	Other: Commerical	Residential
Cyclone (Hurricane/Typhoon)	Extremely serious	Typhoon Nari (September 2001) , the maximum rainfall up to 148.5 mm / hr, resulted in large areas flooding in the Taipei city and the MRT system shut down.	Other: Emergency services	Food and agriculture	Transport
Rain storm	Serious	According to the Central Weather Bureau show that in recent years (1997 to 2007) and the front surface of the typhoon brought rainfall exceeding the design capacity of the multi-city sewer system.	Other: Water	Food and agriculture	Transport

Climate hazards	Magnitude of impact	Impact description	Asset or service	Asset or service	Asset or service
Other: Greater temperature variability	Serious	The Frequency and duration of heat waves had a significant increase and lead to significant temperature variability over the past 50 years in the northern Taiwan.	Other: Health and community	Residential	Food and agriculture
Other: Increased urban heat island effect	Serious	Taipei had no significant temperature increase in the past half century during the day, but the average temperature during the night increase 2 degrees in the previous half century.	Residential	Other: Commerical	Other: Health and community

2.2

Do you consider that the effects of climate change could threaten the ability of businesses to operate successfully in your city?

Response	Explanation
Yes	In terms of industrial structure, Taipei City particularly lays on the Tertiary industrial sector, which takes 80.92% of the total workforce. Most of the business operations happen in blocks of commercial/office buildings or service activities. Ambient temperature rises and the rising frequency of extreme rainfall caused by climate change will result in business operating costs increased, such as spending on raising air-conditioning power consumption and enhanced construction of disaster prevention equipment.

Page: Adaptation

3.0

Has the Mayor or local government committed to adapting to climate change across the geographical area of the city, town or settlement?

Yes

3.0a

Please select the type of commitment(s) and attach evidence.

Type of commitment	Attach	Comments
Durban Adaptation Charter		Develop an acceptable, robust, transparent, measurable, reportable and verifiable (MRV) register. Promote multi-level and integrated governance and advocate for partnerships with sub-national and national governments on local climate action
Mexico City Pact		Sign Mexico City Pact to enter climate actions on the cCR and submit official documentation on greenhouse gas reduction commitments
Other: San Francisco Urban Environmental Accords		Achieve "San Francisco Urban Environmental Accords" commitment, and reduce the jurisdictions emissions by 25% of 2005 by 2030.

Type of commitment	Attach	Comments
Other: World Mayors and Local Governments Climate Protection Agreements		Achieve "World Mayors and Local Governments Climate Protection Agreement" goal, and achieve a reduction of 60% greenhouse gas emissions from 1990 levels by 2050.
Compact of Mayors	Compact of Mayors Taipei (Signed).pdf	Taipei city joined Compact of Mayors (COM) in Sep 2015 and received the full compliant badge in Oct 2015.

3.1

Does your local government have a plan that addresses climate change adaptation?

Yes

3.1a

Please provide more information on your plan that addresses climate change adaptation and attach the document.

Publication title	Year of publication	Attach the document	Web link	E
Taipei City Urban renewal autonomous regulation	1990	臺北市都市更新自治條例.pdf	http://www.laws.taipei.gov.tw/lawsystem/wfLaw_ArticleContent.aspx?LawID=P13D1001-20140206	t (
Green Building autonomous regulation	2014	臺北市綠建築自治條例.pdf	http://www.laws.taipei.gov.tw/lawsystem/wfLaw_ArticleContent.aspx?LawID=P13K1008-20141110	S c e a n e
Taipei City Adaptation Project for Climate Change	2011	臺北市氣候變遷調適計畫英文版.pdf	http://www.dep-tsd.gov.taipei/lp.asp?ctNode=68058&CtUnit=36746&BaseDSD=7&mp=11000C	S c e a n e
Overall target and framework for flooding protection	2013			S c e a n e
Taipei city Typhoon and flooding crisis emergency plan	1998			S c e a n e

Publication title	Year of publication	Attach the document	Web link	E t (S c e a n e S c e a n e
Taipei city heat island effect mitigation plan	2012			
Taipei city green building reward plan	2013			

M3.1.b

If your local government has a climate adaptation plan, please describe how the plan addresses the following key areas, and provide details on the location of this evidence within your plan.

