CDP Cities 2017 - Kaohsiung 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

Administrative boundary	Description of city
City/Municipality	Facing Taiwan Strait on the west and Bashi Channel on the south, Kaohsiung is a beautiful and modern metropolis located in southern Taiwan as well as the second largest city of this island. Kaohsiung has various landscapes: the lush Chai Mountain and Banping Mountain, the clear and serene Lotus Pond, and the Love River flowing across the city. This subtropical city is often full of sunshine and gentle breeze from the sea. Sitting between Cijin Island and downtown, Port of Kaohsiung is a world-class port in Taiwan as well as an international trading hub. The ceaseless ships and containers from the world represent the energy and vitality of the business in Kaohsiung. □ Population： approx. 2,779,371 □ Area： approx. 2947.6159 km2 □ Population density： 943 people/ km2 □ Climate： Tropical Monsoon climate □ The average month temperature： 25.1°C □ The average annual rainfall：2119.3mm □ Co-ordinates： 120°10'29"～121°02'55 East longitude and 22°28'32"～23°28'17" N latitude. An International Metropolis On December 25, 2010, Kaohsiung City merged with Kaohsiung County as the Greater Kaohsiung, a metropolis occupying an area of 2,947 km2 extending from the Central Mountains to the Taiwan Strait. The total population is approximately 2.77 million. Possessing diverse of natural landscapes and living facilities, this metropolis has developed as a new international city. Kaohsiung City is an important hub for Taiwan to the world. The transportation network includes air and marine, which serves industries of logistics, financial insurance and technology R&D. After the merge of the city and the county, a variety of agricultural resources as well as industrial and high-technology parks has created many advantages and benefits. In the great Kaohsiung, immediate services and comprehensive social welfare to each citizen are ensured. The resources of the city and the county also better facilitates the government's administration. With all the features and advantages, Greater Kaohsiung's competitiveness will be greatly enhanced as promised. Climate Kaohsiung City is located in the southwestern part of the island of Taiwan. The city, which lies almost entirely in the south of the Tropic of Cancer, has a tropical monsoon climate. It is dry in the winter, hot and wet in the summer and autumn. The climatic changes are not dramatic due to the moderating effect of the Taiwan Strait. The lowest temperature is usually in January and February ranging from 19.9 to 21.5°C, and the hottest months are from June to August, with averages from 28.3 to 29.5°C. The average temperature in 2010 was 25.1°C. 11 months out of 12 the temperature exceeds 20°C. The lowest temperature reported in January of 2011 in low-elevation areas was 10.9°C, which is exceptionally cold. The sunshine duration of Kaohsiung City is about 200 hours per month, which is higher than any other place in Taiwan. Due to the effects of the southwest monsoon, the rainy season is concentrated from May to September. From October through March, because the northeast monsoon is blocked by mountains, the dry season lasts for six months. Summer and autumn are typhoon seasons. According to Central Weather Bureau statistics, an average of three to four typhoons hit Taiwan annually, mainly from July to September. These have always brought heavy rains. With the increasing frequency of extreme weather events in recent years, precipitations exceeding 500 millimeters in a single day have been reported. For example, during Typhoon Morakot in 2009 and Typhoon Fanapi in 2010, Kaohsiung City experienced record-breaking rainfall.

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.

Government
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.

01附件一_2015 COM_Commitment and Badges_Kaohsiung City.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	Chu Chen	2014	2018	12

0.4

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

Annual operating budget	Currency	Budget year start	Budget year end
123854493000	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
2779371	2016	2713923	2040

0.6

Please provide details of your city's GDP.

GDP	Currency	Year of GDP	Source
529700000	USD US Dollar	2016	Ministry of Economic Affairs

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)
25.1	2947.6	50	120.1747	22.47

Page: Governance

1.0

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

1. Provide Kaohsiung city the guidelines for climate change policy-making.

2. The central government help with the establishment of local environmental database, it has contributed to the development plans and disaster planning of Kaohsiung city since the database contains abundant environmental information. The potential disaster figure of Taiwan has been completed currently. It may help identify high vulnerability areas in order to take adaptation action and avoid the impact of climate change.

3. Kaohsiung city got national subsidies for “(NT$)80 billion plan for flood-prone areas within 8 years”. As for water conservancy projects, we are focused on the establishment of detention pond recently. After this project, the following maintenance plan “(NT$) 66 billion plan for flood-prone areas within 6 years” will be implement from 2014 to 2019. During the new project, Kaohsiung City Government completed 2 flood detention ponds, 16 drainage pumping system construction. The central government also implemented the rainwater sewer construction via the new project in Kaohsiung. The rainwater sewer system implementation rate increased 2% from the current system. We did it to enhance capabilities in response to the impact and threat of floods.

4. In 2017, the Executive Yuan published the "forward-looking infrastructure project(2017-2024)" with a total funding of 880 billion NTD, including six major construction projects. Among them, in order to cope with climate change water environment and green energy two construction projects, water environment construction plan aims to improve flooded Water area of 200 square kilometers, increase the long-term water supply 1 million tons / day and improve the non-tap water area of total 90,000 households. Green energy construction plan aims to complete green energy technology and construction, such as Kaohsiung marine science and technology industry innovation area, for the construction of offshore wind power construction base. Also the plan aims to accelerate the construction of green energy science park and improve the green financial system.

