Data provided for the CDP Cities 2015 Report



Written by

Report analysis & information design for CDP by



In partnership with



Bloomberg Philanthropies



New Taipei City in Context 04

New Taipei City in Focus 06

Introduction 08

Governance 10

Risks & Adaptation 16

Opportunities 24

Emissions - Local Government 28

Emissions – Community 38

Strategy 48

CDP, C40 and AECOM are proud to present results from our fifth consecutive year of climate change reporting for cities. It was an impressive year, with 308 cities reporting on their climate change data (six times more than the number that was reported in the survey's first year of 2011), making this the largest and most comprehensive survey of cities and climate change published to date by CDP. City governments from Helsinki to Canberra to La Paz participated, including over 90% of the membership of the C40 – a group of the world's largest cities dedicated to climate change leadership.

Approximately half of reporting cities measure city-wide emissions. Together, these cities account for 1.67 billion tonnes CO_2e , putting them on par with Japan and UK emissions combined. 60% of all reporting cities now have completed a climate change risk assessment. And cities reported over 3,000 individual actions designed to reduce emissions and adapt to a changing climate. CDP, C40 and AECOM salute the hard work and dedication of the world's city governments in measuring and reporting these important pieces of data. With this report, we provide city governments the information and insights that we hope will assist their work in tackling climate change.

This document contains the questionnaire data provided to CDP from New Taipei City as part of its 2015 CDP submission.

To see all of the results for all participating cities, visit https://www.cdp.net/ cities. The graphics in this document are from the 2015 CDP Cities infographic.

Photos are by Hon Wah Hamlet Kwan.



New Taipei City in context

Number of cities responding per year





New Taipei City participation

2014

207 308



Total population of cities responding in 2015

446,186,833

Where New Taipei fits





77 medium

600k-1.6m population





60 large

Year reported **2015**

Area 2,053 km²

Population

3,954,929 New Taipei City in focus

Inventory method

Guideline of GHG accounting and inventory issued by Taiwan EPA



102 cities reporting emissions of less than 10,000,000 metric tonnes CO₂e

5,000,000 Metric tonnes CO₂e

0 Introduction

Situated in the northern part of Taiwan, surrounding the country's capital, New Taipei City has a population of over 3.9 million and an area of 2052 km². Since 2010, the city has become one of the newest cabinet levels of municipality of the Republic of China with the present Mayor being Dr. Eric Liluan Chu.

Due to its location advantages, today's New Taipei City is a major city of business industries second to Taipei City, with over 250,000 privately owned companies and 20,000 factories, which sums up to a total capital of NTD1.8 trillion. The high technology industry alone generates annual revenue of NTD4 trillion. High technology, service and tourism are all part of the major industries in New

Introduction

Taipei City, attracting a large work force from all over the country with abundant employment opportunities. As a result, 70% of the population are from different parts of Taiwan.

New Taipei City has been on a mission, and stresses the importance of raising global competitiveness by working closely on industrial, cultural, tourism, transportation and city developments in order to accommodate the global trend, transforming itself into an international city.

1.1 Governance

New Taipei City's process for managing progress and responsibility for climate action:

Emissions Reductions and Adaptation

We publish an inventory report every year and conduct forward planning on reduction strategies and measures.

We completed a climate change adaptation project in 2013. It summarizes the impacts we are facing and the vulnerabilities.

Governance

New Taipei City has committed to adapting to climate change.

Signed declaration for "International Summit on Climate Change and Low Carbon Metropolises" Declaration: Urban Empowerment for Sustainable Development. The rights of future generations must be protected to ensure continued access to clean water, pure air, energy supply, biodiversity and climatic conditions that preserve coastlines while diminishing risks of extreme storms and droughts.

New Taipei City has a plan that addresses climate change adaptation:

2013 New Taipei City Climate Change Adaptation Project

New Taipei City anticipates that national and/ or regional climate change activities will have impacts on New Taipei City's own climate change activities.

We 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 and strategies. In addition, the Central Government published the "Adaptation Strategy to Climate Change in Taiwan" in 2012. We followed the principle and assessment process recommended in the report to implement a city-wide vulnerability assessment.

Overall, New Taipei City Government makes efforts with the Central Government to prepare for the impacts of climate change by drawing up local policy on the basis of national climate change policy and activities.