Key requirements	Proof statement	Page number	Publication title
Political commitment to adaptation	Adaptation is an urgent plan. We expect to lower climate change impacts to Taipei by reducing disaster occurrence probability, increasing the flexibility on disaster responding mechanism and enhancing restoring potential before 2030.	6	Vision: "Lower Taipei's vulnerability by 2030"
Identification of adaptation actions	The climate change adaptation plan is, under the existing framework of program and operations of Taipei, to find the "key issues" in the adaptation strategy and propose to adjust the existing programs and construct new plans as needed.	41	Adaptation Strategy and Action Plan
Engagement of multiple city government agencies/departments	We discussed with experts and responsible departments to identify impacts of climate change in Taipei and city's vulnerability and its key issues. We then established the strategies and action plans.	41	Adaptation Strategy and Action Plan
Process for regular review of the plan	Due to the uncertainty of weather change, each department team have to maintain flexibility and expansion ability in response to the disaster type that has not occurred before. If unforeseen disasters do happen, we then modify strategies properly and incorporate to future adaptation strategies.	70	Rolling Adjustment Correction

3.2

The Global Covenant of Mayors requires cities to complete [these additional questions](#) on the climate hazards affecting your city and your city's plans to adapt to these hazards. Other cities wishing to disclose further detail about their adaptation efforts are also encouraged to fill out the download.

[Click here to download the additional questions.](#)

[CRAFT Questionnaire_CDP_v2.xlsm](#)

3.3

Please describe the actions you are taking to reduce the risk to, or vulnerability of, your city's infrastructure, citizens, and businesses from climate change as identified on the previous page.

Climate hazards	Action	Action description
Extreme hot days	Retrofit of existing buildings	Promoting green building, shaping "urban green point", and greening sidewalk of urban green axis to construct urban green network. Then, moving on to ecological street blocks "dimension" with comprehensive greening and sustainable development so to help lowering urban air temperatures.
Cyclone (Hurricane/Typhoon)	Crisis management including warning and evacuation systems	An app utilizes GIS to display disaster location. It can also show the distance between the disaster location and the user. This information serves as a reminder to user to avoid disaster site. We also edit city disaster prevention manual every year and disaster prevention guideline , All of these can be found on this app.
Rain storm	Storm water capture systems	Properly conducting adaptation measures of disaster prevention, flood control and river dredging work to avoid flash flood due to drainage load caused by heavy rain or storm water.
Other: Greater temperature variability	Tree planting and/or creation of green space	Promoting green roof of a building, roof greening & beautification, which not only help to reduce temperature of the building itself, but also lessen power consumption on air conditioning, To achieve the effect of energy saving and carbon reduction and mitigate the heat island effect.
Other: Increased urban heat island effect	Cool pavement	Data from the three-year plan, which began on April 11, 2014, shows the permeable pavement's surface temperature peaked 30 to 60 minutes later than the compressed concrete pavement; The difference between their daily peak temperatures could reach 2.05 to 3.53°C. In terms of surface runoff, the control group exceeded the experimental group by 7.3% to 17.85%, depending on the precipitation intensity.

Page: Social Risks

4.0

Does your city face any social risks as a result of climate change?

No

4.0b

Please explain why not.

1. The job market in Taipei City is stable. Industry type tends to be stationary. The employment rate doesn't change significantly in recent years.
2. In respect of environment, Taipei City has no major development projects in recent years, so the environment has no significant change. In addition, the city acts on the maintenance of public health control properly, so epidemic disease seems unlikely to break out in large scale.
3. Taipei City's overall development has been stabilized. Population mobility is not obvious, so there is little change in resource requirements.

Module: Opportunities

Page: Opportunities

5.0

Does climate change present any economic opportunities for your city?

Yes

5.0a

Please indicate the opportunities and describe how the city is positioning itself to take advantage of them.

