Yokohama City Global Warming Action Plan

January 2023
Yokohama City

Introduction.

We have revised the "Yokohama City Global Warming Countermeasures Action Plan" in order to further promote efforts toward the realization of a decarbonized society. In making these revisions, we have received very valuable opinions and suggestions from citizens and experts. I would like to express my sincere gratitude to all of you.

In addition to climate change caused by global warming and the increasing frequency and severity of natural disasters, problems directly related to the lives of citizens, such as power shortages and rising energy prices, are also arising. The sense of crisis about the future environment has increased the focus on decarbonization, and countries around the world are moving toward a decarbonized society.

In March 2011, Yokohama City formulated the "Yokohama City Global Warming Countermeasures Plan" based on the Law Concerning the Promotion of the Measures to Cope with Global Warming, and in the October 2018 revision of the plan, the city has set a goal of achieving "Zero Carbon Yokohama," which means decarbonization by 2050.

In 2021, the city's economic cycle and sustainable development will be realized along with the promotion of global warming countermeasures.

The "Yokohama City Ordinance on the Promotion of the Formation of a Decarbonized Society," which aims to achieve the goal of a "decarbonized society" by 2022, is now in effect.
On the same month, the Council declared to raise the greenhouse gas reduction target to "50% of the 2013 level" by 2030, which is higher than the national target.

In this revision, we have reviewed our past efforts and established a new basic policy and priority actions that will particularly contribute to achieving our goals. In order to reduce greenhouse gas emissions and achieve sustainable development of the city's economy, we will accelerate our efforts to create decarbonized innovation, enhance decarbonized management, promote decarbonized lifestyles, and take the initiative in decarbonizing city hall.

In 2027, Yokohama will also host the International Garden and Horticulture Expo, the first World Expo to be held in Yokohama, and we will make it a Green Expo, so to speak, that will confront global environmental issues such as the SDGs, global warming, and a decarbonized society, and send a new message from Yokohama to the rest of the world and to Japan.

Even as the effects of climate change become more serious, it is our responsibility to leave a better environment for future generations. In order to do so, it is necessary for us to cooperate with citizens, businesses, and all other related parties to create a synergistic effect. We ask for your continued support and cooperation.

2023 1 月

Mayor of Yokoh 山中竹春

middle of the night

Chapter 1 Background and purpose

1 Purpose of Plan Revision

The Yokohama City Global Warming Action Plan (hereinafter referred to as the "Action Plan") was established in March 2011 (23). The Yokohama City Global Warming Prevention Plan (hereinafter referred to as the "Actual Plan") was formulated in March 2011 (23) and revised in March 2014 (2014) and October (月).

Since then, extreme weather conditions have been seen in many parts of the world that are thought to be caused by climate change, and in Japan, too, there has been an increase in the number of heavy snowfalls.

We are facing unprecedented climatic changes such as floods and heat waves. As human activities contribute to global warming, for example, the risk of flooding due to torrential rains and heat stroke due to extreme heat is expected to increase. Furthermore, the effects of climate change will continue for a long period of time and have a significant impact on the loss of biodiversity. We need to take action to protect the healthy ecosystems that support our livelihoods, and to protect the richness of water and greenery,

In order to meet the 2° C target of the "Paris Agreement" and the 1.5° C target of the current electricity generation, the entire world needs to cooperate in taking action[1] to combat climate change.

While Europe and other countries declared themselves carbon neutral by 2050, Japan also declared itself carbon neutral by October 2020, and then the national target for the reduction of greenhouse gas emissions in 2030 was raised from the previous 26% reduction in 2013 to 46% in 2030, and it was announced that Japan would continue to challenge to reach the 50% mark. The target for the reduction of greenhouse gas emissions in 2030 was raised from the previous 26% reduction in 2013 to 46%, and it was announced that the country would continue to challenge to reach the 50% mark.

In the previous revision of the implementation plan in , the City of Yokohama set a goal of achieving "Zero Carbon Yokohama" by 2050. In June 2021, the Yokohama City Ordinance on the Promotion of the Formation of a Decarbonized Society (hereinafter referred to as the "Decarbonization Ordinance") was implemented with the aim of promoting global warming countermeasures, the circulation of the city economy, and sustainable development. In February 2022, the basic policy for municipal administration in fiscal year 2022 set a target of 50% reduction in energy consumption in fiscal year 2030, which is higher than the national target.

Based on the domestic and international trends such as the increase of the national target for greenhouse gas emission reductions, as well as the past trends in our city, we have revised the actual plan in order to set a new greenhouse gas emission reduction target for 2030 and further promote efforts toward achieving the target and realizing decarbonization 2050.

[1] There are "mitigation measures" to reduce greenhouse gas emissions and "adaptation measures" to avoid or reduce damage from the effects of climate change.

2 Plan positioning and related plans

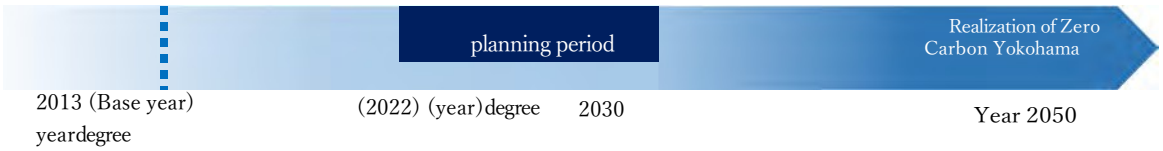
(1) Positioning of the plan

The actual plan shall be implemented in accordance with the Law Concerning the Promotion of the Measures to Cope with Global Warming (hereinafter referred to as the "Global Warming Countermeasures Law"). The actual plan shall be a plan that stipulates measures to reduce greenhouse gas emissions as stipulated in Article 21, Paragraph 3 of the Law Concerning the Promotion of the Measures to Cope with Global Warming (hereinafter referred to as "Global Warming Countermeasures Law").

(the "Directional Public Entity Action Plan (Area Measures)") and the "Regional Climate Change Adaptation Plan" under Article 12 of the Climate Change Adaptation Act, which is the "Basic Plan for the Promotion of the Formation of a Decarbonized Society" based on Article 7 of the Decarbonization Ordinance.

(2) Planning period

The period of the plan is from FY2022 (FY2022) to FY2030 (FY2030 12).



(3) related plans

The actual plan is a sectoral plan of the "Yokohama City Environmental Management Plan," which is the city's basic environmental plan. In conjunction with the Hama City Mid-Term Plan and in coordination with other sectoral plans, we will promote global warming countermeasures that take environmental considerations into account, including the preservation of biodiversity.

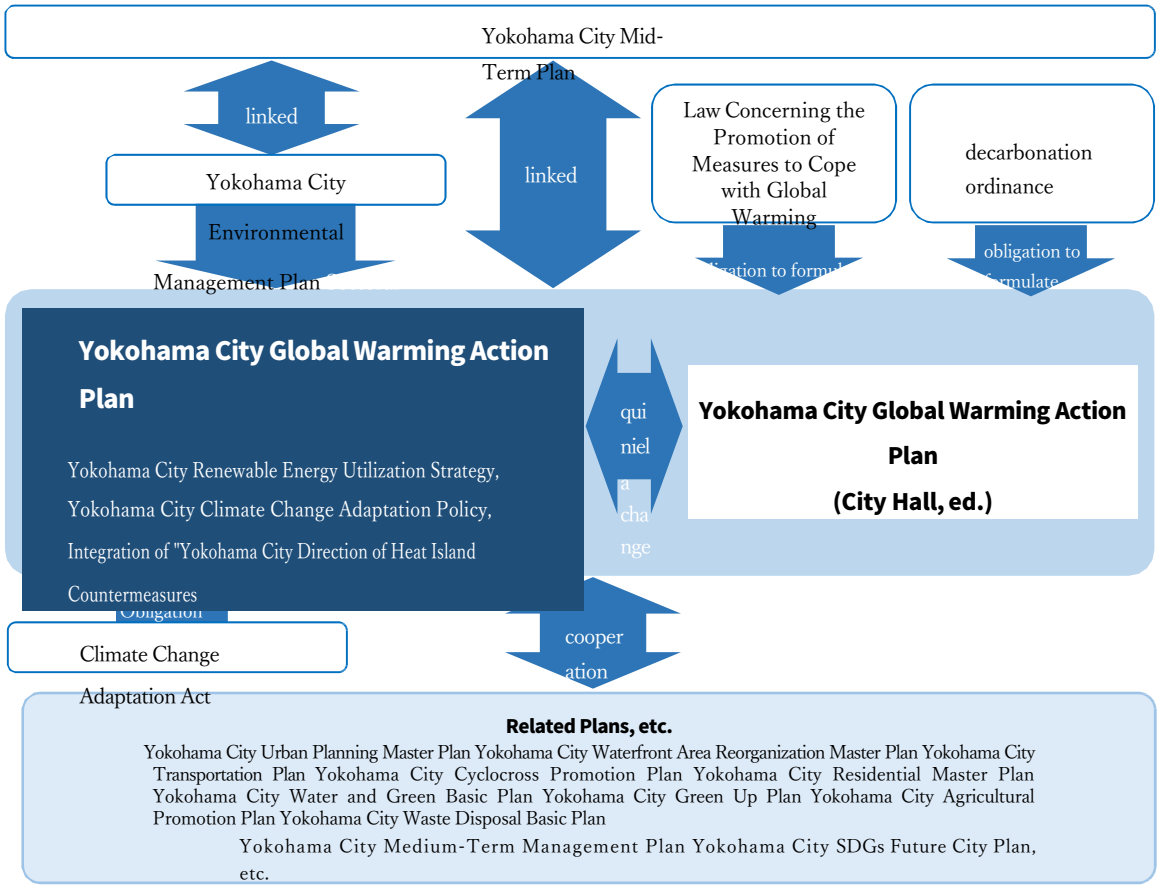


Figure 1-1 Positioning of the Plan and Related Plans, etc.