1.1

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

Kaohsiung City in response to climate change mitigation (reduce emissions) and adaptation (to reduce climate risk) related countermeasures are:
1. " Energy " category: the 20th century solar energy project renewable energy promotion
2. " Manufacturing " category: to set up Kaohsiung greenhouse gas self-management plan, "energy-saving carbon reduction service group" to help industry and commerce, the establishment of Kaohsiung carbon market and carbon economy, high-carbon industry green transformation, to promote industrial energy integration
3. "Housing" category: to promote public sector water saving, energy saving and fuel saving measures, set the energy-saving type street lamps to save lighting electricity, the implementation of green building autonomy regulations, to promote green roof plan
4. "Low carbon education " category: to promote the school for lunch roses to reduce carbon emissions, additional recycling channels, promote the use of waste reduction, promotion of green and friendly restaurant to use the local food
5. "Transportation" category: to promote the construction of Kaohsiung ring light rail transport, mass transit system ticket integration and interchange concessions to promote the introduction of low-carbon transport of electric or low-carbon energy bus, the replacement of old locomotives new electric locomotive subsidies Program

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	In order to strengthen the capability of climate change adaptation and promote the development of a low-carbon city, Kaohsiung city government, according to different competent authorities and sectors, separated works of GHG emission reduction into 6 aspects including green economy, business carbon reduction, energy conservation construction, low-carbon transportation, green ecology, and low-carbon education. The government, at the same time, established administration strategies. In addition, Kaohsiung city government drew up the Greenhouse Gas Emission Reduction Plans, embodying objectives and contents of each aspect, and listed measures and actions which may be able to be adopted for fulfilling short term, medium term and long term goals.

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	Boundary of assessment relative to city boundary (reported in 0.1)	Explanation of boundary choice	Primary author of assessment
2015The Kaohsiung City Climate Change Adaptation and Sustainable Development plan	2015	03附件三_2015The Kaohsiung City Climate Change Adaptation and Sustainable Development plan.pdf		Same – covers entire city and nothing else	Through the assessment matrix, in a specific adjustment area, for the Kaohsiung administrative regions of the various issues to assess the vulnerability of the assessment. In the case of assessment, the impact of climate change has a high degree of impact and only low degree of adjustment ability, to give high vulnerability assessment; the face of climate change impact with a low impact and a high degree of adjustment ability, given low vulnerability assessment. For the impact of climate change, the potential impact can be determined by the impact of a certain climate change caused by a negative impact of the impact of climate	Consultant

Publication title	Year of publication	Attach the document	Web link	Boundary of assessment relative to city boundary (reported in 0.1)	Explanation of boundary choice	Primary author of assessment
					change, and then by the impact of the relevant provisions of the governance plan to assess the overall vulnerability arising from the assessment of the vulnerability.	

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	There are three natural disasters in Kaohsiung city, including flood, landslide and coastal disaster, caused by climate change. Therefore, Kaohsiung government refers the vulnerability assessment methodology of National Science and Technology Center for Disaster Reduction(NCDR) to evaluate the vulnerabilities with environmental vulnerability and social vulnerability, and the detailed assessment of factors, calculation and grading method as shown as below. 1. Assessment of factors for three disasters of climate change 2. Calculation steps 3. Grading matrix

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	The main climate hazards that Kaohsiung City faced are rain storm, landslide and salt water intrusion. The city will continuously improve and enforce on hazard drill and infrastructure , to reduce the impact brought by climate hazard.	3-1	2015The Kaohsiung City Climate Change Adaptation and Sustainable Development plan
Assessment of impact of future hazards	According to history data, the future analysis of Kaohsiung City reveals that temperature will increase 0.75 0C, extremely rainfall disturbance and sea level increase 1 m. Therefore, related infrastructure should enforce its ability to against extreme weather condition. Also, government will improve people in water used behavior, and reduce pipe leaking status.	3-38	2015The Kaohsiung City Climate Change Adaptation and Sustainable Development plan

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
Rain storm	High	High
Cyclone (Hurricane/Typhoon)	High	High
Cold wave	Medium	Medium
Drought	High	High
Extreme hot days	High	High
Salt water intrusion	Medium High	Medium High
Vector-borne disease	Medium	Medium High

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
Rain storm	Increasing	Increasing	Current
Cyclone (Hurricane/Typhoon)	Increasing	Increasing	Current
Cold wave	Increasing	Increasing	Current
Drought	Increasing	Increasing	Current
Extreme hot days	Increasing	Increasing	Current
Salt water intrusion	Increasing	Increasing	Current
Vector-borne disease	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
Rain storm	Serious	Higher extreme rainfall intensity will be the critical challenge for the current drainage system, levees and river embankments. Torrential rain which exceeds the capacity of the drainage system or protection standard of levee will increase the risk of flooding.	Water Supply & Sanitation	Environment	Food and agriculture

Climate hazards	Magnitude of impact	Impact description	Asset or service	Asset or service	Asset or service
Cyclone (Hurricane/Typhoon)	Extremely serious	Inundations, driven by stronger typhoon winds and rain, have coincided with high tides in recent years. The combination of high tides and flashfloods raise the difficulty of waters being naturally drained by estuaries, and both oceanic and freshwater actually ends up being washed back ontocoastal lands and into river mouths.	Transport	Residential	Emergency Management
Cold wave	Serious	The impact of low temperature is relatively high when compared to that of high temperature. Furthermore, under the situation of extreme temperatures, cardiovascular disease is a more possible cause of death than respiratory disease.	Food and agriculture	Environment	Waste Management