Economic opportunity	Describe how the city is maximizing this opportunity

Economic opportunity	Describe how the city is maximizing this opportunity
Development of new business industries (e.g. clean tech)	Taipei City Government has greatly advanced in energy-saving improvement in public and private sectors. Encouraging the private sector to replace energy-saving equipment by offering incentive grants and counseling services, and also indirectly supporting the development of energy services industry (ESCO), such as promoting community and public sector energy conservation improvement guided by mode of ESCO.
Improved efficiency of operations	The inventory of jurisdiction indicated that major GHG emissions came from residential & commercial sector and transport sector, There are many ways so as to develop and enforce relevant energy-saving and carbon reduction programs, such as reduction of electricity/oil consumption in public sector (City agencies and schools), improving leakage rate of urban water supply network, uplifting energy efficiency in public transport system, upgrading traffic lights control, and increasing driving smoothness (reduce traffic congestion situation) etc.
Increased infrastructure investment	In order to reduce carbon emissions and increase energy efficiency, Taipei City enforced public lighting LED replacement project, and budgeted to improve citywide water supply network, as well as strengthened to promote greening of City's main roads. To promote low-carbon transport, the city strengthens the promotion of public bike rental system in the recent years, and continued planning on constructing cycling infrastructure.

5.1

Does your city collaborate with businesses in your city on sustainability issues or projects?

Response	Description
Yes	1. Enhance the energy-saving knowledge for sales staff of appliance manufacturers and appliance distributors and provide promotional activities to attract public using energy-saving products. 2. To promote business carbon reduction and energy-saving awards program. 3. Taipei city provides free counseling services to evaluate energy-saving consulting. Businesses also have the responsibility to reduce carbon emissions into the corporation society responsibility (CSR). 4. Cooperating with businesses to promote high energy efficiency product which has Energy Label.

5.2

List any climate change-related projects for which you hope to attract private sector financing, and provide any details on the estimated overall costs and status of the project. If your city does not have any relevant projects, please select None under Project Area.

Project area	Status of project	Status of financing	Project description	Total cost of project (USD\$)	Total investment cost needed (USD\$)
Infrastructure improvement	Complete	Project not financed and seeking partial financing	Promote community on comprehensive replacement of energy-efficient lighting equipment.	60000	111290
Renewable energy	Complete	Project not financed and seeking partial financing	Government provided the land and the manufacturers contributed the finance of solar photovoltaic, the government has the partial electricity sales revenue from manufacturer according with the proportion of the contract	0	4000000

Project area	Status of project	Status of financing	Project description	Total cost of project (USD\$)	Total investment cost needed (USD\$)
Infrastructure improvement	Complete	Project not financed and seeking partial financing	Subsidize the industries and businesses for improving energy-saving efforts, Engineering or replacement of energy-saving equipment with the rate of energy saving reaching 20% or above, are eligible to apply the subsidy.	282258	1900968
Transport	Complete	Project not financed and seeking partial financing	Promotion of Electric Scooter	100000	10146400

Module: Emissions - Community

Page: Community - Date and Boundary

C1.0

Please state the dates of the accounting year or 12-month period for which you are reporting a GHG measurement inventory for your community.

Thu 01 Jan 2015 - Thu 31 Dec 2015

C1.1

Please indicate the category that best describes the boundary of your community GHG emissions inventory.

Administrative boundary of a local government

Page: Community - GHG Emissions Data

C1.2

Please give the name of the primary protocol, standard or methodology you have used to calculate GHG emissions.

Primary protocol	Comment
Global Protocol for Community-Scale Greenhouse Gas Emissions Inventories (GPC), (WRI, C40 and ICLEI)	Taipei city have been using GPC methodology to make City GHG inventory since 2014.

C1.5

If applicable, please provide a breakdown of your GHG emissions by scope. Where values are not available, please use the comment field to indicate the reason why.

Scope	Metric tonnes CO2e	Level of confidence	Comments
Scope 1 emissions excluding emissions from grid-supplied energy generation	3494270	High	
Scope 1 emissions from grid-supplied energy generation within the city boundary	82545	High	
Total Scope 1 emissions (Row 1 + Row 2)	3576815	High	
Total Scope 2 emissions	8540561	High	

C1.9a

Please provide a summary of emissions by sector and scope as defined in the Global Protocol for Community Greenhouse Gas Emissions Inventories (GPC), (WRI, C40 and ICLEI). Please complete the corresponding emissions for each row in the table below.

