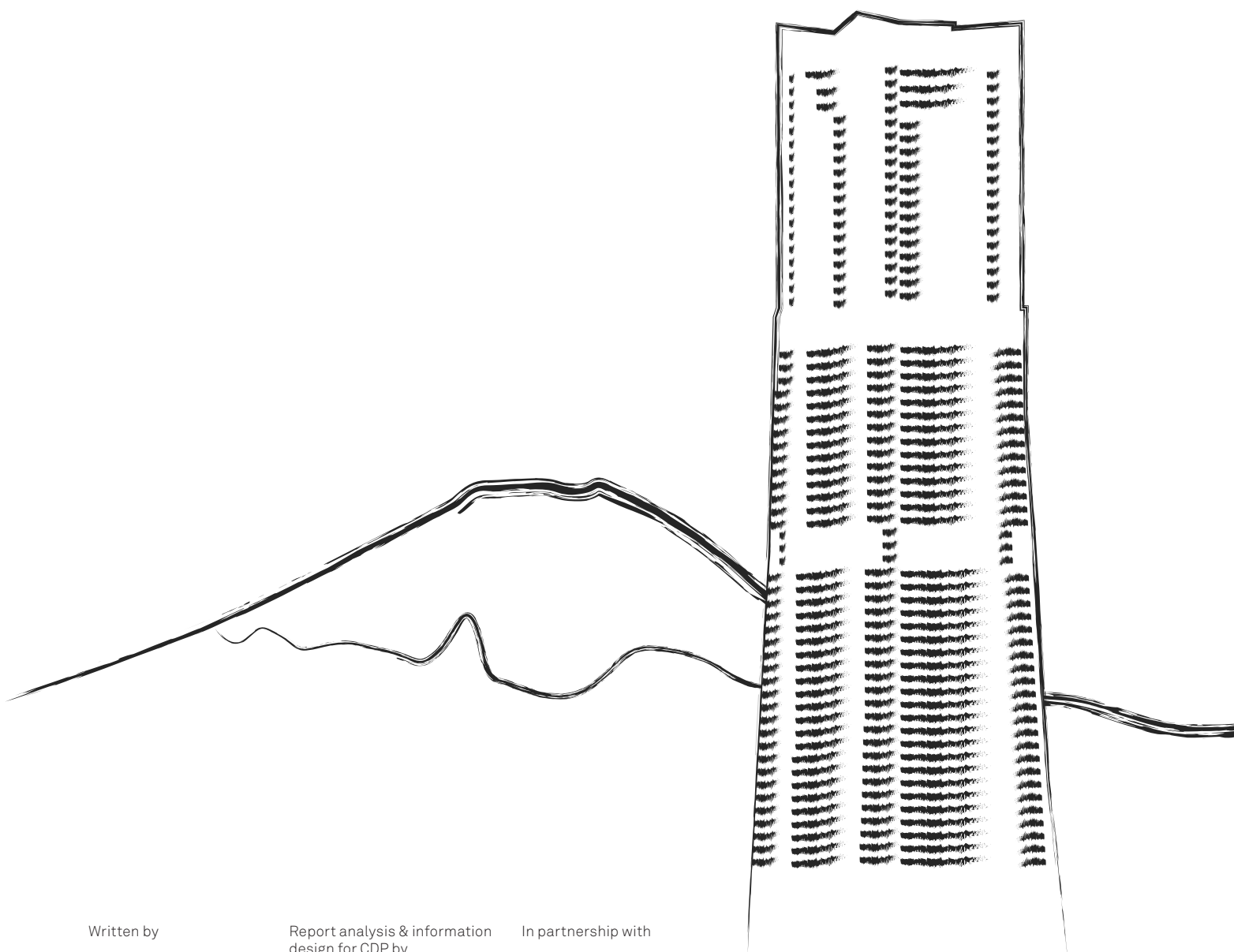


Data provided for the
CDP Cities 2014 Report

www.cdp.net

Yokohama



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In partnership with



AECOM



**Bloomberg
Philanthropies**



Yokohama in Context 02

Yokohama in Focus 04

Introduction 06

Governance 8

Risks & Adaptation 10

Opportunities 16

Emissions – Local Government 19

Emissions – Community 25

Strategy 29

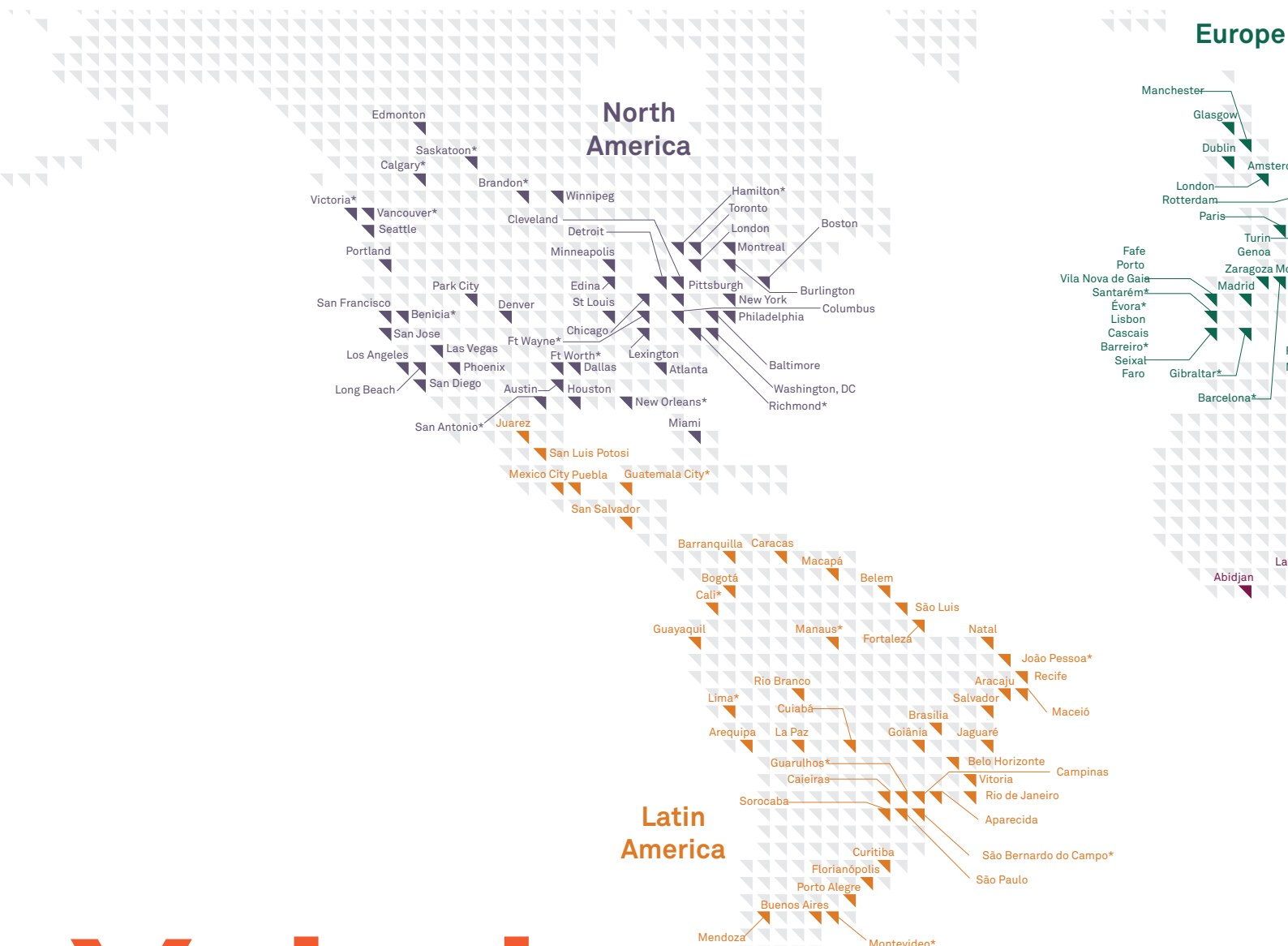
CDP, C40 and AECOM are proud to present results from our fourth consecutive year of climate change reporting for cities. It was an impressive year, with 207 cities reporting on their climate change data (an 88% increase from 2013), making this the largest and most comprehensive survey of cities and climate change published to date by CDP. City governments from Denver to Jakarta to Abidjan participated, including over 90% of the membership of the C40 – a group of the world's largest cities dedicated to climate change leadership.