Climate hazards	Magnitude of impact	Impact description	Asset or service	Asset or service	Asset or service
Drought	Serious	Climate change exacerbates the frequency and magnitude of natural disasters. On the one hand, stronger typhoons and heavier rainfall may damage the island's slopes more frequently; on the other hand, decreasing medium and small rain raise the possibility of drought.	Water Supply & Sanitation	Food and agriculture	Environment
Extreme hot days	Serious	Global warming increases the evaporation of irrigational water supplies, meaning that more water is needed per square meter than before. Similarly, industrial and municipal demand for water grows with the increase in both global temperature and human population. The growing water demand of industrial development and high energy-consuming industries has resulted in difficulties for water resource management and increases the risk of drought.	Environment	Residential	Public health

Climate hazards	Magnitude of impact	Impact description	Asset or service	Asset or service	Asset or service
Salt water intrusion	Serious	Rising sea levels will increase the threat of saltwater intrusion and storm surge, forcing seaside residents to relocate and lose their livelihoods with harbours and industrial parks facing similar predicaments. Since the existence of saltwater intrusion and other related disasters are closely related to seaside land use, it is necessary to regulate the pattern for coastal and low-lying region land use.	Environment	Water Supply & Sanitation	Emergency Management
Vector-borne disease	Serious	The rising temperature will aggravate the spread of insect-borne diseases such as Dengue Fever, Scrub Typhus, Japanese encephalitis, etc. High temperature may also extend the spreading period or area of these diseases.	Water Supply & Sanitation	Public health	Environment

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	Natural disasters caused by climate change will damage the infrastructure, affecting business practices, transport shut down will stop industry from operating and imminent losses, agriculture affected by climate change is significant, will cause the city commercial costs soared.

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
Compact of Mayors	01附件一_2015 COM_Commitment and Badges_Kaohsiung City.pdf	The Kaohsiung City Government was invited to become the only city in East Asia by participating in the 10 cities around the world in the Paris COP21. Kaohsiung City is one of the 20 full Compliant of the Global Mayor Alliance, and Kaohsiung City will continue to actively promote the city's energy saving and carbon reduction policies and become a city of sustainable and resilient environment.
Durban Adaptation Charter	02附件二_2011 Kaohsiung City Durban Signing.pdf	The Kaohsiung City Government was invited to become the only city in East Asia by participating in the 10 cities around the world in the Paris COP21. Kaohsiung City is one of the 20 full Compliant of the Global Mayor Alliance, and Kaohsiung City will continue to actively promote the city's energy saving and carbon reduction policies and become a city of sustainable and resilient environment.

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	Boundary of plan relative to city boundary (reported in 0.1)	Explanation of boundary choice	Area under your city's control	Primary author of plan
2015The Kaohsiung City Climate Change Adaptation and Sustainable Development plan	2015	03附件三_2015The Kaohsiung City Climate Change Adaptation and Sustainable Development plan.pdf		Same – covers entire city and nothing else	Through the assessment matrix, in a specific adjustment area, for the Kaohsiung administrative regions of the various issues to assess the vulnerability of the assessment. In the case of assessment, the impact of climate change has a high degree of impact and only low degree of adjustment ability, to give high	Administrative boundary of city governance	Relevant city department

Publication title	Year of publication	Attach the document	Web link	Boundary of plan relative to city boundary (reported in 0.1)	Explanation of boundary choice	Area under your city's control	Primary author of plan
					vulnerability assessment; the face of climate change impact with a low impact and a high degree of adjustment ability, given low vulnerability assessment. For the impact of climate change, the potential impact can be determined by the impact of a certain climate change caused by a negative impact of the impact of climate change, and then by the impact of the relevant provisions of the governance plan to assess the overall vulnerability arising from the assessment of the vulnerability.		

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	Kaohsiung City is facing several climate change impacts such as precipitation pattern change, intense rainfall, landslide, sea level rise, storm-surge, high temperature and low temperature . In order to cope with the above impacts, Kaohsiung City Government implements climate change adaptation actions, including improving the drainage system and strengthen the management, establishing water resource conservation and disaster prevention system, studying and develop diversified water supply program, execute coastal sustainable regeneration plan, set up flood prevention and relief projects to enhance and build a resilient and sustainable city.	3-1	2015The Kaohsiung City Climate Change Adaptation and Sustainable Development plan
Identification of adaptation actions	To set up the sustainable development and climate change adaptation committee whichwould consider related information, such as the potential impact of climate change in various fields, adaptationcapacity, vulnerability, while track the various departments of the climate change adaptation action progress and effectiveness to reach the purpose of management,. Among them, the Sustainable Environment working group will carry out the adaptation action in accordance with the following steps to continuously assess the effectiveness of the implementation and the revised adaptation program of action:Understand the impact and vulnerability of climate change in Kaohsiung City.Evaluating environmental sensitive regional and risk under climate change impact. Review and confirm the scope of the field of adaptation, the objectives and objectives of each field.Developing strategies and contents of various fields.Evaluating the feasibility of the strategies and establish an assessment system. Integration and decision-making action programs in various fields.Implementation of the program of action and review of amendments to the ongoing program of action for the next phase of adaptation.	3-1	2015The Kaohsiung City Climate Change Adaptation and Sustainable Development plan
Engagement of multiple city government agencies/departments	The main executive unit is Kaohsiung City Sustainable Commission, including many city departments inside, to discuss and arrange related adaptation actions.	3-1	2015The Kaohsiung City Climate Change Adaptation and Sustainable Development plan

Key requirements	Proof statement	Page number	Publication title
Process for regular review of the plan	To set up the sustainable development and climate change adaptation committee whichwould consider related information, such as the potential impact of climate change in various fields, adaptationcapacity, vulnerability, while track the various departments of the climate change adaptation action progress and effectiveness to reach the purpose of management,. Among them, the Sustainable Environment working group will carry out the adaptation action in accordance with the following steps to continuously assess the effectiveness of the implementation and the revised adaptation program of action:Understand the impact and vulnerability of climate change in Kaohsiung City.Evaluating environmental sensitive regional and risk under climate change impact. Review and confirm the scope of the field of adaptation, the objectives and objectives of each field.Developing strategies and contents of various fields.Evaluating the feasibility of the strategies and establish an assessment system. Integration and decision-making action programs in various fields.Implementation of the program of action and review of amendments to the ongoing program of action for the next phase of adaptation.	3-1	2015The Kaohsiung City Climate Change Adaptation and Sustainable Development plan

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.