New Taipei City incorporates sustainability goals and targets into the master planning for the city.

In accordance with the strategic plan (2013-2016) issued by New Taipei City government, Economic Development Department, Education Department, Environmental Protection Department, Urban and Rural Development Department and Transportation Department combined their efforts to build up New Taipei City as a low-carbon city. The measurements could be classified into five aspects: green building, green transportation, green energy, resource recycling and sustainable living environment. 1. Green building: We encourage departments, schools and low-carbon communities to install green roofs and walls. In addition, under the assessment framework for new buildings, developers and the building will be asked to receive silver certification of green building mark.

2. Green transportation: We have built up an automatic public bicycle system throughout the city, we will keep operating and increasing its density. We also actively promote electric vehicles and scooters by completing its infrastructure.

3. Green energy: We assist industry to improve their production processes and energy efficiency, and encourage public and private buildings to install renewable energy equipment (especially solar PV) to achieve our renewable energy target.

4. Resource recycling: The Environmental Protection Department promotes secondhand items recycling, recycle bag and biogas power generation to reduce waste and energy consumption.

5. Sustainable living environment: We promote energy saving services to the private sector; subsidize the reform of community and elect 'Little chiefs of Environmental Protection Bureau' to achieve sustainable living environment in many ways. In addition, we also review our targeted performance and achievements on GHG reduction strategies annually.

New Taipei City has a climate change action plan for reducing GHG emissions:



2.1 Physical risks

Current and/or anticipated effects of climate change present significant physical risks to New Taipei City.



Risks & Adaptation

More hot days

It may increase the water resource demand and threaten the water supply stability. It also exacerbates the heat island effect and puts outdoor workers and energy disadvantages at risk.

Greater temperature variability

Large temperature variability due to climate change will have severe consequences on human health, especially to elderly people and patients of cardiovascular diseases. Some areas have higher percentages of elderly population without enough emergency medical resources.

More frequent heat waves

It seems that the probability of occurrence of heat wave is low.

Warmer water temperatures

It may lower power plant's water use efficiency.

Changes in humidity

It shows no obvious impact now.

More frequent rainfall

It shows no obvious impact now.

More intense rainfall

Many potential debris flow torrents are located within New Taipei City; intense rainfall may result in severe landslide disasters. Besides, urban sewer systems may not be able to handle more intense rainfall and can result in overflow and flooding.

Increased average annual rainfall

It shows no obvious impact now.

More frequent droughts

Drought impacts seriously on people's livelihood.

More intense droughts

Drought impacts seriously on people's livelihood, and may raise health concerns (gastrointestinal infectious diseases). In addition, high water-dependant industries may increase operation costs during the drought period.

Change in seasonality of rainfall

The projection shows that there will be more rainfall in summer and fall and less rainfall in spring and winter. The phenomenon may bring out adverse impacts on water supply stability.

Increased frequency of large storms

Large storms may result in landslides, flooding, increased river turbidity and the opportunities of surges. All of them could severely threaten the safety on lives and poverty.

Increased wind speeds

It shows no obvious impact now.

Compounding factors may worsen the physical effects of climate change in New Taipei City.

Growth in the number of commercial and residential buildings, resulting from increasing population and immigration may exacerbate the urban heat island effect.

New Taipei City considers that the physical impacts of climate change could threaten the ability of businesses to operate successfully.

Higher temperature and increased frequency of extreme rainfall caused by climate change may increase operating costs of industries and reduce the service quality of the government, such as more energy consumption and unstable communication service during typhoon periods. However, our infrastructure and soft measures (such as training) will support us to deal with climate change properly.

A climate change risk or vulnerability assessment has been undertaken for the New Taipei City area.

The primary methodology used to undertake the assessment was the UK Climate Impacts Framework (UKCIP)

2.2 Climate Hazards

New Taipei City currently experiences the following climate hazards:

Extreme hot weather

Heat wave

Extreme winter conditions

Extreme hot weather

Flash/surface flood

River flood

Drought

Vector-borne disease

Drought

Landslide

Severe wind

New Taipei City expects the following hazards to affect the city in the future:

Rain storm

Cyclone (Hurricane/Typhoon)

Tropical storm

Drought

Flash/surface flood

River flood

Coastal flood

Storm surge

Landslide

Water-borne disease

Vector-borne disease

Cities are at risk from climate change



2.3 Adaptation

Actions New Taipei City is taking to reduce risks to infrastructure, citizens, and businesses from climate changes include the following:

Flood mapping Hazard: Precipitation

Other measures include: Landslide risk mapping, Crisis management including warning and evacuation systems, Public preparedness, Community engagement/education

Awareness campaign/education to reduce water use

Hazard: Water scarcity

Other measures include: Disease prevention measures, resilience and resistance measures for buildings, Diversifying power/energy supply.