Sector and scope (GPC reference number)	Emissions (metric tonnes CO2e)
Stationary Energy: energy use – Scope 1 (I.X.1)	1069596

Sector and scope (GPC reference number)	Emissions (metric tonnes CO2e)
Stationary Energy: energy use – Scope 2 (I.X.2)	8215985
Stationary Energy: energy use – Scope 3 (I.X.3)	
Stationary Energy: energy generation supplied to the grid – Scope 1 (I.4.4)	
Transportation – Scope 1 (II.X.1)	2250069
Transportation – Scope 2 (II.X.2)	324575
Transportation – Scope 3 (II.X.3)	535224
Waste: waste generated within the city boundary – Scope 1 (III.X.1)	254312
Waste: waste generated within the city boundary – Scope 3 (III.X.2)	
Waste: waste generated outside the city boundary – Scope 1 (III.X.3)	
Industrial Processes and Product Use – Scope 1 (IV)	
Agriculture, Forestry and Land Use – Scope 1 (V)	2838
TOTAL Scope 1 (Territorial) emissions	3576815
TOTAL BASIC emissions	12114538
TOTAL BASIC and BASIC+ emissions	12652600

C1.9b

Please provide a breakdown of fuel use and emissions by subsector and scope as defined in the Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC), (WRI, C40 and ICLEI) and attach GHG emissions report.

[Download the GPC Reporting Tool \(CIRIS\) here.](#)

Attachment	Document title
2016 Taipei city GPC .xlsm	2016 Taipei city GPC

C1.12

Please indicate if your emissions have increased, decreased, or stayed the same since your last emissions inventory, and please describe why.

Reason for change	Please describe why
Increased	The GHG emissions of Taipei City have been verified by third party, BSI Taiwan (British Standards Institution Taiwan), from 2005 to 2015 in 2016. The greenhouse gas emissions of Taipei City in 2015 were 12,117,400 metric tons. The greenhouse gas emissions of the City present a rising tendency in 2005-2008. The increasing tendency slowed down and began to decline since the 2008. There is no power plant in Taipei City jurisdiction; electricity usage is all dependent on the electricity grid from outside county. Although Taipei city's electricity consumption in 2015 was lower 70 million KWh than that in 2014, the GHG emissions increased slightly in 2015 cause of the country's electricity emission factor increased about 1.34%.

Further Information**Page: Community - External Verification****C1.13**

Has the GHG emissions data you are currently reporting been externally verified or audited in part or in whole?

Yes

C1.13a

Please provide the following information about the emissions verification process.

Name of verifier	Year of verification	Attach verification certificate	Comments
British Standards Institution; BSI	2016	Taipei city GHG Statement - 2015.pdf	1. Name of auditor : British Standards Institution; BSI 2. Year of verification : inventory from 2005 to 2015 3. Percentage of emission inventory audited : 100% 4. Sections of emission inventory audited : It includes transportation, residence & business, industry, waste, agriculture as well as forestry.

Module: Strategy

Page: GHG Emissions Reduction - Local Government Operations

6.0

Do you have a GHG emissions reduction target in place for your local government operations?

Yes

6.0a

Please provide details of your local government operations emissions reduction target.

Sector	Define target boundary	Baseline year	Baseline emissions (metric tonnes CO2e)	Percentage reduction target	Target date	Comment
Total	electricity consumption	2015	635478	4%	Other: 2019	National energy saving project

6.1

What actions are you undertaking to reduce your emissions in your local government operations?

Emissions reduction activity	Anticipated emissions reduction – cumulative over the lifetime of the action (metric tonnes CO2e)	Action description
Building codes and standards	0	Enacting Green Building Ordinance : By compulsory rules, new constructions should contain green building design and plan. After completion, if the building fails to comply with Green Building Standard, manufacturer's performance bond will be confiscated.