3 Current Status of Global Warming and Domestic and International Trends

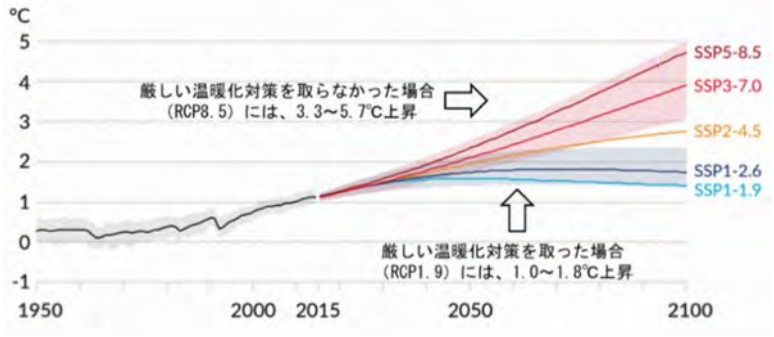
(1) Current status of global warming

Global warming is a phenomenon in which the temperature rises due to the absorption of heat from greenhouse gases emitted by human activities. Since the industrial revolution, large amounts of greenhouse gases have been emitted due to the massive consumption of fossil fuels,

The concentration of carbon dioxide ("CO_2") in the groundwater is increasing. concentration in the atmosphere is increasing.

The report of Working Group I of the Sixth Assessment Report of the Intergovernmental Panel on Climate Change[2] (hereinafter referred to as the "IPCC"), published in August 2021, was the first to assert that "there is no doubt that human impacts have been causing warming of the climate, oceans and land. The report of Working Group I of the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC)2 (hereafter referred to as the "IPCC"), released on August 2021, concluded for the first time that "there is no doubt that human impacts have caused warming of the atmosphere, oceans and land".

21 Global average surface temperatures at the end of the century, in the absence of severe global warming action (SSP5-8.5 scenario) is projected to increase by 3.3-5.7° C (average about 4.4° C).



(Source: Figure SPM.8.(a) in the Summary for Policymakers of the Report of Working Group I of the IPCC Sixth Assessment Special Report.)

生In 2021, the average temperature of the highest on June since 1895, and there were many major fires in Japan and Canada. In Japan, the number of midsummer days(3) and heat days(4) increased during the summer season.

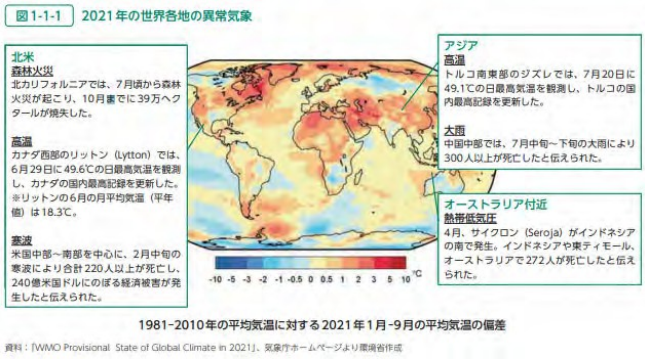


Figure 1-3. Extreme weather in various regions in 2021

(Source: Ministry of the Environment, 2022 Environment, Sound Material-Cycle Society, and Resident Diversity White Paper)

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(2) The United Nations Intergovernmental Panel on Climate (IPCC) is the United Nations body responsible for conducting comprehensive assessments of human-induced climate change, impacts, adaptation and mitigation from a scientific, technical and socioeconomic perspective.

An intergovernmental organization established in 1988 by the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP) for the purpose of

[3] Days when the maximum temperature is 30° C or higher are called midsummer days.

[4] A day when the maximum temperature is 35° C or higher is called a heat wave day.

(2) Interannual changes in temperature and heavy rainfall in the city and future projections

A. Temperature change over time and future projections

The annual average temperature in the city shows an upward trend, increasing by 1.9° C per (statistical period: 1897~2018). The number of days of midsummer and tropical nights[5] is also on the increase.

On the other hand, the number of winter days [6] shows a decreasing trend, which may be due to the effects of global warming as well as the heat island effect caused by urbanization.

Future projections indicate that average temperatures will increase by about 4° C in the future climate (2075-2095 compared to the present, and that there will be about 40 more days of extreme heat.

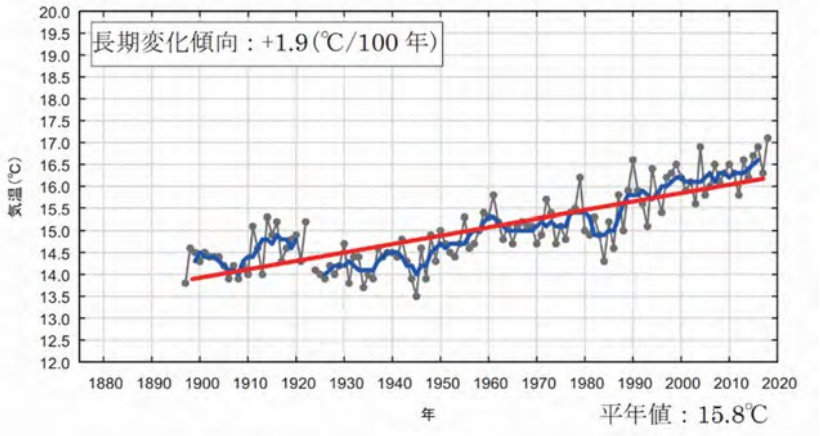

Figure 1-4: Secular change in annual mean temperature at the Yokohama District Meteorological Observatory

(Source: Tokyo Regional Meteorological Observatory, "Climate Change Report 2018 -Kanto Koshin, Hokuriku, Tokai Region

The red line shows the long-term change trend calculated from the observed values between 1897 and 2018, and the blue line shows the 5-year moving average (the same applies hereafter).

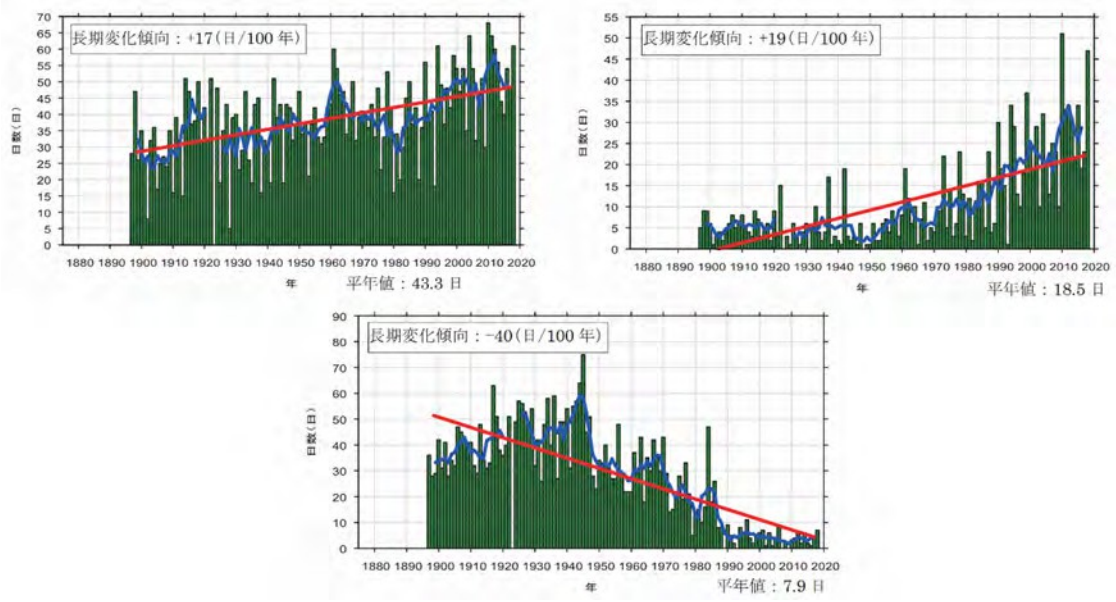

Fig. 1-5 Number of days of midsummer (upper left), tropical nights (upper right), and winter days (lower right) at Yokohama District Meteorological Observatory.

(Source: Tokyo Regional Meteorological Observatory, "Climate Change Report 2018 -Kanto Koshin, Hokuriku, Tokai Region

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[5] A night with a minimum temperature of 25° C or higher from the evening of the same day until the following morning.

[6] Days when the minimum temperature is below 0° C (32° F).

(a) Secular change and future forecast of Australian rainfall

While the annual rainfall observed at the Yokohama District Meteorological Observatory shows no change over time, the average hourly rainfall in Kanagawa Prefecture 50mm is expected to increase in future climates.

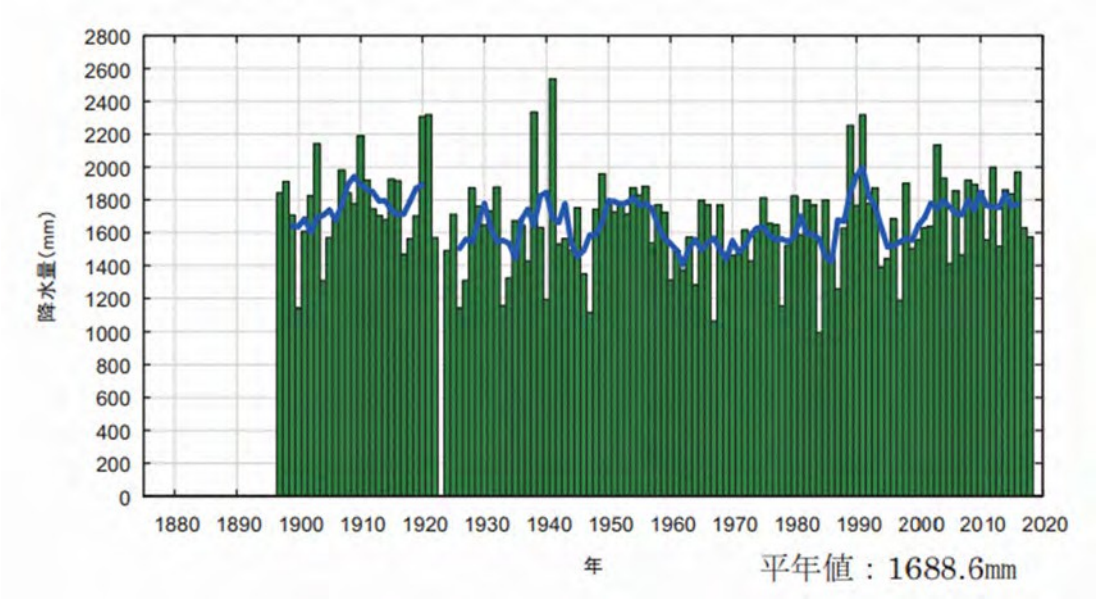


Figure 1-6 Annual rainfall change over time at the Yokohama District Meteorological Observatory