01附件一_2015 COM_Commitment and Badges_Kaohsiung City.pdf

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
Rain storm	Improve water supply distribution method	KCG is committing to the effective integrated drainage system management. KCG has planned to build 4 detention ponds within 5 years which are expected to store 1,000,000 tons of storm water. The comprehensive soil and water conservation strategies have been established to avoid landslide caused by intense rainfall. Standard operation process of disaster response has been established. The SOP content includes disaster warning system, emergency rescue system, refugee resettlement system and disaster obviation system.
Cyclone (Hurricane/Typhoon)	Other: Flood disaster prevention and relief projects	To maintain and to expand the center of each regimen, to implement the management of mobile flood pumping machine equipment, to strengthen local flood tubes and strain dispatching function

Climate hazards	Action	Action description
Cold wave	No action currently taken	KCG will continuously work on this hazard prevention, and find multiple ways to ensure energy providing in order to maintain temperature when cold wave visits.
Drought	Water use restrictions and standards	KCG has developed alternate water supply, such as reservoir and underground water. Multi water resource management in Kaohsiung can also decrease the vulnerability and impacts of more frequent droughts.
Extreme hot days	Tree planting and/or creation of green space	KCG works on green planting in spare areas, and also expand park areas. With more trees in the city to less GHG concentration in order to reduce the temperature.
Salt water intrusion	Other: The plan of sustainable regeneration in coastal environment	To improve the coastal environment t, to advance disaster prevention function of seawall, to activate the utilization of seawall space
Vector-borne disease	Disease prevention measures	KCG uses news, advertisements and broadcasting to keep telling residents of taking some prevention against some diseases.

Page: Social Risks

4.0

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

Yes

4.0a

Please complete the table

Social risks	Anticipated timescale in years	Impact description
Increased incidence and prevalence of disease	Long-term	The impact of extremely hot summer on human health may worsen due to the rise of humidity. Increased frequency and severity of heat waves may lead to an increase in the number of diseases and deaths. According to the study 'The Effects of Climatic Variability and Abnormal Weather Condition on the Occurrence of Selected Diseases in Taiwan', if the annual monthly average temperature rises 1℃, areas with the potential risk of dengue fever will expand; the population threatened by potential dengue fever epidemic will triple. The long-term warming trend in southern Taiwan is very likely to facilitate the severity of regional spread of dengue fever in the metropolitan area.

Social risks	Anticipated timescale in years	Impact description
Increased incidence and prevalence of disease	Short-term	Dust storms from China drifted across Taiwan, making the increase in respiratory diseases. Studies also found that heavy rain and flooding during the typhoon period substantially increased the risk of diseases caused by the exposure to unclean water and soil, such as leptospirosis and melioidosis infections. Of these, the outbreak of melioidosis was particularly significant. Diversified infectious disease surveillance performed by the Centers for Disease Control of the Executive Yuan's Department of Health found that over the years melioidosis epidemics have repeatedly occurred in the aftermath of typhoon disasters in southern Taiwan. During Typhoon Morakot's attack in August 2009, a cluster of ten melioidosis cases and one death appeared in the Zuoying and Nanzih Districts in Kaohsiung City. After Typhoon Fanapi's hit in September 2010, seven melioidosis cases appeared and were confirmed in Kaohsiung, eventually leading to one death. The possible cause of infection may be the scour of pathogens from deep soil to the surface by heavy rains. In addition, the strong typhoon wind may facilitate inhalation of contaminated dust and lead to subsequent infection. These phenomena indicate that if extreme weather incidents occur frequently in the future, it is necessary to pay closer attention to epidemic prevention before and after the flood disaster.
Increased demand for public services (including health)	Long-term	Climate change led to the increase of chronically ill and more medical resources and public services.
Increased risk to already vulnerable populations	Long-term	From the viewpoint of social vulnerability, like low social status, low incomes, or elderly residents, are the populations highly vulnerable to climate change cannot afford the financial losses and affect the efficiency of reconstruction. According to the estimation of population growth by the Kaohsiung City Government's Department of Budget, Accounting and Statistics, the percentage of elderly population will grow from 10% in 2010 to 24% in 2031; as a result, the populations sensitive to climate change will also increase correspondingly.
Increased risk to already vulnerable populations	Short-term	People live in vulnerable areas need to be evacuated due to the threat of typhoon and flooding, some villages even have to be relocated. Typhoon Morakot in 2009 and Typhoon Fanapi in 2010 are examples of Kaohsiung City under severe attack by extreme events. During both rainstorm catastrophes, the 24-hour maximum accumulated rainfall was over 500 mm (the average monthly average precipitation of Kaohsiung is about 188 mm), causing severe flooding and landslides as well as nearly 600 casualties. They also had a considerable subsequent influence on the ecological environment and public health.

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)	KCG is encouraging and promoting the Energy Service Company (ESCO) and trying to create a niche market for those innovative industries. Also, KCG has developed subsidy mechanisms and projects to support the development of renewable energy industries, especially on solar and wind power.
Increased energy security	Since the renewable energy is developing, the energy diversity is increasing. KCG is developing the renewable energy and promoting the energy conservation. Thus, the less dependence on import fossil fuel is expectable, the energy security is increasing.
Other: green jobs	As the clean tech industries are developing, the green job opportunities will be increasing at the same time.