Emissions reduction activity	Anticipated emissions reduction – cumulative over the lifetime of the action (metric tonnes CO2e)	Action description
On-site renewable energy generation	116300	1. As the effects of global warming become more severe, the City Government issued the “Renewable Energy Action Plan in Taipei City” in 2008 to promote the renewable energy policies and achieve the goal of using renewable energy as it has committed in the Urban Environmental Accords. Aside from its advocates on education, energy conservation, carbon reduction and the application of renewable energy, it also distributes the budget for the affiliated institutions and schools, provides subsidies to the private industries and businesses that set up a solar and photovoltaic power system, employs professional institutions to make research plans on renewable energy development mechanisms, and passes and carries out the policies on the utilization of renewable energy. 2. Taipei City published a solar setting method to enhance the ambition of manufacturers to set up solar photovoltaic in 2015. Taipei city provides the useless land and the manufacturers contribute the finance to build the Solar photovoltaic. The proportion of electricity sales income is given to the government as venue rental fee. 3. Solar photovoltaic systems with a total capacity of 1,996 kW have been installed on Fu-de-Kun landfill in Jan 2017. The estimated annual energy output is 2 million kWh or so.
Improve fuel economy and reduce CO2 from motorized vehicles		1. Enforcing to replace official use of government vehicles beyond 2008 with hybrid vehicles, and to transform government vehicles beyond 2003 into hybrid version, if they match the type or model. 2. Encourage all levels of government to purchase motorized vehicles certified as energy-saving and low-pollution.
LED / CFL / other luminaire technologies	95367	1. Replace streetlights with LED lamps : Finish 84,126 streetlights changeover to LED lamps before the end of 2016, and change 10,010 public parking lightings to T8-LED. 2. 11,000 streetlights will be replaced by LED lamps at the end of 2017.
Transportation demand management	0	Gradually expand public transport network and adjust bus route to match up MRT system. In the end of 2016, Taipei city has operated the MRT shuttle bus over 53 routes with average daily traffic capacity of about 118,900 passengers.

Page: GHG Emissions Reduction - Community

7.0

Does your city have a climate change action plan for reducing GHG emissions?

Yes

7.0a

Please attach your city's climate change action plan below.

Publication title	Year of publication	Attach	Web link
Taipei Greenhouse Gas Control Action	2016	1051220臺北市溫室氣體管制執行計畫(修訂版).pdf	http://www.dep.gov.taipei/public/Attachment/612261021878.pdf

Publication title	Year of publication	Attach	Web link
BAU GHG Emission Forecast		New Taipei BAU GHG Emissions forecast.pdf	
GHG EV	2016	New Taipei GHGEV 1149-2005 年度.pdf	

M1.6b

If your city has a climate change action plan, please describe how the plan addresses the following key areas, and provide details on the location of this evidence within your plan.

Key requirement	Proof statement	Page number	Publication title
Political commitment to emissions reduction	Taipei City always actively engages in environmental issues by continuously promoting reduction of GHG emissions and sharing the responsibility for fighting the climate change.	1	1 The Current Situation
Vision describing city's overall ambition and clear objectives	Taipei City government also carries out the energy conservation and carbon reduction policies following the content and specific practices included in the "Greenhouse Gas Reduction and Management Act" promulgated by the Taiwan Environmental Protection Administration. In order to fulfil the goal of GHG emissions reduction, TCG also proposes the slogans; "Government Leads", "Industries Co-operate", and "Citizen Participate" to encourage all residents towards making Taipei City to be a more "sustainable and livable city".	1	1 The Current Situation
Context of the action plan	Constructing a low-carbon city has been an important policy for Taipei City Government (hereinafter referred to as TCG). In order to establish each department's responsibility on reducing greenhouse gas (GHG) emissions, TCG formulated and established "Energy Conservation and Carbon Reduction Promotion Program" in 2008	1	1 The Current Situation
Baseline GHG emissions figure	Taipei city's baseline GHG emissions is 13.1 million tons CO ₂ e in 2005.		As verification
Business as usual GHG emissions forecast	"The 2030 BAU emissions forecast is 13.79 million tons CO ₂ e. The 2050 BAU emissions forecast is 15.61 million tons CO ₂ e."		As attach
GHG emissions reduction target	1. Long-term goal: Reduce the jurisdiction's GHG emissions 50% below 2005 levels by 2050. 2. Medium-term goal: Reduce the jurisdiction's GHG emissions 25% below 2005 levels by 2030.	1	2 Stage Goals
Implementation of the action plan	Responsibilities and duties for related departments	2	Work contents and responsible authorities