Over half of the reporting cities measure city-wide emissions. Together, these cities account for 1.2 billion tonnes CO₂e, putting them on par with Japan, the world's third largest economy and fourth largest emitter of greenhouse gas emissions. 60% of all reporting cities now have completed a climate change risk assessment. And cities reported over 2,000 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 the City of Cleveland as part of its 2014 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 CDP Cities 2014 infographic and the Protecting Our Capital report.



Yokohama in context

Number of cities responding per year

48

2011



Yokohama participation

73

2012



110

2013



207

2014





57 cities
with **greater than**
1,600,000 people

Year reported

2014

Area

437.57

km²

Population

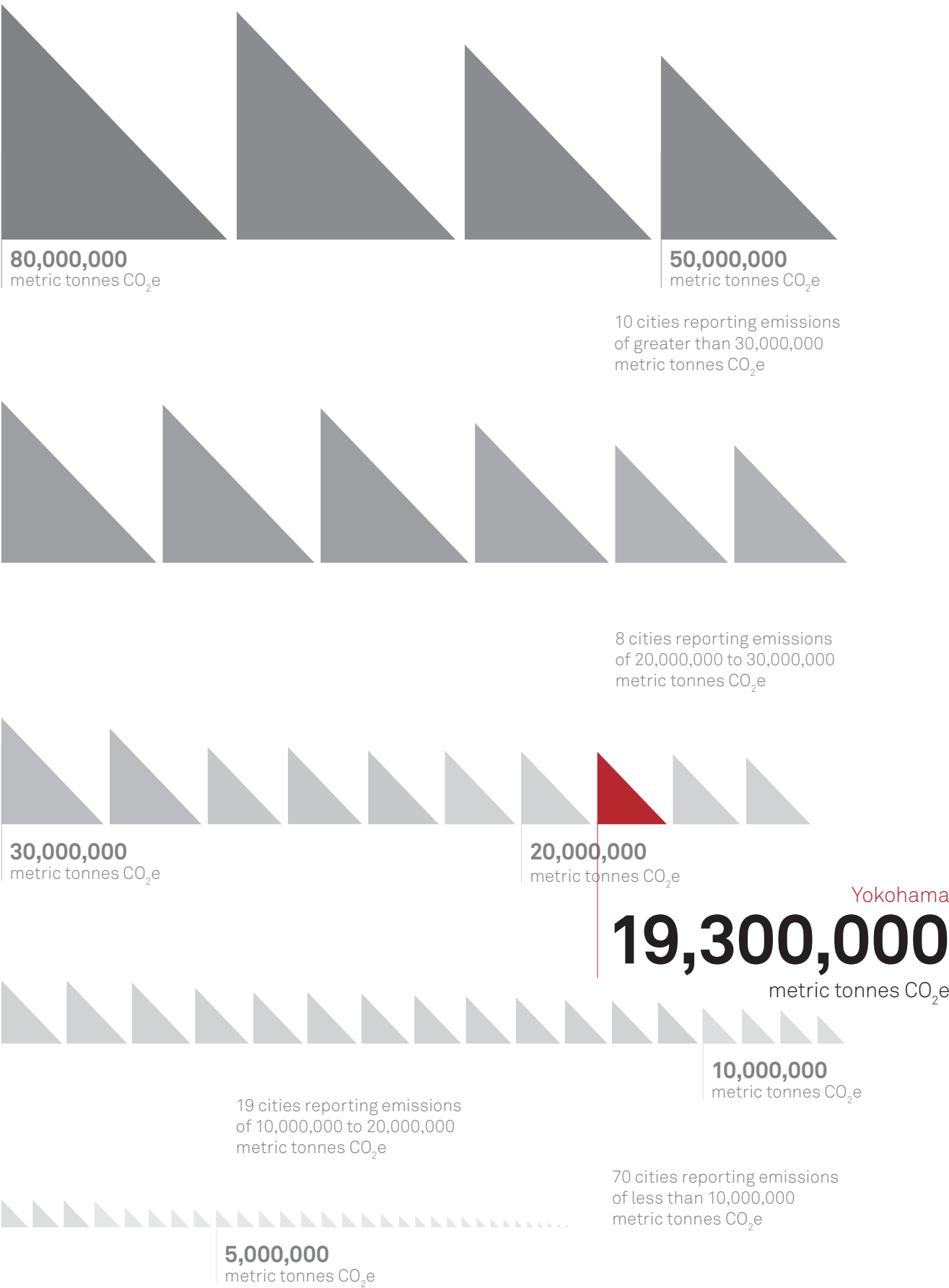
3,702,551

Yokohama in focus

Inventory method

Yokohama City Action Plan for Global Warming Countermeasures (district measure edition, 2011) prepared in accordance with the provisions of Article 20, Item 3, Paragraph 3 of The Act on Promotion of Global Warming Countermeasures.