Landslide risk mapping

Hazard: Precipitation

Other measures include: Flood mapping, Crisis management including warning and evacuation systems, Public preparedness, Community engagement/education.

2.4 Social risks

New Taipei City faces social risks as a result of climate change.

Increased demand for public services (including health)

Timescale:

Some areas have higher percentage of elderly population without enough emergency medical resources.

Increased risk to already vulnerable populations

Timescale: 🕨

More hot days may put energy disadvantages at risk.

-->



$\cap 1$	0					1 B.	
\prec \square	()	nı	nn	rti.	ını	тι,	<u> </u>
0.1	\mathbf{v}	М	μυ	I LL			

Climate change action presents economic opportunities for New Taipei City.

Opportunities

New Taipei City is positioning itself to take advantage of opportunities from taking climate change action.

Development of new business industries (e.g. clean tech)

1. Solar energy industries have been engaged to offer onestop services for the public energy conservation improvement guided by mode of ESCO. 2. We are promoting a pilot project for electric vehicles in accordance with Central Government policy, aiming to increase the use of electric vehicles (EVs) by raising the public's understanding of electric vehicles and building up a friendly electric vehicle charging environment.

Additional funding options

Some banks have committed to support solar PV installation by reducing the financing threshold.

Improved efficiency of operations

We improve our energy efficiency through many measures, such as reduction of electricity/oil consumption in the public sector, upgrading traffic lights controls and converting gasoline engines to propane in public streets, etc.

Increased energy security

We subsidize non-public buildings (non-governmental organizations, companies, community committees, academic institutions etc.) to install solar energy equipment.

Increased attention to other environmental concerns

We hold several information sessions to increase public awareness of various environmental issues, host environmental education activity 'Little chiefs of Environmental Protection Bureau' to encourage our children to develop respect and a caring attitude towards the environment. We also offer cash incentives to the public to save energy by holding energy-saving contests.

Increased infrastructure investment

In order to reduce carbon emissions and increase energy efficiency, we cooperate with private companies to implement public lighting LED replacement projects and install smart metering systems in schools. We also actively promote the ESCO industries to invest in low-carbon businesses.

OG CITIES That reported are taking action

or 1/3 of cities that reported are taking action to de-carbonize their energy supply.

OF these cities see an ECONOMIC OPPORTUNITY in climate change. New Taipei City is hoping to attract private sector involvement for the following climate-related projects:

- 1. Promotion of solar photovoltaic power generation system.
- 2. Replacement of energy-efficient lighting equipment.
- 3. Promotion of electric scooters.
- 4. Promotion of energy-saving products.
- 5. Subsidy reform for communities.

4.1	Date	and	boun	dary
-----	------	-----	------	------

New Taipei City is reporting a GHG measurement inventory for a period of one year.

Tue 01 Jan 2013 - Tue 31 Dec 2013

Boundary typology used for New Taipei City's GHG emissions inventory:

Departments, entities or companies over which financial control is exercised

Emissions – Local Government

4.2 GHG emissions data	The primary protocol used by New Taipei City to inventory emissions:
	Guideline of GHG accounting and inventory issued by Taiwan EPA, which mainly refers to the "International Emissions Analysis Protocol (ICLEI)" and "2006 IPCC Guidelines for National Greenhouse Gas Inventories".
	Gases included in emissions inventory:
	CO ₂ PFCs CH ₄ SF6 N ₂ O HFCs
	Total (Scope 1 + 2) emissions for New Taipei City:
	160,099
	Metric tonnes CO ₂ e

Breakdown of New Taipei City's GHG emissions by scope:

Scopes are a common categorisation method. Scope 1: All direct GHG emissions (with the exception of direct CO_2 emissions from biogenic sources). Scope 2: Indirect GHG emissions associated with the consumption of purchased or acquired electricity, steam, heating, or cooling.