(Source: Tokyo Regional Meteorological Observatory, "Climate Change Report 2018 -Kanto Koshin, Hokuriku, Tokai Region

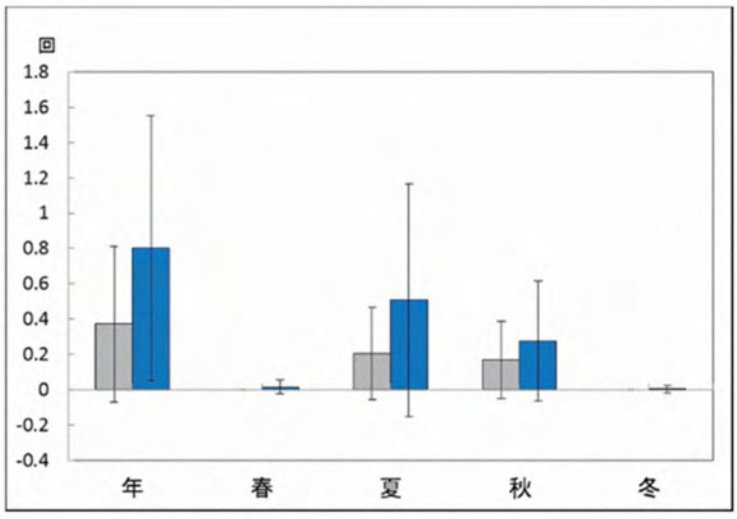


Figure 1-7 Number of 1-hour rainfall events of 50 mm or more in Kanagawa Prefecture

(Source: Tokyo Regional Meteorological Observatory, "Climate Change Report 2018 -Kanto Koshin, Hokuriku, Tokai Region

Gray bars indicate the number of occurrences per location for the current climate as reproduced by the climate model. 1 Black bars indicate the number of occurrences per location for the future climate.

The number of occurrences per location

Column　Sea breezes and green spaces will continue to be important in the future.

The Institute for Environmental Science and Technology (ISET) and the Japan Agency for Marine-Earth Science and Technology (JAMSTEC) have conducted numerical simulations of future temperatures in the city to predict two possible future cases of climate change: a 2° C rise in future global average temperature [1] and a 4° C rise [2], and the current [(3) temperature] in the city (4). (2) and "4° C increase" (3)) in the future.

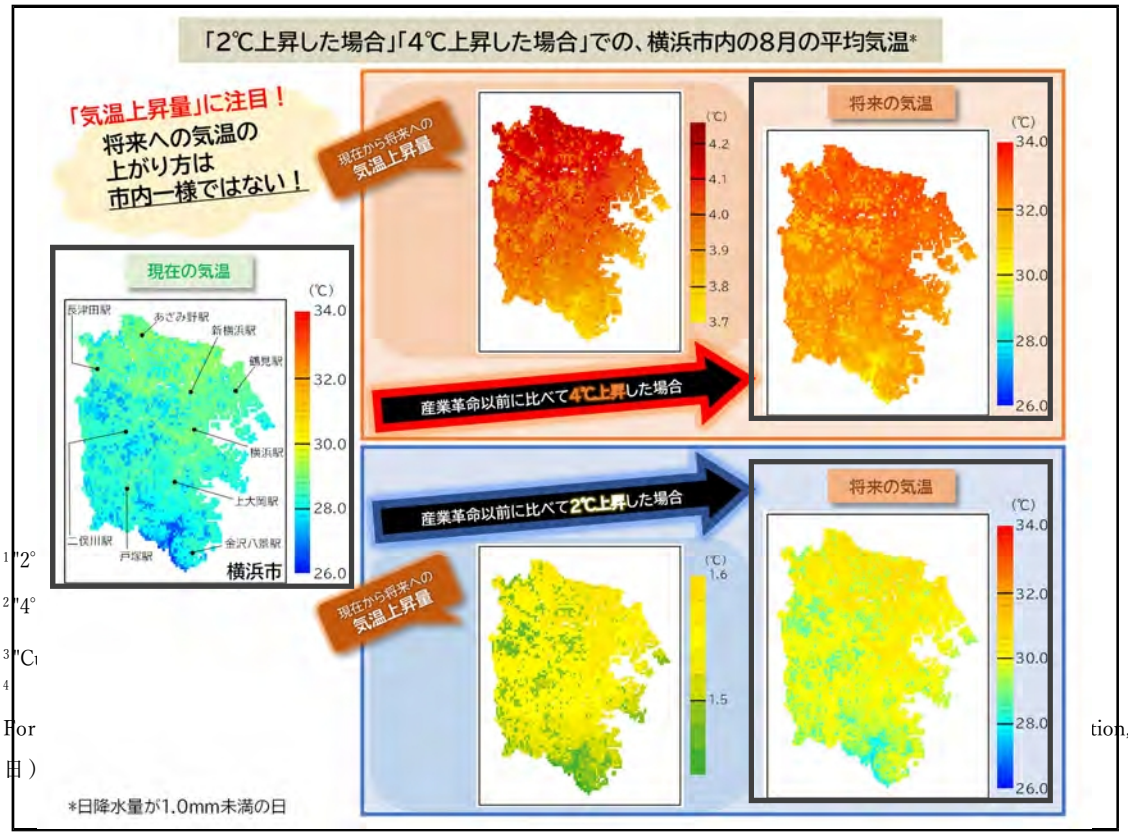
It was previously known that "sea breezes have the effect of reducing the rise in daily temperatures, and green spaces have the effect of reducing nighttime temperatures[4]",and the present results indicate that sea breezes and green spaces will remain important even in a warming future.

As shown in the figure, the results of the simulation are, from left to right, "Present Temperature", "Amount of Temperature Increase from Present to Future", and "Future Temperature".

The "future temperature" and "the amount of temperature increase from the present to the future" varied from region to region within the city, and the effects of sea breezes and green areas were observed.

Sagami Bay is located near the south of the city, and Tokyo Bay is located to the east. In both the 2° C and 4° C cases, the southern part of the city and the Tokyo Bay coastal area, which are strongly affected by the sea breeze, are less likely to experience high temperatures, and the amount of temperature increase is kept low.

In addition, there are many green areas in the southern and western parts of the city. In both the case of a 2° C rise and the case of a 4° C rise, the green areas were less likely to be at high altitude than the surrounding area.



[1] "2°

[2] "4°

[3] "C

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(3) Major trends outside Japan

At the 21st Conference of the Parties to the United Nations Framework Convention on Climate Change (COP21) in 2015 (2015), the 2020

(The Paris Agreement, a new international framework for reducing greenhouse gas emissions after 2020, has been adopted. The "Paris Agreement" is a new international framework for the reduction of greenhouse gas emissions after 2020, and it is expected that both developed and developing countries will make efforts to limit the increase in the average global temperature to the farthest below 2° C compared to the pre-industrial age (2℃目 target), and to limit it to 1.5° C, regardless of whether they are developed or developing countries.

(The company has set a target of 1.5° C as its goal.

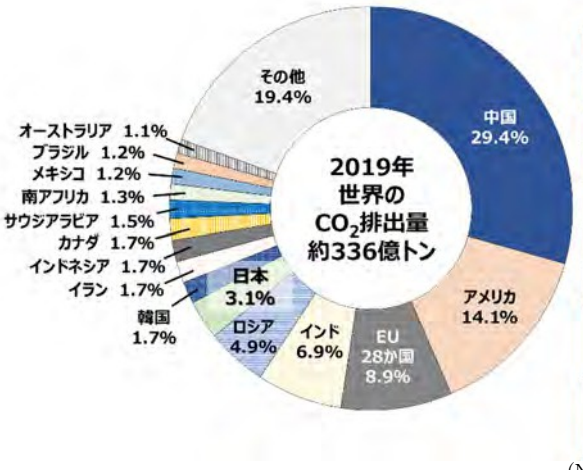
In the "1.5° C Special Report" published by the IPCC in , it is reported that there is a clear difference in the impact on ecosystems and humans between a 2° C temperature rise and a 1.5° C rise. In order to prevent the future average temperature rise from exceeding 1.5° C significantly, it has been shown that global human CO_2 emissions must be reduced by about 45% by 2030 compared to , and reach "net zero" around 2050. This report triggered countries around the world to set a goal to achieve carbon neutrality from 2050 to the latter half of this century.

At COP26 in the UK in 2021, the "Glasgow Climate Accord" was decided, and it was agreed to continue efforts to achieve the 1.5° C objective, which was the intended target at the time the "Paris Agreement" was signed.

Column Global CO_2 Emissions and GHG Reduction Targets of Major Countries for 2030

Japan's share of global CO_2 emissions in 2019 will be about 3%.

The table below shows the GHG reduction targets for 2030 for major countries.



Global CO_2 Emissions

(2019)

(Source: Global energy-derived CO_2 emissions

(Created by Ministry of the Environment)

country	Reduction target	base year
Japan	46% reduction	2013
United States of America	50-52% reduction	2005
United Kingdom	At least 68% reduction	1990
EU	At least 55% reduction	1990
Germany	65% reduction	1990
Russia	30% reduction	1990
China	Over 65% reduction (Emissions per unit of GDP)	2005
India	33-35% reduction (Emissions per unit of GDP)	2005

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(4) Major domestic trends

Based on the Law Concerning the Promotion of the Measures to Cope with Global Warming, the Japanese government adopted the "Global Warming Countermeasures Plan" by Cabinet decision in May , with the goal of reducing greenhouse gas emissions by 26% by 2030 (2030) compared to 2013 (2013) and 80% by 2050.

In October October 2020, the government committed itself to the carbon neutrality legacy for the year 2050, and in April 2021, the government announced that it would raise its greenhouse gas emission reduction target to 46% below the 2013 level by the year 2030, and that it would continue its challenge to reach the 50% mark. We have announced that we will continue to challenge to achieve the goal of 50% reduction by 2030.