108 cities reporting emissions in 2014



0 Introduction

The city of Yokohama is located on the eastern end of Kanagawa Prefecture (a larger local administrative entity), in the central part of Japan. It is bordered by Tokyo Bay on the east, the city of Kawasaki on the north, the cities of Yamato and Fujisawa on the west, and the cities of Kamakura, Yokosuka, and other communities on the south. The center of the city lies about 30 kilometers from the center of Tokyo.

Yearly average temperature: 16.6 degrees C; Yearly precipitation: 1,516.5 mm; Yearly hours of sunlight: 2,256.7 hrs (2013).

Based on the foundation provided by its port, which is the biggest international port in Japan, Yokohama functions as one of the core cities in the National Capital Area, and is one of the 20 major Japanese cities designated by Cabinet order.

According to the stipulations of the Local Autonomy Act, to be designated by Cabinet order, cities must have a population of at least 500,000 (about 700,000 or more in practice). The cities so designated are

Introduction

accorded treatment different from other cities in the aspects of allocation of duties, involvement of the prefectural governor (mayoral authority), administrative organization, and finances.

In fiscal 2010, the gross municipal product (indicating the degree of economic activity in the city) came to about 12.6 trillion yen.

In fiscal 2009, the breakdown of the gross municipal product by industry was led by tertiary industry (service sector) at 84.4 percent, followed by secondary industry (manufacturing) at 12.6 percent and primary industry (agriculture, forestry, and fishery) at less than 0.1 percent.

Yokohama was organized into a city in 1889 and began applying the ward system in 1927. At present, it contains 18 wards.

Based on the Local Autonomy Act, the governance organization in the city consists of the City Council (the decision-making organ, with a fixed membership of 86 at present), the mayoral office as the executive organ, and administrative commissions. The City Council members and mayor are elected directly by the citizens (each serving terms of four years). The City Council and the mayor are in positions of mutual independence and equality, and have a check-and-balance relationship with each other.

There are three deputy mayors who serve as the supreme auxiliary organ for the mayor. The city organization also contains 26 headquarters, bureaus, office of accounting, and boards as well as 18 ward offices. Municipal employees (civil servants) number 25,283. (All figures as of April 2013.)

The fiscal 2013 city budget came to about 3.4 trillion yen (general account: 1.5 trillion yen; special account: 1.3 trillion yen; corporate account: 0.5 trillion yen).

1 Governance

Yokohama determines levels of greenhouse gas (GHG) emissions, promotes their reduction, and manages the progress of plans to this end. These activities are in accordance with the provisions of Article 20, Item 3 of the Act on Promotion of Global Warming Countermeasures, and based on two ad-hoc action plans (Yokohama City Action Plan for Global Warming Countermeasures), one for the entire city, and the other for city operations and works (prepared by City Hall). Both of these plans were revised in 2014. The Cabinet Secretariat assesses and releases information on the progress of plans in the city as a whole, because Yokohama is one of the country's environmental model cities.

Governance

Yokohama provides incentives for management of climate change issues, including the attainment of GHG reduction targets.

Recognition (non-monetary)

Announcement of the names of businesses with excellent plans based on the Action Plan for Global Warming Countermeasure Program.

Impact of national and/or regional climate change activities on Yokohama's climate change activities.

The formulation of the aforementioned Yokohama City Action Plan for Global Warming Countermeasures is grounded in the aforementioned Act for Promotion of Global Warming Countermeasures, its legal basis, and the electrical power mix (which affects power sector emission coefficients) in the basic energy plan prepared by the national government. Amendment of the Act or revisions in the plan consequently exert an influence on countermeasures and initiatives in Yokohama.