Total Scope 2 activity



Total amount of fuel (direct/Scope 1 emissions) consumed in New Taipei City during the reporting year:

Buildings - Natural gas



Buildings - Liquidfied Petroleum Gas (LPG)

13_{Metric tonnes}

Buildings - Liquefied Natural Gas (LNG)

5,551_{M³}

Buildings - Residual Fuel Oil

1,216,268

Buildings - Biodiesel

5,082

Buildings - Other

1,086_{Metric tonnes}

Busses - Diesel/Gas oil

14,641

Buses- Motor gasoline (petrol)

50L

Municipal Vehicle Fleet - Motor gasoline (petrol)

7,244,101

Municipal Vehicle Fleet - Biodiesel

201

Municipal Vehicle Fleet - Diesel/ Gas oil

22,861,018

Municipal Vehicle Fleet - Liquefied Petoleum Gas (LPG)



Electricity, heat, steam, and cooling (indirect/Scope 2 emissions) purchased by New Taipei City during the reporting year:

Electricity

129,175,713_{kWh}

New Taipei City does not measure Scope 3 emissions.

Breakdown of New Taipei City's GHG emissions by department (total):

Environmental Protection Department 68,003,059 Metric tonnes C0,e

Police Department

18,384,703 Metric tonnes C0,e

Education Department

14,460,037 Metric tonnes C0,e

Secretariat **12,101,228** Metric tonnes C0,e

District office **8,741,816** Metric tonnes C0₂e



6,843,102 Metric tonnes CO₂e Public Health Department 6,613,495 Metric tonnes CO₂e Water Resources Department 634,399 Metric tonnes CO₂e **Fire Department** 624,816 Metric tonnes CO_ge **Civil Affairs Department** 71,026 Metric tonnes CO_ge Social Affairs Department 2,622,956 Metric tonnes CO,e

Cultural Affairs Department

Land Administration Department **2,435,397** Metric tonnes C0,e 1,823,052 Metric tonnes CO₂e Transportation Department 879,261 Metric tonnes CO₂e Agriculture Department 756,269

Finance Department

Metric tonnes CO₂e

Hakka Affairs Department

624,820 Metric tonnes C0,e

Public Works Department

420,919 Metric tonnes C0,e

Labor Affairs Department

478,627 Metric tonnes CO,e

Urban and Rural Development Department



Indigenous Peoples Department

43,723 Metric tonnes CO₂e

Department of Budget, Accounting and Statistics



Legal Affairs Department

4,877 Metric tonnes CO₂e

4.3 External verification	New Taipei City's emissions have not been externally verified.
	The City chooses to engage a consultant's support for inventory report reviewing.



5.1 Date and boundary

New Taipei City is reporting a GHG measurement inventory for a period of one year.

Tue 01 Jan 2013 - Tue 31 Dec 2013

Boundary typology used for New Taipei City's GHG emissions inventory:

Administrative boundary of a local government

Emissions – Community

5.2 GHG emissions data	New Taipei City has used Guidelines of GHG accounting and inventory issed by Taiwan EPA which is designed on the basis of International Emissions Analysis Protocol.
	Gases included in emissions inventory:
	CO ₂ PFCs CH ₄ SF ₆ N ₂ O HFCs
	Total (Scope 1 + 2) emissions for New Taipei City:
	18,096,066 Metric tonnes CO ₂ e

Breakdown of New Taipei City's GHG emissions by scope:

Scopes are a common categorisation method. Scope 1: All direct GHG emissions (with the exception of direct CO_2 emissions from biogenic sources). Scope 2: Indirect GHG emissions associated with the consumption of purchased or acquired electricity, steam, heating, or cooling.

Scope 1 exluding emissions from grid-supplied energy

generation

7,109,704 Metric tonnes CO₂e

Scope 1 emissions from grid-supplied energy generation

within the city boundary

4,141,772 Metric tonnes C0,e

Total Scope 1 activity

11,251,476 Metric tonnes C0,e

Total Scope 2 activity

10,986,361 Metric tonnes C0₂e Breakdown of these emissions by end user, economic sector, IPCC sector, GHG or any other classification system used:

End user: buildings, water, waste, transport. Economic sector: residential, commercial, industrial, institutional. IPCC sector: stationary combustion, mobile combustion, industrial processes, waste. Greenhouse gas: CO₂, CH₄, N₂O etc.