5.1

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

Response	Description
Yes	In October, 2017, Kaohsiung City will hold EcoMobility World Festival, with car-free demonstration, green vehicles presentation, ecomobility forum discussion and experience sharing. By this event, the government wants citizens to realize the content and benefit inside green transportation. Furthermore, people will be more interested in execution by experiencing. The government also invites some enterprises to participate in and present their green works, including CSC, Kaohsiung Bus Group, Swap AHAMANI (E-Scooter) and FARA (Electric Vehicle). Combining with government, enterprise and event, to improve and promote Kaohsiung City's transportation status.

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$)	Total investment cost needed (USD$)

Project area	Status of project	Status of financing	Project description	Total cost of project (USD$)	Total investment cost needed (USD$)
Energy efficiency/retrofit	Implementation	Project partially financed and seeking additional financing	In 2009, Kaohsiung World Games Stadium has solar energy capacity of 1MW, the world's largest photoelectric sports facilities. Kaohsiung city government is expected to implement solar energy Photoelectric power generation in four years to reach the 150 World Games stadiums' capacity, the implementation of the second year plan (2016 years) has reached 30 million watts (MW). In 2017, Kaohsiung City Government is planning to invest photoelectric industry about 20 billion. In order to reach the target of 150 megawatts (MW) of the "100th World Game Stadium" photoelectric project.	66666667	0

Module: Emissions - Local Government Operations

Page: Local Government - Methodology

LGO1.0

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

Thu 01 Jan 2015 - Thu 31 Dec 2015

LGO1.1

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

Departments, entities or companies over which operational control is exercised

LGO1.2

Please indicate which of the following major sources of emissions are included in your municipal GHG emissions inventory.

Source of emissions	Status
Airport(s)	Not applicable
Buildings	Included
Buses	Not included
Electricity generation	Not applicable
Electricity transmission and distribution	Not applicable
Employee commuting	Not included
Incineration of waste	Included
Landfills	Included
Local trains	Not included

Source of emissions	Status
Maritime port	Not included
Municipal vehicle fleet	Included
Regional trains	Not included
Roads / highways	Not included
Street lighting and traffic signals	Included
Subway / underground	Not included
Thermal energy	Not included
Waste collection	Not included
Wastewater treatment	Included
Water supply	Not included
Unknown source	Not included
Total	Included

LGO1.3

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

Primary protocol	Comment
Other: GHG Inventory Accounting Guideline for Local City (EPA)	Our country in order to assist local cities to handle emissions baseline, and make sure it follows the standard of MRV, so referring to related international GHG inventory guidelines for local cities, including IEAP published in 2009, to develop our city GHG inventory guideline.

LGO1.4

Which gases are included in your emissions inventory? Tick all that apply.

CO2
CH4
N2O
HFCs

Further Information

Page: Local Government - Energy Data

LGO1.5

Please give the total amount of fuel (refers to Scope 1 emissions) that your local government has consumed this year.

Source	Fuel	Amount	Units
Buildings	Natural gas	1170285	m3 (cubic meters)
Buildings	Liquefied Petroleum Gas (LPG)	1008317	L
Buildings	Diesel/Gas oil	1263143.08	L
Municipal vehicle fleet	Diesel/Gas oil	15765296.15	L
Municipal vehicle fleet	Motor gasoline (petrol)	8564364.66	L
Municipal vehicle fleet	Other: Alcohol Gasoline	10171.02	L
Other: Fire extinguisher	Other: CO2	12.39	Metric tonnes

LGO1.6

How much electricity, heat, steam, and cooling (refers to Scope 2 emissions) has your local government purchased for its own consumption during the reporting year?

Source	Type	Amount	Units
Buildings	Electricity	212966.85	MWh
Street lighting and traffic signals	Electricity	346570.50	MWh
Wastewater treatment	Electricity	56334	MWh

Page: Local Government - GHG Emissions Data

LGO1.7

Please provide total (Scope 1 +Scope 2) GHG emissions for your local government's operations, in metric tonnes CO2e.

518757

LGO1.8

If applicable, please provide the following GHG emissions.

Scope 1: All direct GHG emissions
Scope 2: Indirect GHG emissions associated with the consumption of purchased or acquired electricity, steam, heating, or cooling.

Total Scope 1 activity in metric tonnes CO2e emitted	Total Scope 2 activity in metric tonnes CO2e emitted
193576	325181

LGO1.9

Do you measure Scope 3 emissions?

No

LGO1.9b

Please explain why not and detail your plans to do so in the future, if any.

Currently the city has not arranged for scope 3 emissions, due to right now Kaohsiung City government only gets data resource in waste, and other sections the city does not have any data to quantify.

LGO1.11

Where it will facilitate a greater understanding of your government emissions, please provide a breakdown of these emissions by department, facility, source, or by any other classification system used in your city.

Department / Facility / Source / Other	Scope	Emissions (metric tonnes CO2e)
Building and Facility Energy used	Total figure	119719
Street Light and Traffic Light Energy used	Scope 2	182989
Waste and Waste Water (collection and distribution) Energy used	Scope 2	29744
Transportation Energy used	Scope 1	62046
Energy Fugitive	Scope 1	2036
Waste	Scope 1	122222

LGO1.12

Please indicate if your emissions have increased, decreased, or stayed the same from the previous year, and please describe why.