2 Physical risks

Current and/or anticipated effects of climate change present significant physical risks to Yokohama:

Seriousness

Less Serious  Serious  Extremely Serious 

Timescale

Current	
Short-term	
Medium-term	
Long-term	

Risks & Adaptation

More hot days

Risk:  Timescale: 

Heat strokes and other damage to health, and damage from inundation of lower levels in railway stations etc.

Hotter summers

Risk:  Timescale: 

Heat strokes and other damage to health, and damage from inundation of lower levels in railway stations etc.

More intense rainfall

Risk:  Timescale: 

Heat strokes and other damage to health, and damage from inundation of lower levels in railway stations etc.

Increased urban heat island effect

Risk:  Timescale: 

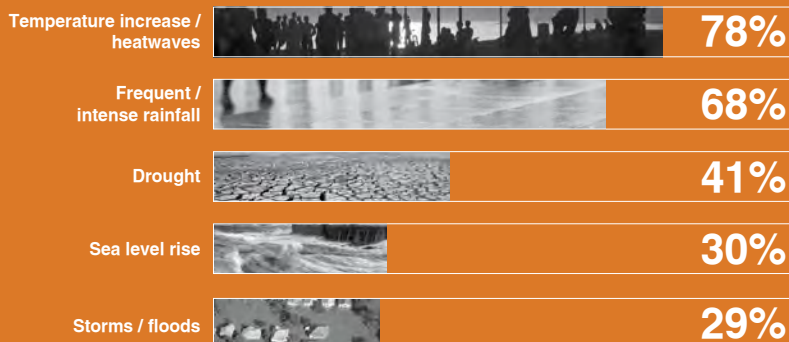
Heat strokes and other damage to health, and damage from inundation of lower levels in railway stations etc.

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

There could be a change in production processes as a result of limitations placed on power consumption accompanying an increase in power use for air conditioning during hot summer days.

The severance of supply chains caused by natural disasters at overseas sites of production could affect business activities in the city.

Cities are facing risks from climate change.



Percentage of cities facing different categories of natural risk.

3 Adaptation

Yokohama has a plan for increasing the city's resilience to the expected physical effects of climate change.

“6-4 Adaptation to Environmental Change due to Climate Change” in the Yokohama City Action Plan for Global Warming Countermeasures (2014)

Actions that Yokohama is taking to reduce the risk to the city's infrastructure, citizens, and businesses from climate changes include the following:

More hot days

Publicity campaigns for ways to prevent heat stroke

"Cool-biz" campaign

Demand control by HEMS

Hotter summers

Publicity campaigns for ways to prevent heat stroke

"Cool-biz" campaign

Demand control by HEMS

More intense rainfall

Flood mapping

Sewerage improvement

Preparation of hazard maps for flooding and local runoff

Training for measures to counter damage from wind and rain

Increased urban heat island effect

Heat mapping and thermal imaging

Heat-island countermeasures (investigative research)

"Suzukaze" (refreshing breeze) project pavement

Permeable pavement,

Management of roadside trees

Yokohama has undertaken or will undertake additional efforts to ensure operational continuity for both the city government and the businesses in the event of a weather-related event.

4 Social risks

Yokohama faces social risks as a result of climate change.

Increased incidence and prevalence of disease: Current

Increase in the number of patients and the disease affliction rate

Increased risk to already vulnerable populations: Medium term

Districts damaged by inundation caused by local runoff

Increased resource demand: Long term

Increase in consumption of power along with the increase in power use for air conditioning

Cities are facing risks from climate change.



5 Opportunities

Climate change presents economic opportunities for Yokohama.

Yokohama is positioning itself to take advantage of opportunities to take climate change action.

Opportunities

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

The construction of schemes for supply of energy-saving housing, electric vehicles, and photovoltaic (PV) power generation systems by companies in the city is providing opportunities for business. Provision of subsidies for purchase of equipment reusing or saving energy is acting to expand demand. In addition, the city is furnishing support for the development of technologies and products in the environmental field by the local manufacturing industry.

Increased attention to other environmental concerns

The construction of schemes for supply of energy-saving housing, electric vehicles, and photovoltaic (PV) power generation systems by companies in the city is providing opportunities for business. Provision of subsidies for purchase of equipment reusing or saving energy is acting to expand demand. In addition, the city is furnishing support for the development of technologies and products in the environmental field by the local manufacturing industry.