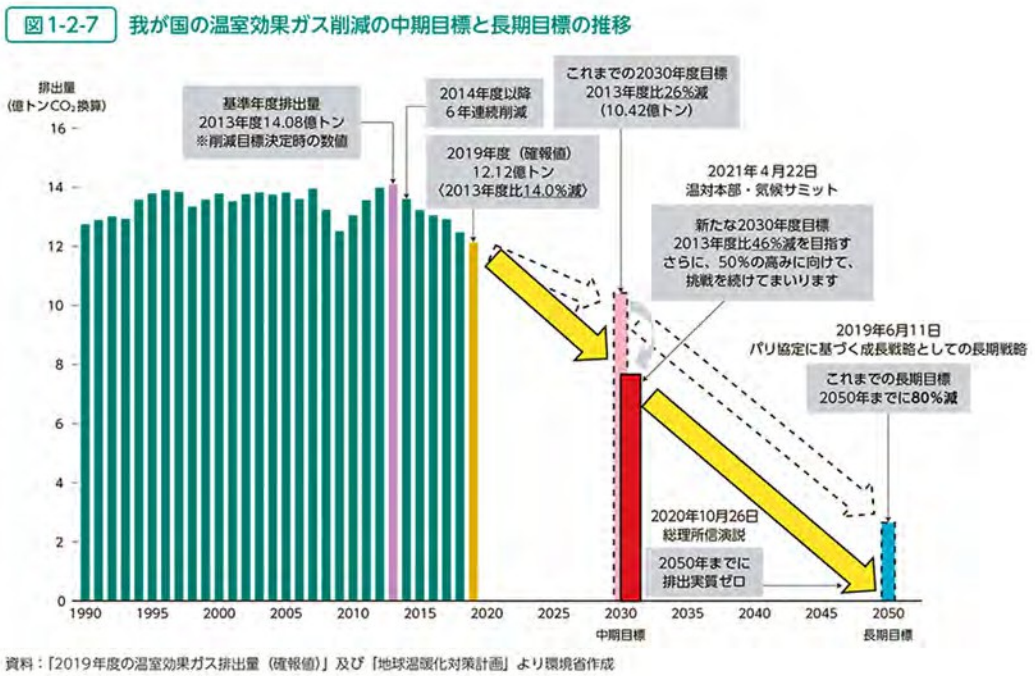


Figure 1-8 Trends in Japanese greenhouse gas emissions[7] and reduction targets

(Source: Ministry of the Environment, 2021 Environment, Sound Material-Cycle Society, and Resident Diversity White Paper)

Based on the above, the "Green Growth Strategy for Carbon Neutrality in 2050 (月)," which specifies future initiatives in priority areas that are expected to achieve success in addressing global warming (長), and the "Regional Decarbonization Roadmap (示)," which shows regional growth strategies to create decarbonized regions and spread the model throughout the country. The "Regional Decarbonization Roadmap (月 in 2021)" was formulated to create decarbonized regions by displaying regional growth strategies, and to disseminate these models throughout the country.

In addition, in 2021 10 , the "Global Warming Prevention Plan" and the "Sixth Basic Energy Plan" will be published,

The "Long-term Strategy as a Growth Strategy Based on the Paris Agreement" and the "Climate Change Adaptation Plan" were approved by the Cabinet of Ministers, and the "Climate Change Adaptation Plan" was adopted in 2030.

(A new policy for mitigation and adaptation measures and energy policy has been established to achieve the 46% reduction in greenhouse gas emissions reduction target for FY2030.

The Ministry of the Environment has decided to establish the Organization Supporting Decarbonization in accordance with the revision of the Law Concerning the Promotion of the Measures to Cope with Global Warming in 2022 (5). The aim is to use FILP to support private businesses that are eager to engage in decarbonization projects, and to establish a new business model.

[7] The latest data as of August 2022 is for FY2020 (confirmed value), and the total emissions are 1.15 billion tons CO_2, down 18.4% from the FY 2013 level.

The goal is to induce trillions of yen in decarbonization investments.

The Ministry of Economy, Trade and Industry (METI) has announced that in February 2022, a framework will be established in which companies with ambitious carbon reduction targets will invest in emission reductions and conduct self-sustained emissions trading to achieve their targets.

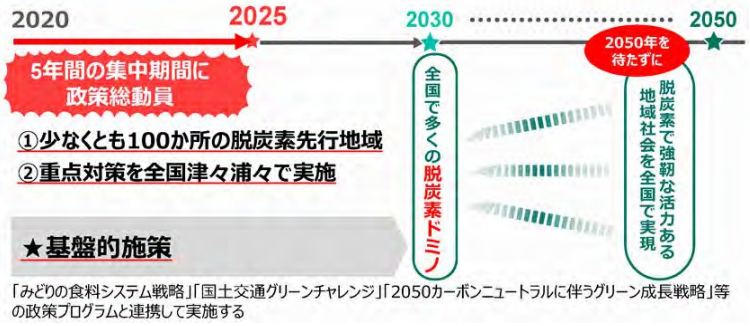
The "GX (Green Transformation) League Basic Concept" was announced and 440 companies have expressed their support. Discussions will be held on the full-fledged operation of the GX League, which is scheduled to be launched in 2023.

Column Regional Decarbonization Roadmap

The Regional Decarbonization Roadmap was compiled by the national government in June 2021, and focuses on measures and policies to be implemented by 2030, especially those to be implemented by 2030, in order to solve regional issues and to contribute to the creation of a decarbon society that enhances the attractiveness and quality of the region as a whole, and to spread this decarbonization throughout the country and to the world. This is a display of the process and concrete measures for regional decarbonization, which will also serve as a growth strategy for the region.

This roadmap aims to create at least 100 "decarbonization-first regions" by 2030, implement priority measures such as self-consumption solar power generation, energy-efficient housing, and electric cogwheels throughout Japan, and propagate such models throughout the country (decarbonization domino) to achieve decarbonization before 2050. The goal is to achieve decarbonization before 2050 by spreading this model throughout the country (decarbonization domino).

In April 2022, the Minato Mirai 21 district was selected as a decarbonization destination area.

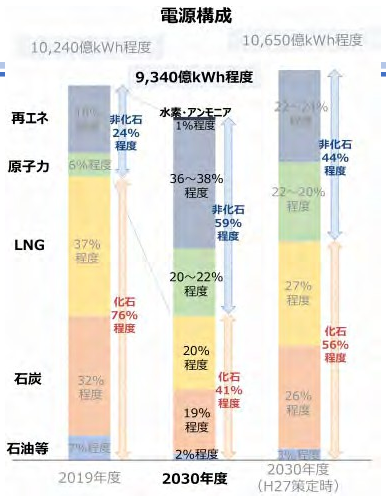


Column Power Source Composition in 2030

~~In the Basic Energy Plan review, "Energy Demand and Supply Forecasts for FY2030~~ (Energy Mix)" were also revised.

The new energy mix is being implemented. As a key point of the new energy mix,

- Energy-saving target increased by 20% from previous target
- Raise the target for renewable energy from 22%-24% to 36%-38%.
- New target of 1% of power supply to be provided by water and ammonia power generation These include.



Power source composition in FY2030

(Source: Energy Demand and Supply Forecasts for FY2030)

(5) Major trends in the economy

In December 2020 the Japan Business Federation (Keidanren) announced its action plan "— Determination and Action by the Business Community to Achieve Carbon Neutrality by 2050 (Society 5.0 with Carbon Neutrality)—" and expressed its determination to work with the government to achieve carbon neutrality by 2050 . The plan states that the Japanese government and the business community will work together with unwavering determination to achieve carbon neutrality by 2050 ().

At the level of finance, the Task Force on the Disclosure of Climate-related Financial Information, which was established in response to a request from the G20 , has been working on the disclosure of climate-related financial information.

(The Task Force on Climate-related Financial Disclosures (TCFD) published the TCFD Proposed Language in June 2017 The TCFD Proposition recommends that companies and others disclose information on four climate change-related objectives: governance, strategy, risk management, indicators and targets.

By disclosing such unpublished financial information to financial institutions and investors, the ESG (Environment / As of May 2022, approximately 3,400 companies and institutions worldwide (878 of them in Japan) have endorsed the TCFD, which is expected to promote investment in social and governance issues.

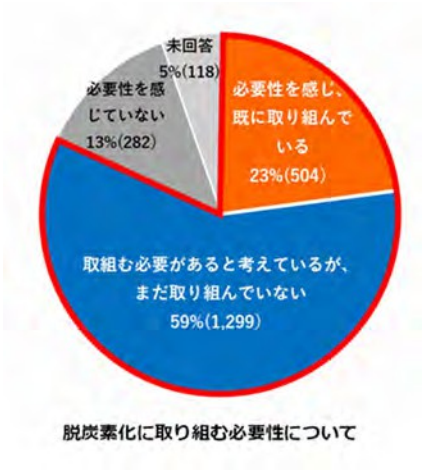
A growing number of initiatives are recognizing the efforts of such companies, and Science Based Targets (As of March 31, 2022, 1,267 companies worldwide (including 173 Japanese companies) have been certified by the SBT.

Japanese companies that have obtained SBT certification require their major suppliers to set their emission reduction targets in line with SBT, and an increasing number of companies are asking their suppliers to reduce emissions. Initiatives such as TCFD , CDP[9], and SBT are also working on the identification and reduction of Scope 3[8] emissions, including Scope 3(02) emissions. and reduction of supply chain emissions, including Scope 3 emissions.

Column Attitudes of small and medium-sized enterprises toward decarbonization

According to the "Attitude Survey on Decarbonization and SDGs" conducted by the city in 2021, about 80% of businesses answered that they "need to work on decarbonization", while about answered that they "think it is necessary to work on decarbonization, but have not yet done so". In addition, "Insufficient knowledge and know-how" and "Difficulty in raising funds to cope with increased costs" were both cited by more than 40% of respondents as major challenges, regardless of industry sector or size.

With the focus on large companies, the importance of reducing not only their own emissions but also those of their supply chain as a whole, including Scope 3 emissions, is being emphasized. As part of the efforts of other companies, we are working to reduce emissions throughout the entire supply chain, including Scope 3 emissions.
We expect to see a move toward requiring small businesses to reduce their emissions, making the efforts of small and medium-sized enterprises (SMEs) increasingly important.



脱炭素化に取り組む必要性について

[3] See column on next page

[9] See column on next page

Column　Supply Chain Emissions

Supply chain refers to the flow of raw material procurement, manufacturing, distribution, sales, and disposal. The greenhouse gas emissions generated from these processes are referred to as supply chain emissions.　Supply chain emissions consist of Scope 1, Scope 2, and Scope 3.

Scope 1: Direct emissions of greenhouse gases (combustion of fuels, industrial processes) by the company itself　Scope 2: Indirect emissions from the use of electricity, heat and steam supplied by other companies　Scope 3: Indirect emissions other than Scope 1 and Scope 2 (emissions by other companies related to the company's activities, including raw materials)

manufacturing, transportation, disposal, etc.)