Key requirement	Proof statement	Page number	Publication title
Monitoring of the action plan	Execution unit shall submit the annually aggregated performance evaluation with control and execution plan implemented from January to December in the prior year to DEP before the following year of February 1st.	5	6 Controls and Evaluation

7.1

Do you have a GHG emissions reduction target in place for your community? Tick all that apply.

Base year emissions (absolute) target

7.1a

Please provide details of your total city-wide base year emissions reduction (absolute) target. In addition you may provide details of your sector-specific targets, by providing the baseline emissions specific to that target.

Sector	Baseline year	Baseline emissions (metric tonnes CO2e)	Percentage reduction target	Target date	Comment
Total	2005	13108260	25%	2030	
Total	2005	13108260	50%	2050	

7.2

What actions are you undertaking to reduce emissions city-wide?

Emissions reduction activity	Anticipated emissions reduction – cumulative over the lifetime of the action (metric tonnes CO2e)	Action description
Building codes and standards		Enacting Green Building Ordinance : By compulsory rules, new constructions should contain green building design and plan. After completion, if the building fails to comply with Green Building Standard, manufacturer's performance bond will be confiscated.
Building performance rating and reporting	328852	1. Develop Taipei City Commercial & Industrial Sectors Energy Efficiency & Carbon Reduction Ordinance : Checking and testing industrial or commercial establishment or workplace indoor air temperature and lighting equipment, through legal means, regulate energy use behaviour. 2. Counselling of commercial & industrial sectors energy efficiency assessment : Aiming at major power users to provide expertise counselling and deliver specific report to guide energy efficiency improvement. 3. Aimed at voluntary energy conservation enterprises with city electricity contract capacity over 100 kW, we provided counselling service for electricity, lighting, air conditioning and heat system. From 2008 to 2016, there were 211 cases fulfilled, electricity saving up to 54.9 million kWh, equivalent to reduce the GHG emissions about 32,000 metric tons.

Emissions reduction activity	Anticipated emissions reduction – cumulative over the lifetime of the action (metric tonnes CO2e)	Action description
Energy efficiency/ retrofit measures	50394	<p>1.Citywide Energy-Saving Lighting Subsidization Plan : In 2011, Taipei City Government promote “Community Energy-Saving Lighting Subsidization Plan” to replace high-energy-consuming lighting equipment with energy-saving lighting in the public areas of communities. From 2011 to 2016, there were 663 cases subsidized, electricity saving up to 12.8 million kWh, equivalent of reducing the GHG emissions about 6,715 metric tons. 2.Subsidy for replacement of energy saving lighting in schools: In 2010, all schools have fully replaced TL5 type high frequency lighting, which is expected to decrease electricity fee at least NTD 3,000 each classroom annually, and save energy up to 30%. The estimated total reduction of electricity fee is around NTD 39 million per year.</p>
On-site renewable energy generation	116300	<p>1. As the effects of global warming become more severe, the City Government issued the “Renewable Energy Action Plan in Taipei City” in 2008 to promote the renewable energy policies and achieve the goal of using renewable energy as it has committed in the Urban Environmental Accords. Aside from its advocates on education, energy conservation, carbon reduction and the application of renewable energy, it also distributes the budget for the affiliated institutions and schools, provides subsidies to the private industries and businesses that set up a solar and photovoltaic power system, employs professional institutions to make research plans on renewable energy development mechanisms, and passes and carries out the policies on the utilization of renewable energy. 2. Taipei City published a solar setting method to enhance the ambition of manufacturers to set up solar photovoltaic in 2015. Taipei city provides the useless land and the manufacturers contribute the finance to build the Solar photovoltaic. The proportion of electricity sales income is given back to the government as venue rental fee. 3. In 2017, the installed capacity will increase about 4,000kW with annual energy output being 3.65 million kWh. Annual CO2 reduction is estimated at 1,927 tons. 4. Provide subsidy support to citizens and private sectors to install solar photovoltaic systems.</p>
LED / CFL / other luminaire technologies	95367	<p>1. Replace streetlights with LED lamps : Finish 84,126 streetlights changeover to LED lamps before the end of 2016, and change 10,010 public parking lightings to T8-LED. 2. 11,000 streetlights will be replaced by LED lamps at the end of 2017.</p>
Improve fuel economy and reduce CO2 from motorized vehicles		<p>1. Promotion of Electric Scooter: Subsidy \$ 777 USD per E-Scooter purchased and build 350 free battery-recharging stations. 2. Carry out activities for electric vehicles and promotions that encourage the citizen to adopt low-pollution and low-emission electric vehicles.</p>