Other: increase in environmental industries and launch of environment-related business

The construction of schemes for supply of energy-saving housing, electric vehicles, and photovoltaic (PV) power generation systems by companies in the city is providing opportunities for business. Provision of subsidies for purchase of equipment reusing or saving energy is acting to expand demand. In addition, the city is furnishing support for the development of technologies and products in the environmental field by the local manufacturing industry.

CDP cities represent a growing slice of the world's economy.



That's
28%
of world GDP...



...an incredible
\$21 trillion
in total annual output.



Cities reporting to CDP
have a combined annual budget of
\$954 billion
roughly the annual budget of the UK.

LGO Date and boundary

Yokohama is reporting a GHG measurement inventory for local government operations for a period of one year.

**Sun 01 Apr 2012 –
Sun 31 Mar 2013**

Boundary of Yokohama's Municipal GHG emissions inventory:

The subject is levels related to city duties and works

Emissions – Local Government

LGO GHG emissions data

Yokohama has used the following major sources of emissions in the municipal GHG emissions inventory:

Buildings	Municipal vehicle fleet
Buses	Subway/underground
Electricity generation	Waste collection
Incineration of waste	Wastewater treatment
Maritime port	Water supply

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

Town gas or city gas:

26,000,000
m³

Liquefied Petroleum Gas (LPG)

620,000
m³

Electricity, heat, steam, and cooling (indirect/Scope 2 emissions) that has been consumed by Yokohama during the reporting year:

Electricity consumed

826
GWh

Yokohama calculates the levels of GHG emissions related to city duties and works on the basis of the Yokohama City Action Plan for Global Warming Countermeasures (city hall edition; revised in 2014), which was prepared in accordance with the provisions of Article 20, Item 3, Paragraph 1 of the Act on Promotion of Global Warming Countermeasures.

Total Scope 1 + Scope 2 GHG emissions
for Yokohama local government operations

892,292
metric tonnes CO₂e

Breakdown of Yokohama's GHG emissions by
department

Government buildings, facilities, etc.

118,000
metric tonnes CO₂e

Official vehicles etc.

5,000
metric tonnes CO₂e

General waste treatment works

358,000
metric tonnes CO₂e

Sewage works

183,000

metric tonnes CO₂e

Water works

64,000

metric tonnes CO₂e

High-speed railway service (municipal subway)

56,000

metric tonnes CO₂e

Automobile service (municipal buses)

30,000

metric tonnes CO₂e

Education services

58,000

metric tonnes CO₂e

Hospital services (municipal hospitals)

19,000

metric tonnes CO₂e

Yokohama does not carry out measurement of Scope 3 emissions

Yokohama is not carrying out measurement of Scope 3 emissions, but it is implementing initiatives with Scope 3 in mind, such as promotion of green purchasing.

Yokohama's GHG emissions have increased because emission coefficients in the power sector worsened under the influence of the Great East Japan Earthquake.

LGO External Verification

Currently reported emissions have not been externally verified or audited in part or in whole.

C Date and boundary

Yokohama is reporting a GHG measurement inventory for community for a period of one year.

Thu 01 Apr 2010 – Thu 31 Mar 2011

Boundary of community GHG emissions inventory:

Geopolitical Boundary

Physical areas over which local government has jurisdictional control.

Emissions – Community

Yokohama determines levels of greenhouse gas (GHG) emissions, promotes their reduction, and manages the progress of reduction on the basis of the Yokohama City Action Plan for Global Warming Countermeasures (district measure edition; 2011), which was prepared in accordance with the provisions of Article 20, Item 3, Paragraph 3 of the Act on Promotion of Global Warming Countermeasures. It measures GHG emissions in accordance with the manual for formulation of action plans by local public entities for global warming countermeasures (regional measure edition, Vol. 1), which was formulated by the Ministry of the Environment.

Calculation method for CO₂ only

Fuel combustion

Determination of the yearly amount of consumption for various types of fuel (fuel (heavy) oil, city gas, etc.) in each economic field (energy conversion, industrial, business, residential, and transportation) from various statistical data, and multiplication of the amount for each fuel by its particular CO₂ emission coefficient.