Residential/commercial sector - Scope 1

534,666 Metric tonnes CO₂e

Residential/commercial sector – Scope 2

5,572,099 Metric tonnes C0,e

Industrial sector (energy use) - Scope 1

1,082,323 Metric tonnes CO₂e

Industrial sector (fuel) – Scope 2

5,414,262

Transportation sector Scope - 1

4,572,470 Metric tonnes CO₂e

Transportation sector Scope - 2

155,044 Metric tonnes CO,e Industrial Processes and Product Use - Total figure

1,005,465 Metric tonnes C0,e

Agriculture sector – Total figure

18,073 Metric tonnes CO₂e

Waste sector - Total Figure

202,952

Metric tonnes CO₂e

Total amount of fuel (Scope 1) consumed in New Taipei City during the reporing year:

Natural gas

 $\begin{array}{l} 354,339,728_{m^{3}} \\ \text{Motor gasoline (petrol)} \\ 1,395,941,383_{L} \\ \text{Diesel/Gas oil} \\ 454,752,998_{L} \end{array}$

Liquefied Petroleum Gas (LPG) 84,058,918_L Liquefied Natural Gas (LNG) **1,569,023**_{m³} Coal (unknown) 400,275,588 Metric tonnes Residual fuel oil **68,587,740**∟ Kerosene **858,000**

Other:

1,427,600 L Electricity, heat, steam, and cooling (indirect/ Scope 2 emissions) purchased by New Taipei City during the reporting year:

Electricity

19,999,395,205

New Taipei does not measure Scope 3 emissions.

The Central Government has measured emissions by material flow analysis method, which covers most of Scope 3 emissions. Therefore, New Taipei City Government focuses on measuring Scope 1 and Scope 2 emissions.

New Taipei City's emissions have increased.

Emissions have increased due to a growing population and regulation on reporting emissions for high carbon density industries.

5.3 External verification

New Taipei City's emissions have been externally verified.

Sinotech Engineering Services, LTD.

2013

Percentage of emissions inventory audited:
100%

2. Sectors of emissions inventory audited: transportation, residence and business, industry, waste, agriculture and forestry.



43 cities reported that they want private sector support to deliver community renewable projects. CDP data indicates that less than half of these projects are located in the global south.

\$57 TRILLION

will be invested in infrastructure through 2030. That means that less than 0.01% of this sum, or just \$1 OF Every \$8k

spent is required to support delivery of renewable goals for all the CDP cities that report a target. At just over \$7 billion in total, this is still a large price tag and represents a considerable challenge for cities, but with global focus it can be achieved.

CAN CITIES OUT FOSSIL FUELS?

162 CITIES Reported their Energy Mix,

revealing a diversity of responses, for cities large and small across all regions.

The results are diverse. Revealing mixes from 100% Non-Fossil to 100% continuel Reliance on Fossil and Many Combinations thereof.









Strategy

6.1 Local government operations – GHG emissions reduction New Taipei City has a GHG emissions reduction target in place for local government operations. New Taipei City's local government operations GHG emissions reduction target in detail:

Baseline year

Percentage reduction target

All departments' oil and electricity consumption

10%

Target date

2015

Activities undertaken to reduce New Taipei City's emissions in its government operations:

Buildings Energy efficiency/ retrofit measures

Some organizations have installed Power Monitoring and Control Systems to reduce energy consumption, and most organizations have implemented an energy-saving retrofit program.