Column CDP Initiatives

The Carbon Disclosure Project (CDP), a UK non-governmental organization, has been sending out questionnaires on climate change, water security and forestry in line with the TCFD protocols to companies and others, evaluating their responses and displaying them to investors. Of the 427 Japanese companies that responded to the CDP questionnaire, 56 were selected for the A-list, the highest rating, and in the urban CDP, the highest rating was given to the 2021 CDP.

(In 2021, the City was selected for the A-list in the area of climate change.

(6) Major trends in the City

In accordance with the Law Concerning the Promotion of the Measures to Cope with Global Warming, the City formulated an actual plan in 2011 and revised it in 2018 with the goal of "Zero Carbon Yokohama," which means decarbonization by 2050.

The City participated as a member of the "National and Local Council for Decarbonization" held December of 2020 to June of 2021. At the first meeting, the city announced that it would compile the voices of municipalities that are willing to decarbonize and make proposals, and in February 2021, the "Council of Zero Carbon Cities, Towns and Villages (Chairman: Yokohama City)" was established, calling on all municipalities in Japan that have declared their commitment to virtually zero CO

The company has been involved in many initiatives, such as submitting proposals to the national government.

The Decarbonization Ordinance was implemented on June 2021 (月). The aim of this ordinance is to contribute to the promotion of global warming countermeasures, the circulation and sustainable development of the city's economy, and to ensure a healthy and culturally rich lifestyle for the citizens of the city. In addition, measures will be taken to support related industries, promote research and development, promote the use of renewable energy in buildings, promote environmental education, and disseminate knowledge on renewable energy.

In April 2022, the City of Kobe and the General Incorporated Association "Koganei" were selected as the first "decarbonization advanced region" by the Ministry of the Environment of Japan.

The "Minato Mirai 21 District" was selected through a joint proposal by the Minato Mirai Yokohama Minato Mirai 21. The [10] participating facilities are listed below.

The aim is to achieve "virtually zero CO_2 emissions from vegetative consumption by 2030" together with the people in the local communities in which the project is based, and to challenge the public and private sectors to work together to decarbonize electricity, conserve energy (hereinafter referred to as "energy conservation"), and manage energy. The project aims to achieve [illegible]c., through public and private partnerships.

Column Zero Carbon Municipal Council

The aim is to share opinions among municipalities of different sizes and with different regional characteristics, to promote discussion on concrete actions to realize a decarbonized society, and to effectively promote together the provision of recommendations to the national government,

The "Zero Carbon Municipalities Council" was established. (Chairman: Yokohama City)

■ Establishment立 2021 (2021)2月

Number of members 232 (as of the end of September 2022)

Initiatives

(1) Research on policies to realize a decarbonized society and related issues, etc.

(2) (3) Activities to promote mutual exchange and collaboration among member organizations.

Main Activities: Submission of the言 to the State (March 2021, 11 月)

Propositions to the State

Implementation of information exchange meetings for members (2021 10 月) (2021 11 月 24 日)

[10] 32 facilities at the time of selection in April 2022

4 Basic information about this market

(1) 人口

The city has the largest population of approximately 3.78 million (by 2021) and the largest number of households as a basic city.

177 million households in 2021.

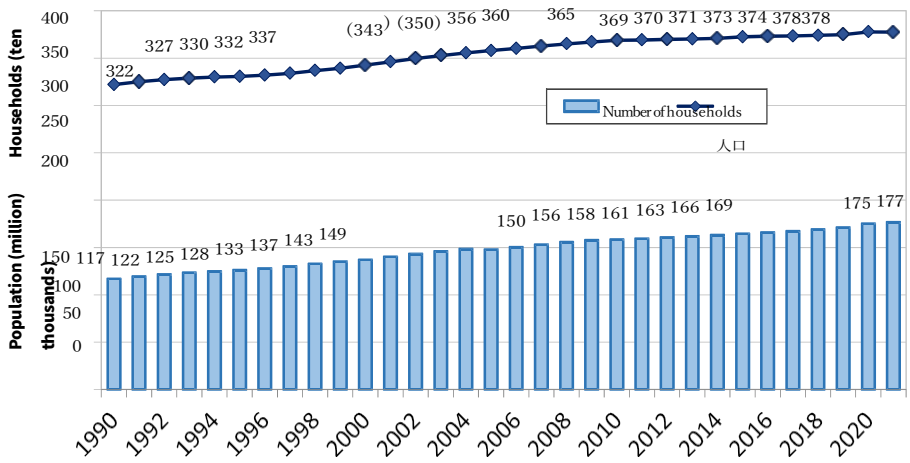


Figure 1-9 Trends in the number of people and households in Yokohama City

(Source: Yokohama City Statistics)

Japan's population is becoming "younger and older" ahead of the rest of the world, and it is estimated that the population will fall below 90 million by 2065, and the aging rate will reach 38% level. In 2025 when all baby boomers will be over 75 years old, it is estimated that the number of people over 75 will be about 18% of the total population, and the number of people over 65 will be about 35% of the total population in 2040, and the trend of declining birthrate and aging is progressing compared to other countries.

Under such circumstances, the city's airmass, which has been on the increase, has decreased by more than 4,000 people in the last year, becoming a minus sign for the first time in the postwar period, and we are beginning to see signs of a decline in human population. In the forecast which simply reflects the 2020 census figures in the Yokohama City Air Population Estimate (2017 fiscal year), the peak of人口 will be replaced by in 2021 (2040), the peak of will be replaced by in 2040 (2040), and the peak of will be replaced by in 2040 (2040).

It is expected that the city will enter a society with a full-blown decline in the number of people, with an estimated 3,779,510 persons in 2012.

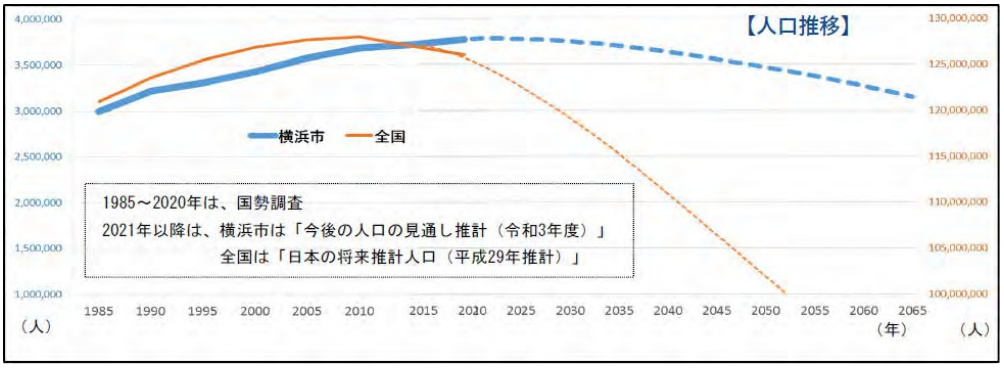


Fig. 1-10 Forecast of Yokohama City's human population in the future

(Source: Yokohama City Policy Bureau)

(2) Basic information on topography and land

The topography of the city is divided into hills, plateaus and terraces, lowlands and islands. The hills are located slightly to the west of the city center and run north-south across the city. To the east and south of the hills are the Shimosueyoshi Plateau and the Sagamihara Plateau, as well as the lowlands at the bottom of the rivers that carve the plateau and hills and the coastal lowlands. The coastal areas have been reclaimed and the coastline has been mostly modified by artificial landforms. The rolling hills and rivers provide a continuous water and green environment over a wide area.

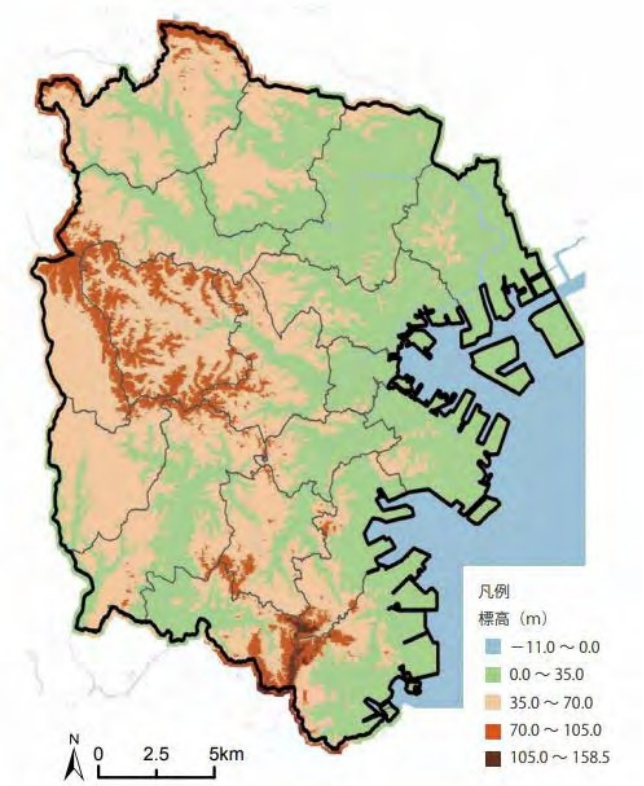


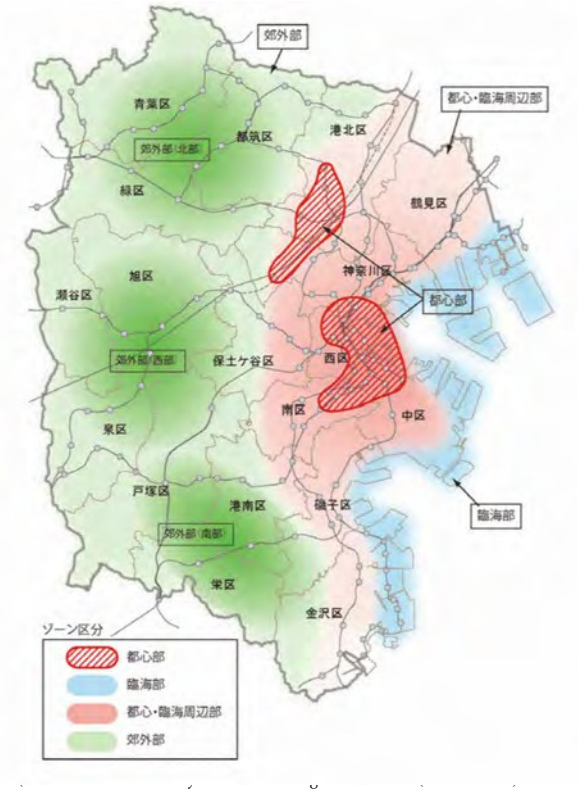
Figure 1-11 Topography of Yokohama City
(Source: Yokohama City Basic Plan for Water and Greenery)

Table 1-1 Basic Inf

Basic Information on Land Use			
total floor space (Year 2021)	Approx. 438 km²	**area zoned for urbanization (urbanisation) (Year 2021)**	Approx. 338 km²
Basic information on manpower and households			
人口 (Year 2021)	Approximately 3.78 million	**Number of households (Year 2021)**	Approximately 1.77 million households
Increase in human population ❹ (2015-20)	0.28% (0.28%)	**People per household (2021)**	2.14 人
Basic Information on Industry			
Gross domestic product (2019)	Approx. 14.5 trillion yen	**Number of offices (2019)**	Approx. 156,000
Floor Space (2020)	Approx. 37.4 million m²	**Shipment of manufactured goods (2020)**	Approx. 3.93 trillion yen

(3) Regional characteristics

The general characteristics of the City can be divided into the following areas



○ Best sites (in Yokohama, Shin-Yokohama, etc.)