Use of electrical power

Based on the indirect emission method. Collection of data for yearly amount of electrical power consumption in each division from electric power companies and multiplication of the amount by the CO₂ emission coefficient (released by the electric power companies).

Use of heat

Based on the indirect emission method. Calculation from the yearly amount of heat in each division supplied by heat supply companies and the amount of CO₂ emissions.

Waste incineration

Multiplication of the yearly amount of incineration of plastics (several types) and oils (excluding animal and vegetable oils) by their respective CO₂ emission coefficients.

Calculation method for CH₄

Emissions accompanying fuel combustion, agriculture-sourced emissions, waste-sourced emissions, and emissions caused by conversion of forests and grasslands.

Calculation method for N₂O

Emissions accompanying fuel combustion, emissions caused by industrial processes, emissions due to use of organic solvents and other products, agriculture-sourced emissions, and waste-sourced emissions.

Calculation method for HFC, PFC, SF₆

Emissions at the stages of manufacturing and use.

C GHG emissions Data

Total Scope 1 + Scope 2 GHG emissions
for Yokohama community

19,300,000
metric tonnes CO₂e

Yokohama is not carrying out measurement of Scope 3 emissions, but it is implementing initiatives with Scope 3 in mind, such as promotion of green purchasing.

Currently reported emissions have not been externally verified or audited in part or in whole.

Yokohama's GHG emissions have increased because emission coefficients in the power sector worsened under the influence of the Great East Japan Earthquake.

**6 Local government
operations – GHG
emissions reduction**

Yokohama has a GHG emissions reduction target in place for local government operations.

Strategy

GHG emissions reduction target in detail:

Baseline year

2012

Baseline emissions

892,292

metric tonnes CO₂e

Percentage reduction target

8.5%

GHG sources to which target applies

Emissions accompanying city duties and works.

Target date

2017

Activities currently being undertaken to reduce emissions in local government operations:

Energy Demand in Buildings

Energy efficiency/retrofit measures

Setting up energy efficient measuring equipment in public architecture

53 metric tonnes CO₂e

Renewable on-site energy generation

Introduction of solar power system into nursery school

46.4 metric tonnes CO₂e

Setting up rainwater utilization system on public architecture

0.4 metric tonnes CO₂e

Switch to LED for lighting in facilities owned by the city

356 metric tonnes CO₂e

Finance

Carbon finance / markets

Implementation of carbon offset in community festival.

10 metric tonnes CO₂e

ESCO financing

Implementation of ESCO in Public Architecture

2,347 metric tonnes CO₂e

Public Procurement

Encourage low carbon products

Introduction of energy saving ICT equipment of (implementation of energy saving setting for PC in city office

9.4 metric tonnes CO₂e

Energy Supply

Low or zero carbon energy supply generation

Recovery of spent edible oil from municipal elementary schools by welfare facilities, and use of refining units to refine it into biodiesel fuel. The refined oil is used in place of fuel (heavy) oil at the wastewater treatment plants and pumping stations under the jurisdiction of the Environmental Planning Bureau.

183.1 metric tonnes CO₂e

Transport

Improve fuel economy and reduce CO₂ from motorized vehicles

Initiative to introduce electric vehicles into official
vehicle fleet

9.5 metric tonnes CO₂e

Introduction of hybrid bus into city bus

37.9 metric tonnes CO₂e

Application of Bio-diesel Fuel

269.4 metric tonnes CO₂e

7 Community – GHG emissions reduction

Yokohama has a GHG emissions reduction target in place for its community.

Yokohama's GHG emissions reduction target in detail:

Baseline year

2005

Baseline emissions

19,540,000
metric tonnes CO₂e

Percentage reduction target
(emissions accompanying city duties and works)

16%

Target date

2020

Baseline year

2005

Baseline emissions

19,540,000
metric tonnes CO₂e

Percentage reduction target
(emissions accompanying city duties and works)

24%

Target date

2030

Baseline year

2005

Baseline emissions

19,540,000
metric tonnes CO₂e

Percentage reduction target
(emissions accompanying city duties and works)

80%

Target date

2050

Activities currently being undertaken to reduce Yokohama's emissions city-wide:

Energy Demand in Buildings

Building codes and standards

CASBEE Yokohama. Imposition of a requirement for emission notification on owners of structures with a floor area of 2,000 m² or more in the city, and assessment and release of data for energy-saving performance and other items for the buildings in such notifications.