Change in emissions	Reason for change
Decreased	In government total emission, compared with 2014, its decreased, and mostly happened in "Waste" section, the reasons including recycle promotion and trush-handled declining. And in other sections, the emission are increased, in transportation, the reason maybe is connected to government car purchasing. The government will continuously promote bus routes and bike renting to decrease emission. In street lights, the government will promote LED or energy-saved lights to decrease electricity consumption.

Page: Local Government - External Verification

LGO1.13

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

No

LGO1.13b

Please describe your plans to verify your emissions in the future.

There is no any verification plan arrangement for current emissions data, will be arranged in the end of this year.

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)	Our country in order to assist local cities to handle emissions baseline, and make sure it follows the standard of MRV, so referring to related international GHG inventory guidelines for local cities, including IEAP published in 2009, to develop our city GHG inventory guideline.

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	42261102	High	
Scope 1 emissions from grid-supplied energy generation within the city boundary	26284488	High	
Total Scope 1 emissions (Row 1 + Row 2)	68545601	High	
Total Scope 2 emissions	15358577	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)	27197124.2
Stationary Energy: energy use – Scope 2 (I.X.2)	15277316.1
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)	4141124.61
Transportation – Scope 2 (II.X.2)	81260.82
Transportation – Scope 3 (II.X.3)	
Waste: waste generated within the city boundary – Scope 1 (III.X.1)	529228.75
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)	

Sector and scope (GPC reference number)	Emissions (metric tonnes CO2e)
Agriculture, Forestry and Land Use – Scope 1 (V)	
TOTAL Scope 1 (Territorial) emissions	
TOTAL BASIC emissions	35900212.75
TOTAL BASIC and BASIC+ emissions	

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

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
Decreased	The city's community GHGs emission compared with 2014, is 1.4% decreased. And the city is actively working on promoting action in industrial and transportation section, which are the main source in city. In industry, there is rule for limiting factory emission and also promoting energy-saved actions, also, the city constructs public transport to reduce daily vehicles' emission.

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
(bsi	2015	05附件五_Kaoshiung City GHGs Verification_Community 2015.pdf	

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

Sector	Define target boundary	Baseline year	Baseline emissions (metric tonnes CO2e)	Percentage reduction target	Target date	Comment
Total	In boundary	2005	67326998	20%	2020	Kaohsiung made commitment and indicated short term target that 2020 GHG emission will be reduced 20% compared with 2005.

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
On-site renewable energy generation	4000	Public roof rentals have been completed 5.64MW and rented by private vendors. The annual power generation is about 7.62 million degrees, and the annual carbon reduction is 4,000 metric tonnes.
Energy efficiency/ retrofit measures		Kaohsiung city government planned to execute old public buildings renewal and replace energy-consuming equipments with energy-saving equipments to reduce energy consumption and GHG emissions caused by public buildings.
Developing the green economy		In order to encourage green businesses in Kaohsiung, the city government promotes green purchase, purchasing goods with green labels and using green products, in public sectors.
Low or zero carbon energy supply generation		Kaohsiung city government purchases vehicles using clean fuel as official cars and public buses to reduce GHG emissions and promote low-carbon vehicles in the city.
Building performance rating and reporting		To approach a low-carbon city, Kaohsiung city government implements water, electricity, fuel oil and paper reduction in public sector to be a model for citizens and private sectors.

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
2015 Kaohsiung City GHG Reduction Plan	2015	06附件六_2015 Kaohsiung City GHG Reduction Plan.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

Key requirement	Proof statement	Page number	Publication title
Political commitment to emissions reduction	Kaohsiung made commitment and indicated short term target that 2020 GHG emission will be reduced 20% compared with 2005.	2-1	2015 Kaohsiung City GHG Reduction Plan
Vision describing city's overall ambition and clear objectives	Kaohsiung made commitment and indicated short term target that 2020 GHG emission will be reduced 20% compared with 2005.	2-1	2015 Kaohsiung City GHG Reduction Plan
Context of the action plan	After the short-term reduction target was confirmed, the city identified specific tasks and responsible departments for GHG management according to emissions by sector and by category. Source sectors include energy, industry, residential and commercial sectors, transportation, and agriculture.	3-19	2015 Kaohsiung City GHG Reduction Plan
Baseline GHG emissions figure	The base year for Kaohsiung City is 2005, with 658,400 tonnes CO2e	2-64	2015 Kaohsiung City GHG Reduction Plan
Business as usual GHG emissions forecast	The base year for Kaohsiung City is 2005, with 658,400 tonnes CO2e	2-64	2015 Kaohsiung City GHG Reduction Plan
GHG emissions reduction target	Kaohsiung made commitment and indicated short term target that 2020 GHG emission will be reduced 20% compared with 2005.	2-1	2015 Kaohsiung City GHG Reduction Plan
Implementation of the action plan	After the short-term reduction target was confirmed, the city identified specific tasks and responsible departments for GHG management according to emissions by sector and by category. Source sectors include energy, industry, residential and commercial sectors, transportation, and agriculture.	3-19	2015 Kaohsiung City GHG Reduction Plan
Monitoring of the action plan	After the short-term reduction target was confirmed, the city identified specific tasks and responsible departments for GHG management according to emissions by sector and by category. Source sectors include energy, industry, residential and commercial sectors, transportation, and agriculture.	3-19	2015 Kaohsiung City GHG Reduction Plan

7.1

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

Baseline scenario (business as usual) target

7.1c

Please provide details of your total city-wide baseline scenario target, including projected business as usual emissions.