It is an attractive and lively district with a concentration of higher-level business, commercial, cultural, tourist, and social functions.

○ seaside

It consists of industrial areas, inner port areas, and port logistics areas. It is a hub for industry, port functions andlogistics.

○ Tokyo, Kobe, Tokyo Waterfront Area

Located in the heart of the city, the area has a high density of residences due to its easy accessibility to the center of the city, as well as greenery such as hills overlooking the city and the sea.

○ Suburban area (Northern area, Western area Southern area)

方面)

Residential, commercial, business, and industrial areas around the station

The area has a mix of industrial and distribution business areas and suburban residential areas, and especially in the northern part of the city, the increase in the number of people is expected to continue.

The trend is toward progress. The city is also developing a cohesive, green city centered on the "10 Green ," which are important centers for the city's water and green environment.

The city has a concentration of energy-related industries, manufacturing industries, and R&D centers of global companies, centered on the waterfront area, and has the potential to create innovation.

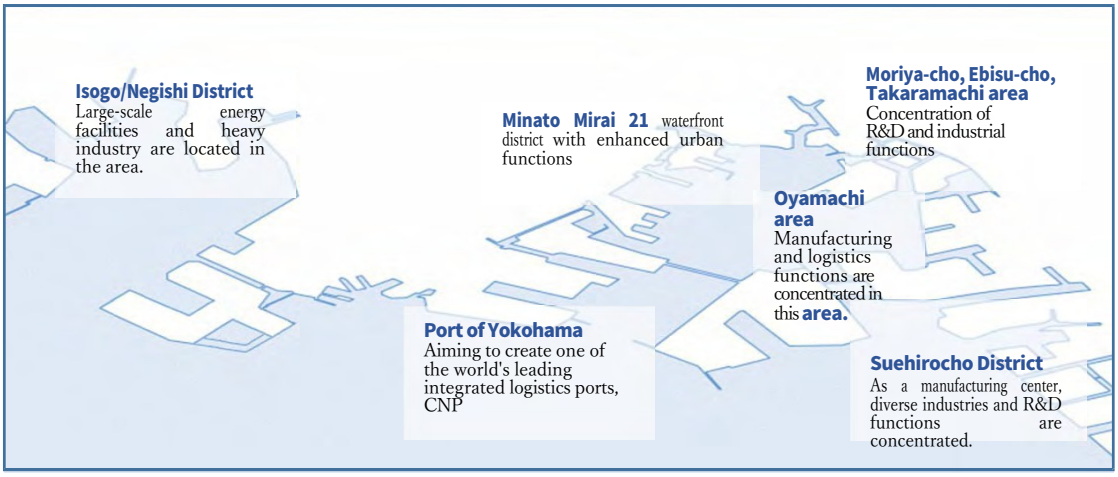


Figure 1-13 Characteristics of the City's Waterfront Area

Column　Creating an Environment to Beat the Heat - Utilizing Urban Environmental Climate Charts

The combination of global warming and the heat island effect seen in urban areas has resulted in increasingly hot summers in the city. The number of days of midsummer is expected to reach 50 by 2020, the hottest year on record.

Therefore, we have created a hint map (Urban Environmental Climate Map) for creating an environment to keep out the heat by learning about the characteristics of the "wind" and "greenery" that affect the temperature in Yokohama and considering specific measures that are suited to the region. Using this map, we will promote the creation of an environment that can withstand the heat by considering specific measures for the lights, greenery, buildings, etc. that match the characteristics of the local area.

Three Steps Using the Hint Map

<STEP1: Learn how the wind blows

Ocean breezes have the effect of reducing the rise in daily temperatures. Region

(Learn about the summer winds in each of the five zones, and think about how to take in the wind.

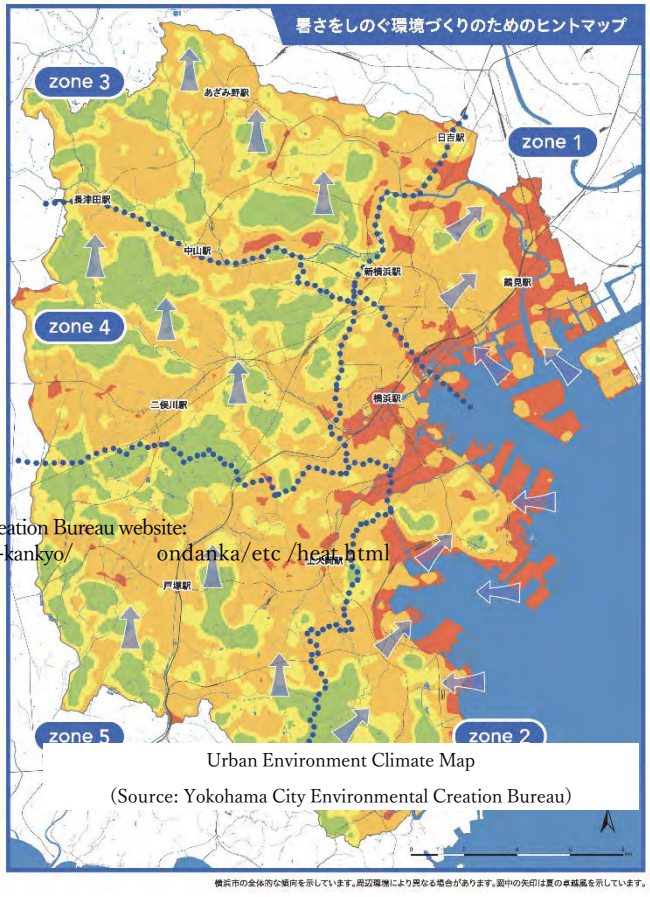
<STEP2: Understanding the effects of green

The more green space, the more effective it will be in reducing the temperature, mainly at night. Trees also provide shade and shade from the sun during the day, creating a cool spot that reduces the temperature of the body.

We will improve the surface of the land by preserving and creating green areas, and create cool spots where people can enjoy greenery in commercial areas where many people gather during the day.

<Based on STEPs 1 and 2, create an environment that can withstand the heat and is suited to the characteristics of the community.

* For details, see the Yokohama City Environmental Creation Bureau website:
https://www.city.yokohama.lg.jp/kurashi/machizukuri-kankyo/　　ondanka/etc /heat.html



Urban Environment Climate Map

(Source: Yokohama City Environmental Creation Bureau)

5 Greenhouse gas emissions and energy consumption in the city area

(1) Greenhouse Gas Emissions in the City

The total amount of greenhouse gas[11] emissions from the city area in FY2020 (preliminary figures) was reduced by 1.5 times compared to the previous year.

emissions decreased 7.4% to 16.48 million tons-CO_2, a decrease for seven consecutive years after peaking in FY2013. This is a 24% reduction compared to the base year of FY2013 (2013), the year for which the greenhouse gas emission reduction target was set.

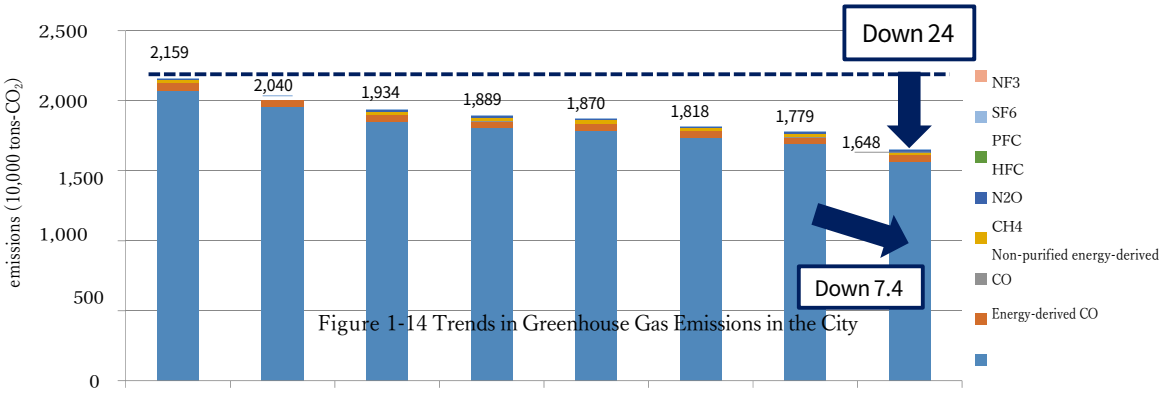


Figure 1-14 Trends in Greenhouse Gas Emissions in the City

By type of greenhouse gas, CO_2 emissions were the largest, accounting for approximately 98% of total emissions, or 16.09 million tons. CO_2.

emissions in the fiscal year 2020 (2020) of this city, about 30% of the CO_2 emissions are from our city's households and compared to the emission composition of crimpers in Japan, the proportion of emissions from our city's households, especially for our pro- and pro-門 and energy conversion departments, is about the same as that of our country.

The market has become very large.