Emissions reduction activity	Anticipated emissions reduction – cumulative over the lifetime of the action (metric tonnes CO2e)	Action description
Transportation demand management		<p>1. Gradually expand public transport network and adjust bus route to match up MRT system. In the end of 2016, Taipei city has operated the MRT shuttle bus over 53 routes and average daily traffic capacity of about 118,900 passengers. 2. Continue establishing public bike rental system. As of Nov. 2016, there were 272 rental stations with 8,914 bikes available online. It is expected to expand to 400 rental stations and 13,000 bikes at the end of 2017. 3. To promote low-carbon transport, the city strengthens the promotion of public bike rental system in recent years, and continued planning and construction of cycling infrastructure. 4. Provide subsidy support for transportation companies to replace the aged buses with low-pollution and low energy consumption electric vehicles. 5. Increase number of taxi stands as a way to reducing carbon emissions.</p>
Waste prevention policies and programs	1400000	<p>In 2000, Taipei City imposed the creative Policy of per Bag Trash Collection Fee, which aimed to reinforce the efficiency of reducing, sorting and recycling. There are about 4,438,044 tons of wastes recycled in recent decade, equivalent to reduce 1.4 million TCO2e GHG emissions.</p>
Water recycling and reclamation	9023	<p>1. Advocacy of water-saving measures through household, community, city agencies and schools, 2014 Statistics revealed the daily household water consumption in city water supply area was 202 liters, declined 21.4% compared with 257 liters in 2006. Total household water consumption reduced 530 million tons. 2. Removing the useless water supply pipelines in the city. 3. In coordination with sidewalk improvement engineering, 10,000 kilometers of permeable pavement will be constructed in 2017.</p>
Energy efficiency/ retrofit measures	10400	<p>Providing guidance and counselling service of energy saving citywide: Since 2007, we have started to push the project of low-carbon communities, undertake guidance and assistance of energy saving, and select the best practice communities as benchmark. By the end of 2016, we have fulfilled services over 539 communities, and achieved the accumulated emissions reduction of 10,400 TCO2e.</p>
Energy efficiency/ retrofit measures	62667	<p>1. Campaign for energy saving and carbon reduction: Promote voluntary energy conservation "Taipei leadership for Energy Saving" in private sectors. This project saved about 57.5 million kWh electricity. It is estimated that these projects help to save electricity consumption up to 200 million kwh annually; accumulated emissions reduction about 62,667 TCO2e. 2. In accordance with Energy Management Act and Industrial and Commercial Energy Saving and Carbon Reduction Guidance and Self Administration, the government has conducted inspections and provided diagnosing and consulting service. After that, the records and related data were submitted to the authorities and following data analysis were carried out by the government.</p>