Sector	Base year	Base year emissions (metric tonnes CO2e)	Target year	Estimated business as usual absolute emissions in target year (metric tonnes CO2e)	Percentage reduction target from business as usual	Comment
Stationary energy (buildings)	2005	67326998	2020	67326998	20%	Chu Chen, Mayor of Kaohsiung City had set up short term GHG reduction target, decreasing 20% by 2020 compared with the emissions in 2005. Therefore, city has to build up its future BAU for comparison with baseline emissions, to estimate how many should city reduce in order to reach the target.

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
Optimize traditional power/ energy production	363000	Kaohsiung city government has successfully promoted the Integration of resources and energy in LinHai industrial park, taking China Steel Company (CSC) as the core selling waste heat and steam to surrounding factories. In 2015, due to decreasing market in industry, compared with 18.9 million metric tonnes steam sold in 2014, only 15.8 million metric tonnes steam sold in demand, which would be equal to reducing emissions 363 thousand metric tonnes CO2e produced by burning fossil fuels.
Eco-district development strategy		According to the Kaohsiung's Environmental Maintenance and Management Autonomy Regulations, the Environmental Protection Administration or central competent authority shall declare public and private spaces for stationary sources of GHG emissions, which should set a self-management plan, setting greenhouse gas reduction targets of the process.

Emissions reduction activity	Anticipated emissions reduction – cumulative over the lifetime of the action (metric tonnes CO2e)	Action description
Energy efficiency/ retrofit measures	71808	Kaohsiung City Environmental Protection Bureau actively promotes energy-efficiency and reduction of greenhouse gas emissions of the project. According to the ISO14064 standard, the plants should be assisted by the task of inventory, reduction of counselling and log in. Since 2009, Kaohsiung City Environmental Protection Bureau has investigated all of the plant located in Kaohsiung in accordance with the ISO14064-1 and counselled over 51 plants. Furthermore, Kaohsiung City Environmental Protection Bureau has made a survey to know how many plants located in Kaohsiung is willing to cooperate with the plan of voluntary reduction of carbon reduction. It was estimated that there are reduction amount on Carbon reduction by 71,808 metric tonnes in the seven years ,which resulted from 6 times assistance on 2012.
Energy efficiency/ retrofit measures	9803	Carbon Reduction Technique Foundation’s counselling founded on 2014 aims to provide both on diagnosis, analysis on the energy usage of general plants’ production or relevant facility and on assistance for factory owners to set up an improvement to realize the practically using situation ,which can be seen as a reference of level-up efficiency and up-graded information. Take the example on 2015, if cooperated with the project, five plants on the plan were improved their overall carbon reduction benefits, saving total energy consumption of 18,560,000 degrees of the total electrify amount and 68.5 million cubic meters of natural gas per year, saving energy costs total 54.4 million NTD, representing a decrease of approximately 9,803 metric tonnes of carbon dioxide equivalent emissions per year.
Green space and/ or biodiversity preservation and expansion	5250.7	Since 1st July, 1995, the EPA commenced promoting the program called "Air quality purifying areas" to build green spaces to make better air quality. And Kaohsiung City also strongly supported and promoted this plan, Up to 2015, green space reached to 562 places, 228.3 ha in public place. 5,250.7 GHG reduction is anticipated per year.
On-site renewable energy generation		Kaohsiung City actively undergoes amending construction related regulations to promote solar photovoltaic system. According to 2015 analysis, city's application occupied 13.78% of total applicants, and with 28.486 MW capacity , creating 2.8 billion benefit, total capacity occupied 8.81% in whole country. This year, 2016, city will continuously make compensation for encouraging setting up system, each subsidy is limited NT$300,000(US$9,375).
Building performance rating and reporting		Kaohsiung city government provides subsidy to private buildings to improve its energy efficiency. The subsidy covers LED lights, water-saving taps and is up to NT$20000 (USD$ 666).

Emissions reduction activity	Anticipated emissions reduction – cumulative over the lifetime of the action (metric tonnes CO2e)	Action description
Infrastructure for non motorized transport	2206	Kaohsiung continuously set up new public bike rental stations. Until 2016, 189 stations have been set up, which can provide 220 ,000 citizens to use each month, and totally reduce 2,206 metric tonnes CO2e emissions.
Improve bus infrastructure, services, and operations		Adding shuttle buses for KMRT (Kaohsiung Metro Rapid Transit) users, and providing privilege for people transferring between KMRT and public buses, aiming to double public transportation users.
Improve rail, metro, and tram infrastructure, services and operations		Kaohsiung is building a light rail system. The project with 22.1 km long, includes two stages. So far, the first stage is completed, and temporally operated and commenced on 16th October, 2015, while the whole stage would be operated in 2019.
Improve fuel economy and reduce CO2 from motorized vehicles		The city government provides subsidies to replace two-stroke scooters with electronic scooters. The maximum subsidy is NT$ 20,500 (USD$ 640). After analying data base (until February, 2016), replaced stroke scooters number is over 345,181, and more than 6,841 electronic scooters has been registered. More green transportation used, less pollution and GHG emissions will be made, which will bring benefit to our environment.
Green space and/ or biodiversity preservation and expansion		Kaohsiung city government puts lots of efforts in the issue of wetland conservation because of its abilities of carbon fixing, unban flood detention, and ecological and recreational value. Until 2016, the city has successfully created 21 wetland parks in Kaohsiung with total area about 986 ha.
Green space and/ or biodiversity preservation and expansion		Many actions have been taken between 2005 and 2009 to advocate green campus, and the impressive results are in 6 aspects including illumination, energy conservation, planting, water conservation, recycling and thermal insulation.
Developing the green economy		In order to stimulate the development of green economy in Kaohsiung, the city government promotes goods with green labels, including energy-saving label and water-saving label, to citizens. According to analysis in 2015, total green procurement number is NT$ 1,504,710,000 (USD$ 50,157,000) including 204 units (companies, schools and public groups). And for Kaohsiung City government, total green procurement is NT$ 326,853,413 (USD$ 10,214,169).
Building performance rating and reporting		The green energy environmental concept of the building: Kaohsiung Main Public Library is integrated into every floor; the design of the third to eighth floors on the southwest side is a five-meter-deep green turf landscape balcony providing a cool place to hide from the burning rays of Kaohsiung's summer, and also allowing citizens to lie on a lawn, or read under a tree, thus providing an excellent green space for reading.