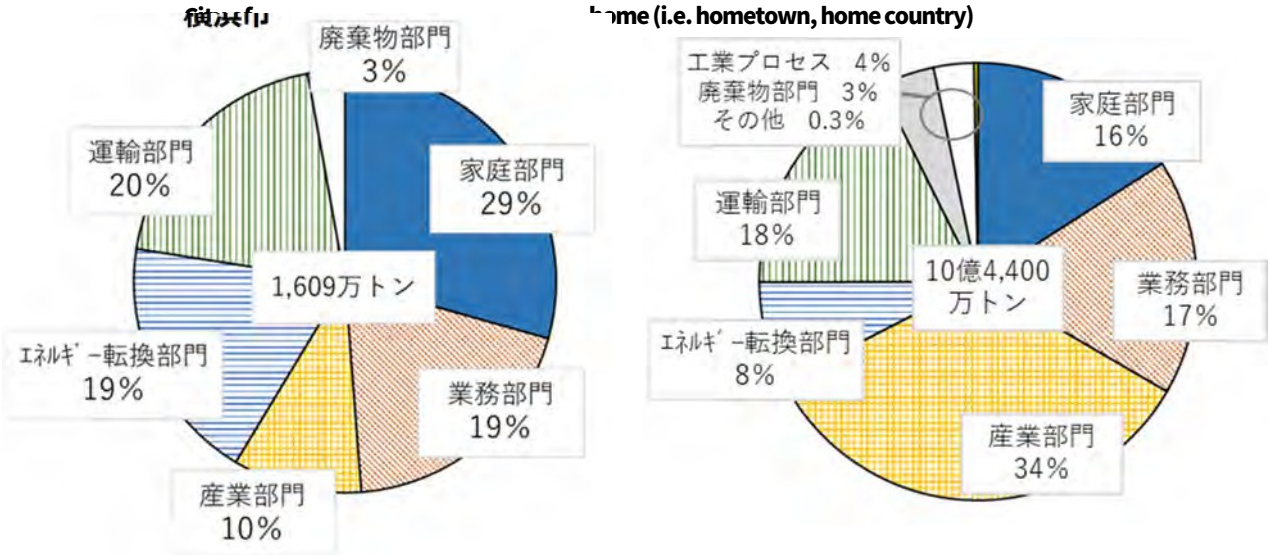


Figure 1-15 Our city's CO_2 emission crimp (left) and country's CO_2 emission crimp (right) in FY2020

[11] Total of carbon (CO_2), methane (CH_4), nitrogen dioxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), nitrogen trifluoride (NF_3)

emissions in FY2020 will be reduced by 7.4% from the previous year, and the amount of CO

(25) FY 2012 sales ratio was 25% decrease from the previous year except in the case of pro-competitive sales to pro-competitive sales in the domestic department.

increased by 10%.

In FY2020 (2020), as in the case of Japan, we can expect to see an increase or decrease in each of our city's sections due to the impact of the new coronavirus infection. The reason for the increase in the household sector can be attributed to the increase in hours of work in門 and the reason for the decrease in the industrial sector can be attributed to the stagnation of economic activities.

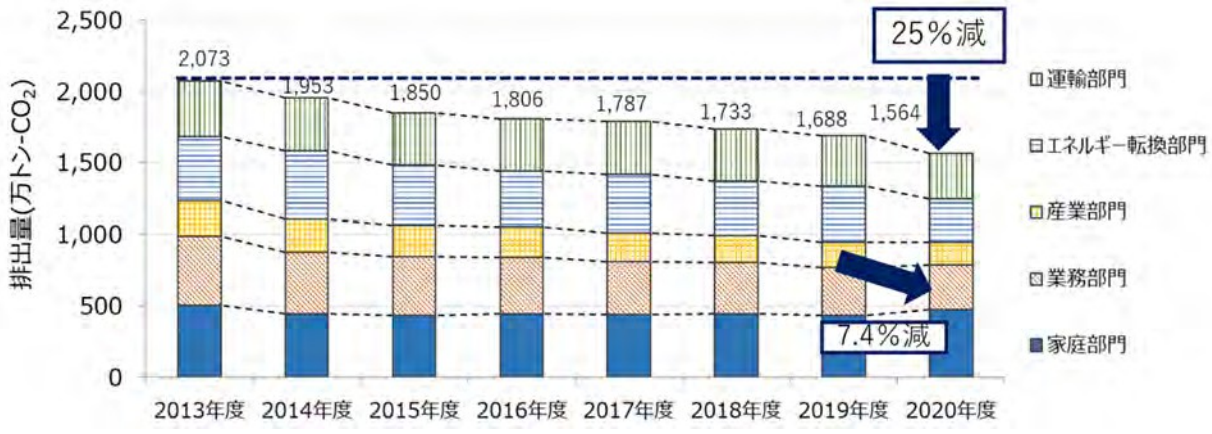


Figure 1-16 Energy-related CO_2 Emissions in Yokohama City (by Dept.

Column Regarding the calculation targets of greenhouse gas emissions for each department and garage

Household section ：Covering CO_2 emissions from the use of electricity, gas, and kerosene at home

Business Department ：Covering CO_2 emissions from the use of electricity, gas, and oil-based fuels in office buildings, commercial facilities, public facilities, etc.

Industrial Division ：Covering emissions of CO_2 from the use of electricity, gas, and oil-based fuels in the manufacturing and construction industries, etc.

Energy: The process of converting energy sources (crude oil, LNG, etc.) into more usable forms (gasoline, city gas, electricity, etc.) (e.g. gasoline, city gas, electricity, etc.) conversion process to power generation, oil refining, coke production, city gas auto-consumption, etc. emissions due to CO

Transportation Department ：This covers emissions from the use of autos owned by households and businesses, as well as CO_2 emissions from railroads and ships.

Waste Department ：Covered by CO_2 emissions from incineration of waste derived from chemical resources

Other 6 gases: methane, bi-nitrogen oxide, and 4 gases (hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, nitrogen trifluoride) such as CFC alternatives are covered.

[12] Energy origin: Emissions from combustion of fuels. Non-use energy origin refers to emissions derived from incineration of waste and raw materials during product manufacturing.

(2) Energy consumption in the city area

Energy consumption in the city in FY2020 will be 204 Petajoules [13], which is the same as the previous year.
比 It decreased by 7.9%, and by 20% compared to the crimp in FY2013 (2013). Especially in the industrial and pro-energy conversion areas, the decrease from the previous year was very drastic, while in the residential area, the energy consumption increased. The total energy consumption of the household sector was the highest among the three sectors. In addition, the household sector has the largest energy consumption, followed by the energy conversion sector for pro- and pro-community and transportation sectors, in that order.

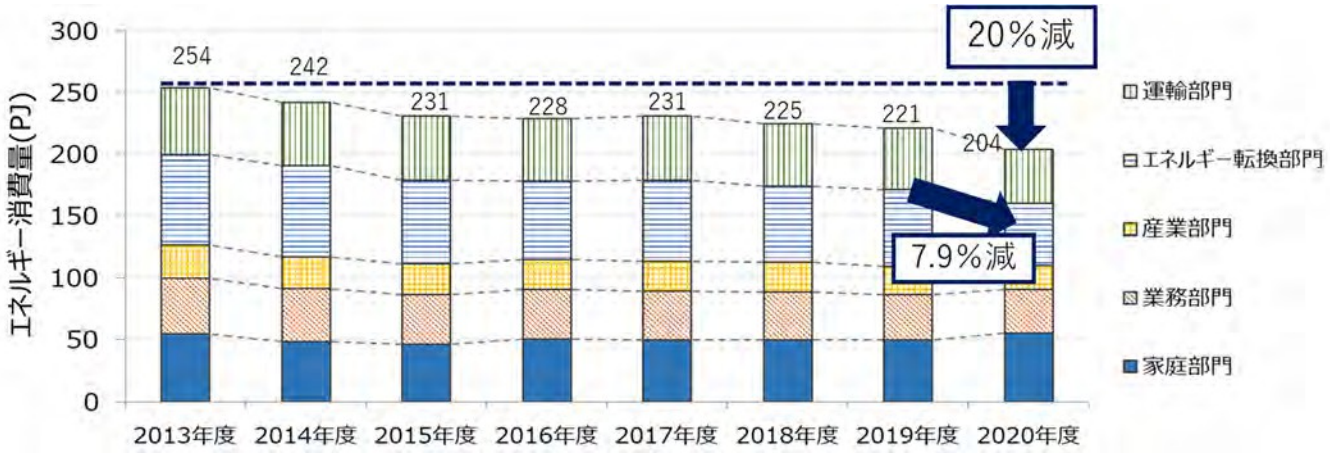


Figure 1-17 Energy Consumption in Yokohama City (by Dept.)

By energy type, oil-based fuels have the largest energy consumption, followed by electricity and city gas.

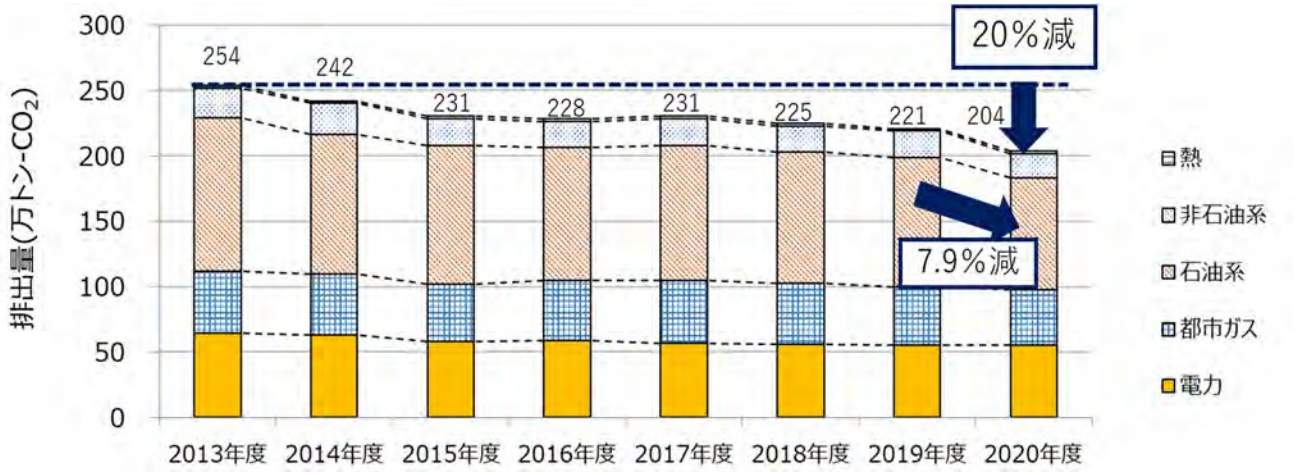


Figure 1-18 Energy consumption (by energy type)

[13] Petajoule (PJ) ："J (joule)" is a unit of energy. A "P" (peta) represents 1,000,000,000,000,000 (10 to the 15th power, a thousand trillion) times.