Emissions reduction activity	Anticipated emissions reduction – cumulative over the lifetime of the action (metric tonnes CO2e)	Action description
Smart public transport	1480	Review traffic signal control system at 71 sites which will reduce oil consumption by 654259.23 liters accounting for 1480.59 ton CO2 reduction.
On-site renewable energy generation	1498910	1. Using the steam generated by garbage incinerator to produce 250,000 kWh of electricity per year. 2. Biogas electricity plants have been constructed in Fu-de-Kun and Shan-Zhu-Ku landfill. The installed capacity is 1,361kW and 2,722kW separately.
Energy efficiency/ retrofit measures		Combining with appliance manufacturers, channel firms and stores, the government has been launching promotional games to encourage the contracted retailer to offer a discount for customers who is willing to purchase energy-saving products.
Energy efficiency/ retrofit measures	1650	The government is providing subsidies for communities to introduce Energy Service Company and replace aged facilities in public area. The practice could save electricity about 625,000 kWh with CO2 reduction being estimated at 330 tons per year.
Energy efficiency/ retrofit measures	13075	Promote energy efficiency of air-condition, illumination, escalator and electric power system in MRT station and adjust energy management in accordance with passenger volume at different time.
Energy efficiency/ retrofit measures	3764	1. For chillers that have exceeded their service life, the government is implementing performance measurement and giving improvement recommendations. It could save electricity about 313,000 kWh per year. 2. The government is improving the illumination of playgrounds and the air-condition of activity centers as well at schools. It could save electricity about 400,000 kWh per year. 3. Introduce Energy Service Company for schools with Energy Saving Performance Contract to improve energy efficiency and maximize the benefit.

Page: Renewable Energy

8.0

Please indicate the energy mix of your electricity consumed at the city-wide scale.

Energy source	Percent
Coal	35.70%
Gas	35.10%
Oil	4.70%
Nuclear	16.00%
Hydro	2.86%
Biomass	1.72%
Wind	0.57%
Geothermal	0.00%
Solar	0.45%
Unknown sources	2.90%

8.1

Does your city have a renewable energy or electricity target for consumption and/or production of energy?

Yes

8.1a

Please provide details of your renewable energy targets and how the city plans to meet those targets.

Scale	Energy types covered by target	Base year	Base year total renewable energy covered by target (in unit specified in column 2)	Base year percentage renewable energy of total energy or electricity	Target year	Target year total renewable energy covered by target (in unit specified in column 2)	Target year percentage renewable energy of total energy	Plans to meet target (include details on types of energy)
City-wide	All renewable electricity consumed (in MWh)	2015	487226	3%	2050	10%	10%	Develop solar PV system, landfill biogas power generation and biomass renewable energy

Page: Water Supply Risks

9.0

Do you foresee substantive risks to your city's water supply in the short or long term?

Yes

9.0a

Please identify the risks to your city's water supply as well as the timescale and level of risk.

Risks	Timescale	Level	Risk description
Declining water quality	Short-term	Less serious	The number of typhoons and torrential rain and rainfall increases, resulting in increased degree of raw water turbidity.
Other:	Current	Serious	According to Ministry of Economic Affairs Water Resources Agency, data show that Taiwan often drought, frequency of about once every two years, causing water shortages each time.

Page: Water Supply Management

9.1

Please describe the actions you are taking to reduce the risks to your city's water supply.

Risks	Adaptation action	Action description
Declining water quality	Investment in existing water supply infrastructure	1. Holding the water saving lottery to encourage people to water conservation. 2. Setting up new water treatment equipment. 3. Counselling establishment and maintenance of high altitude residents' simple water supply system. 4. Planning to set up 45 emergency water supply stations which could provide drinking water to approximately 344,000 tons and supply water about 28 days for 3.92 million populations.
Other:	Conservation incentives	1. An online water quality monitoring system based on ISO27001 for 24-hours continuous water quality monitoring from the source to the user. 2. Routine sampling for water supply districts from fixed sampling points. 3. Establish the detection procedures of new pollutants. 4. Promoting "water supply pipe network improvement and management plan" since 2006, and a total replacement 1,776.3 kilometers till the end of 2016.

Module: Compact of Mayors

Page: COM Overview

Please
note

Your Global Covenant (Compact of Mayors) questions are integrated into the main CDP questionnaire and highlighted in blue. Please ensure you respond to those questions.

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Page: COM GHG Emissions Inventory

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Page: COM GHG Emissions Reduction

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Page: COM Climate Hazards

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Page: COM Climate Hazards II

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Page: COM Adaptation

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