Emissions reduction activity	Anticipated emissions reduction – cumulative over the lifetime of the action (metric tonnes CO2e)	Action description
Building codes and standards	16619	In response to the impact of climate change and the advent of an aging society, Kaohsiung city government imposed Kaohsiung house designing and feedback project in September,2014. The estimation base is 20% of 5829 buildings constructed in 2013: The setting of three-dimensional green roof increases the total green area of 11 football fields, and total power generation is about 18 National Stadiums. All green building practices create 16,619 metric tonnes carbon reduction, equivalent to about 1.66 million trees planted in carbon sequestration.

Page: Renewable Energy

8.0

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

Energy source	Percent
Coal	
Gas	
Oil	
Nuclear	
Hydro	
Biomass	
Wind	
Geothermal	
Solar	
Unknown sources	

8.1

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

No

8.1b

Please explain why you do not have a renewable energy target or a renewable electricity target and any plans to introduce one in the future.

Kaohsiung City Government has various plans for renewable electricity, yet does not set targets. The solar energy plans are: 1) Kaohsiung main stadium—the stadium is a green building with solar panels on the roof. The capacity of the system is 1MW. Annual electricity generation is 1.1 million KWh and the annual GHG reduction is 701 metric tonnes per year. 2) Da Ping Ding Green Solar project—The Da Ping Ding area accounts for 2,214 ha. The city government constructed a photovoltaic system of 1 MW. The annual power generation is 1.2 million kWh. The generated power is also used for soil remediation. After the completion of remediation, the power will supply local residence. 3) Gang-shan Landfill—The photovoltaic system in Gang-shan Landfill accounts for 2 ha. It is connected to grid of Taiwan Power Company and provides 456 KW to the centre. 4) Xing-da solar power plant—operated since October 2011. The system occupies 9.45 ha and equipped with 16 thousand panels. The capacity goes to 6 million kWh. 5) Developed by Public Affair Bureau, the project named " Hundreds Stadiums-Solar PV plan" will collect related PV plans from all bureaus and departments, and expect to reach 150 MW capacity in 4 years and complete 3 PV demonstrations set up, in order to increase occupied percentage of renewable energy used.

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
Increased water stress or scarcity	Short-term	Serious	Kaohsiung city's water supply relies on river flow and rainwater. The rain falls into the river catchment area. If these areas are not able to have rain for one season or even longer, it would cause water supply crunch.

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
Increased water stress or scarcity	Diversifying water supply (including new sources)	For the purpose of the stability supply for water resources in Kaohsiung Region, the riverbank filtration as water intake works nearby the Kaoping River is to be accessed and acted as backup and supplement water resources to increase the reaction capacity of the water allocations. Develop interflow resources and riverbank water intake works evaluation near the Kaoping River(Weng park and Jhuliao area). Promote the construction of a desalination plant, given the high value industries without water will cause serious losses due to high water bills are more affordable to obtain a stable supply of incentives, short-term high-value industries will be set as the main objective to promote. Desalination of seawater: Kaohsiung area planning assessment on the daily processing capacity of 100,000 CMD desalination plant. Currently WRA schools around the reservoir has handled promotional activities related to water resources in the region and start promoting water conservation education rooted in actions to promote water conservation education materials on campus and agencies, programs and activities, organizing seminars train community love the water, promoting water conservation pickets and summer water conservation conservation camp, the concept of water conservation from an early age. Currently wastewater treatment technology has been available since the output to meet the water quality standards of recycled water, the water quality is stable and not subject to weather the impact of its effective recycling can improve the utilization of water resources for industrial zones, science parks area of high water rates Insurance is water. Reclamation of waste water –Fongshan waste water treatment plant is formally under building, which recycle waste water and then reuse. Linhai waste water treatment plant now is under design and the construction expected to bid at 2018.

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.

As you have selected to submit your data to the Global Covenant (Compact of Mayors) through the main CDP response (in question M0.0 on the Introduction page), no questions will be visible on this page.

Submitting your response

Once your response is complete, please return to the Home page, check the box next to the "Global Covenant module" and click Submit.

Page: COM GHG Emissions Inventory

Please
note
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Submitting your response
Once your response is complete, please return to the Home page, check the box next to the "Global Covenant module" and click Submit.

Page: COM GHG Emissions Reduction

Please
note
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Submitting your response
Once your response is complete, please return to the Home page, check the box next to the "Global Covenant module" and click Submit.

Page: COM Climate Hazards

Please
note
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Submitting your response
Once your response is complete, please return to the Home page, check the box next to the "Global Covenant module" and click Submit.

Page: COM Climate Hazards II

Please
note
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Submitting your response
Once your response is complete, please return to the Home page, check the box next to the "Global Covenant module" and click Submit.

Page: COM Adaptation

Please
note
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Submitting your response
Once your response is complete, please return to the Home page, check the box next to the "Global Covenant module" and click Submit.

CDP: [X][-,-][P2]

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