Outdoor Lighting LED / CFL / other luminaries technologies

Streetlight retrofit program

Water Metering and billing

Water metering and billing

6.2 Community – GHG emissions reduction New Taipei City has a GHG emissions reduction target in place for its community.

New Taipei City's community GHG emissions reduction target in detail:

Baseline year

2006

Baseline emissions

18,487,331

Metric tonnes CO₂e

Percentage reduction target

20%

Target date

2026

Activities currently being undertaken to reduce emissions city-wide:

Buildings Energy efficiency/ retrofit measures

Anticipated reduction: 2,261 metric tonnes CO, e per year

Buildings

Carbon emissions reduction from industry

Anticipated reduction: 15,000 metric tonnes CO₂e per year

Buildings

On-site renewable energy generation

Anticipated reduction: 1,700 metric tonnes CO₂e per year

Community-Scale Development

Green space and/ or biodiversity preservation and expansion

Anticipated total reduction: 2,000 metric tonnes CO₂**e** Period: 2011~2015

Community-Scale Development

Urban agriculture

Anticipated total reduction: 2,645 metric tonnes CO₂**e** Period: 2011~2014

Finance and Economic Development

Instruments to fund low carbon projects

Anticipated reduction: 97,000 metric tonnes $\rm CO_2e$ by 2015

Mass Transit

Improve fuel economy and reduce CO₂ from trucks

Anticipated reduction: 28,553 metric tonnes CO₂e by 2014

Mass Transit

Improve rail, metro, and tram infrastructure, services and operations

Anticipated reduction: 34,609 metric tonnes $\rm CO_2e$ by 2026

Private Transport

Transportation demand management

It's difficult to evaluate the reductions due to trans-boundary riding behaviors.

Private Transport

Infrastructure for non motorized transport

Anticipated reduction: 280 metric tonnes CO, e per year

Waste

Landfill management

Anticipated reduction: 750 metric tonnes CO₂e per year

6.3 Planning

The city-wide energy mix for New Taipei City's electricity:

Coal

37.60%

Gas

32.30%

Oil

2.90%

Nuclear

18.60%

Hydro

3.40%

New Taipei City has a renewable energy target.



1. Develop solar PV (photovoltaic) systems and other renewable energy by establishing the green industry association.

2. The green industry association aims to enhance competitiveness of green energy businesses of New Taipei City.

6.4 **Water**

New Taipei City foresees substantive risks to its water supply in the short or long term.

Risks to New Taipei City's water supply as well as timescale:



Increased water stress or scarcity

Risk: Timescale: According to the "Climate Change in Taiwan: Scientific Report 2011", in the future, precipitation during summer and fall seasons is likely to increase while decreasing during spring and winter seasons in North Taiwan. The phenomenon may cause adverse impacts on water supply stability. Water scarcity will worsen the public's quality of life. However, according to the analysis results of "Regional water management project of Northern Taiwan", it shows that the risks to water supply is low.

Actions (on the supply and demand side) that New Taipei City is taking to reduce risks to its water supply:

Increased water stress or scarcity

Conservation awareness and education

We subsidize communities to retrofit their high-water consumption applications, promote water use recording and water reclamation and reuse by "Regulations for reforming grants to low-carbon community".







CDP team

Conor Riffle Director, Cities and Data Product Innovation

Maia Kutner Head of Cities Andreia Banhe

Account Manager, Latin America

Hanah Paik Account Manager, Asia Pacific

Katie Walsh Account Manager, North America

Juliette Daniels Account Manager, Europe, Middle East, and Africa Sara Telahoun

Project Officer

Simeran Bachra Data Analyst

CDP Board of Trustees

Chairman: Alan Brown Wellcome Trust

Ben Goldsmith WHEB Group Chris Page Rockefeller Philanthropy Advisors

James Cameron Overseas Development Institute (ODI)

Jeremy Burke Green Investment Bank

Jeremy Smith Kate Hampton

Children's Investment Fund Foundation Martin Wise Relationship Capital Partners

Takejiro Sueyoshi Tessa Tennant

AECOM team

Claire Bonham-Carter Principal

Ben Smith Director of Sustainable Development

Culley Thomas Senior Strategic Planner

Christopher Pountney Principal Engineer, Sustainability Daniel Elsea

Creative Director

Contact Claire Bonham-Carter AECOM +1 415 955 2800 claire.bonham-carter@aecom.com www.aecom.com

C40 team

Seth Schultz Head of Research, Measurement and Planning

Michael Doust Head of Measurement and Planning

Brooke Russell Head of Editorial and Content

Kathryn Vines Head of Climate Change Adaptation Research

Hanya Gartner Manager, City Reporting

CDP

3rd Floor, Quadrant House, 4 Thomas More Square, Thomas More Street, London, E1W 1YW Tel: +44 (0) 20 3818 3900

www.cdp.net cities@cdp.net @CDP

Lead sponsors