4,100 metric tonnes CO₂e

Finance

Instruments to fund low carbon projects

Subsidies for the cost of installation of fuel cell systems

620 metric tonnes CO₂e

Subsidies for the cost of installation of HEMS

170 metric tonnes CO₂e

Subsidies for energy-saving equipment

920 metric tonnes CO₂e

Assistance for installation of residential PV power generation systems

7,200 metric tonnes CO₂e

Assistance for installation of residential solar heat use systems

30 metric tonnes CO₂e

Transport

Improve fuel economy and reduce CO₂ from motorized vehicles

Assistance of input of electric vehicles and low-emission vehicles

690 metric tonnes CO₂e

Improve the operations of shipping ports

Subsidies for acquisition of green management certification by businesses engaged in port & harbor transportation, warehousing, and marine container transportation

330 metric tonnes CO₂e

Other

Provisions for renewable energy input, study, and reportage

Imposition of a requirement for consideration of renewable energy input on the occasion of construction of new buildings above a certain size

830 metric tonnes CO₂e

Low-carbon storage through conditioning of the production environment

380 metric tonnes CO₂e

Promotion of energy conservation in greenhouses for agricultural production

Subsidies for installation of multi-layer curtains on agricultural production greenhouses and heat pumps with a higher efficiency than oil-fueled heaters

1000 metric tonnes CO₂e

Promotion of greening of rooftops and walls

Assistance with rooftop greening of property on privately-owned land in the city, and planting of lawns on the grounds of schools (nurseries, elementary schools, junior high schools, etc.)

110 metric tonnes CO₂e

8 Planning

Yokohama does not have a renewable energy or electricity target.

Yokohama has climate change-related projects which are targeted to attract private sector involvement.

The Yokohama Smart City Project was selected in April 2010 as one of the projects under the Demonstration Areas of Next-Generation Energy and Social Systems, a Ministry of Economy, Trade and Industry program. It is aimed at building a Yokohama-style sustainable low-carbon city (Yokohama Smart City) through a concerted effort by the citizenry, enterprises, and administrative authorities for input of renewable energy; energy management in units of houses, buildings, and districts; and construction of a new-age transportation system. Project approaches may be exemplified by an energy-saving action experiment conducted with about 1,900 households installed with HEMS; demonstration of a demand-response system utilizing BEMS with the participation of buildings, factories, and collective housing; and Choimobi Yokohama, a proving test of large-scale car-sharing utilizing ultra-compact EVs (New Mobility CONCEPT model).

Yokohama incorporates desired GHG reductions into the masterplanning for the city,

Promotion of measures to counter global warming is positioned as one of the basic initiatives in the Yokohama mid-term four-year plan (running from fiscal 2010 to fiscal 2013).

9 Water

Yokohama foresees substantive risks to the city's water supply in the short and long term.

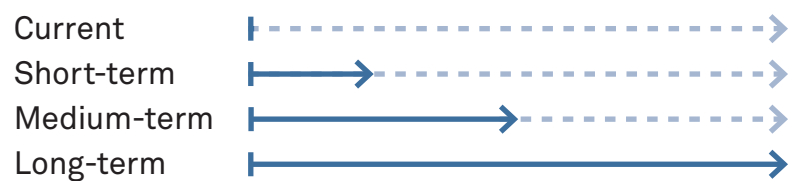
Seriousness

Less Serious !!!

Serious !!!

Extremely Serious !!!

Timescale



Increased water stress or scarcity

Risk !!! Long-term →

Declining water quality

Risk !!! Long-term →

Flooding

Risk !!! Long-term →

Actions Yokohama is taking to reduce risks to its water supply.

Conservation awareness and education

Yokohama is preserving and nurturing the growth of headwaters forest owned by Yokohama city in the village of Doshimura, Yamanashi Prefecture. Doshi Water Conservation Forest volunteer project: improvement of forest for headwaters conservation, in collaboration with NPOs and volunteer groups.

Fund for Headwaters and the Doshi Forest: establishment of a fund with donations from citizens, enterprises, and groups as well as with part of the proceeds from sales of Hamakko Doshi Water, a water product sold in plastic bottles. The Fund is used to support activities for conservation of headwaters.





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