(3) CO_2 emissions and energy consumption characteristics by energy type in each department and garage

CO_2 emissions and energy consumption by energy type for each cell in FY2020 (FY2020) are as follows.

0family department

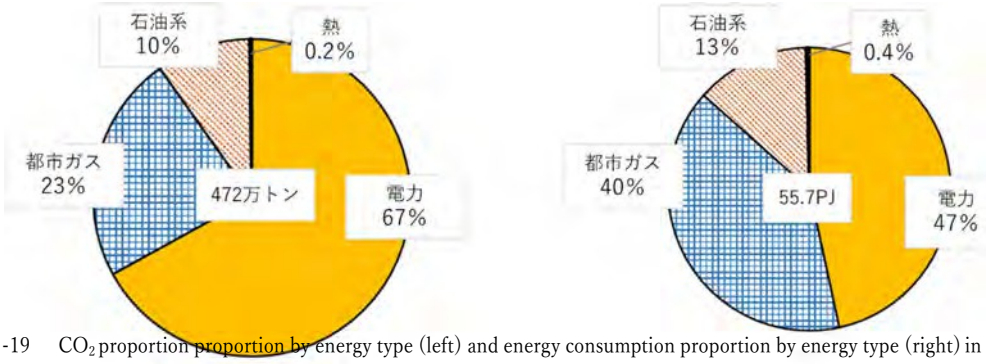


Figure 1-19 CO_2 proportion proportion by energy type (left) and energy consumption proportion by energy type (right) in the household section

0 business department

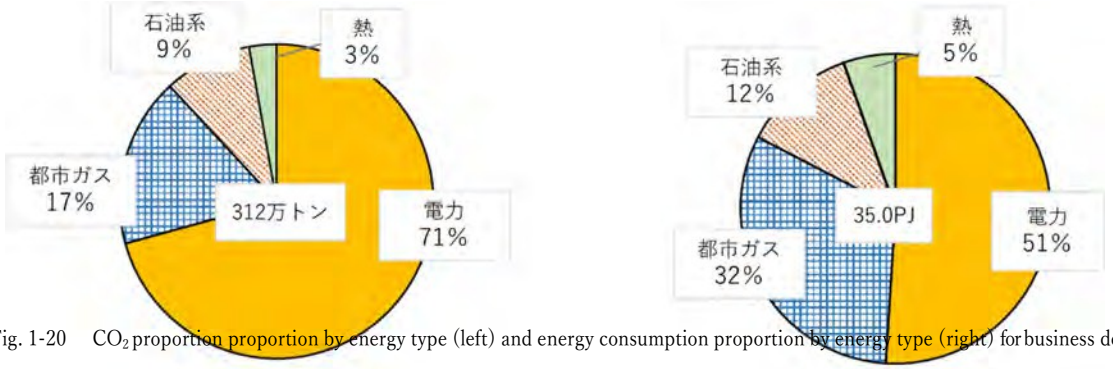


Fig. 1-20 CO_2 proportion proportion by energy type (left) and energy consumption proportion by energy type (right) for business department

0 industrial division

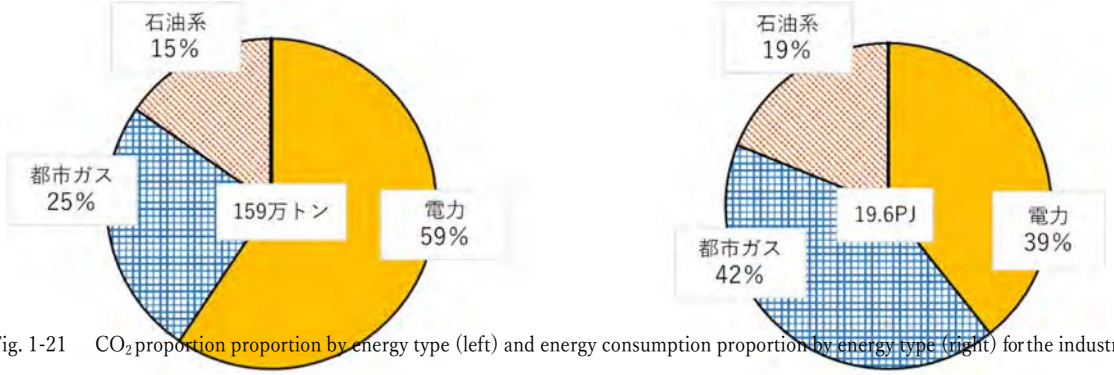


Fig. 1-21 CO_2 proportion proportion by energy type (left) and energy consumption proportion by energy type (right) for the industrial division

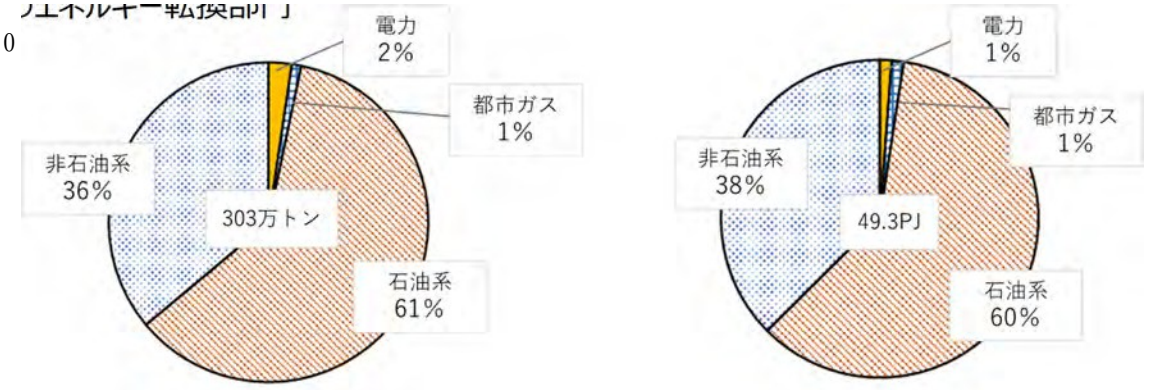


Fig.1-22 CO_2 proportion proportion by energy type (left) and energy consumption proportion by energy type (right) for energy conversion section for proberty

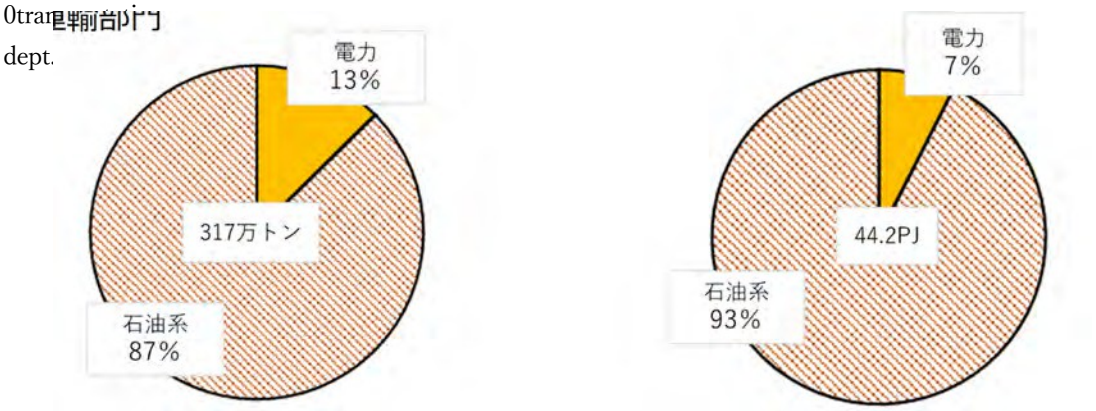
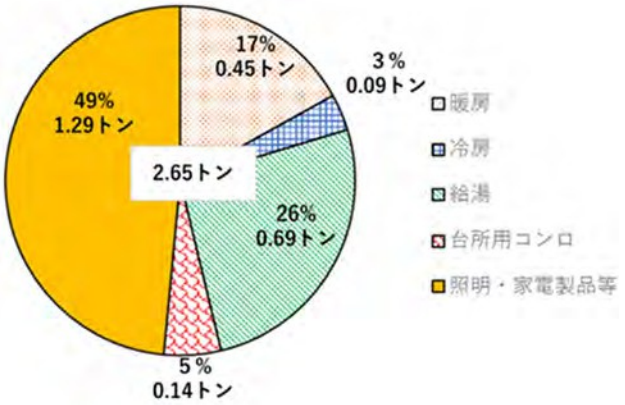


Figure 1-23 Transportation Department CO_2 proportion proportion by energy type (left) and energy consumption proportion by energy type (right)

Column CO_2 Emissions per Household by Use

The amount of CO_2 emissions by use is estimated in "FY 2020 Statistical Survey on CO_2 Emissions from Households in Japan (Ministry of the Environment)". emissions per household in the Kanto Koshin region is 2.65 tons, of which the illuminant is Lightings, appliances, etc. accounted for 49%, hot water supply 26%, and heating 17%.



CO_2 emissions per household by use in the Kanto Koshin area (FY 2020)

(Source: "FY2020 Statistical Survey on CO2 Emissions from Households in Japan (Ministry of the Environment)" Kanto Koshin region Reference: Basic items (household, dwelling)

Carbon dioxide emissions by use (e.g., home, equipment use, etc.).

6 Progress of previous implementation plan

In the previous actual plan, we set management indicators for each of the eight basic policies to serve as a guide for progress toward the realization of "Zero Carbon Yokohama".

Five results, including the amount of emissions per floor area of operations and the number of global warming action plans and reports submitted, are shown in the table below.

While exceeding the target, the amount of renewable energy equipment installed in the city and the percentage of energy-efficient houses among newly built houses are still in the process of being evaluated.

The six results did not reach the target, and further promotion of efforts will be necessary.

Table 1-2 Management indicators and results in the previous implementation plan

Basic Policy	Management Indicators	Approx.	
1 Promotion of initiatives by citizens and business cooperation	(1) Companies and citizens who promote global warming countermeasures in cooperation with the City of Tokyo Number of Groups	Approx.	FY2020: 480 organizations
		Achievements	FY2020: 481 organizations FY2021 ：580 organizations
2 Realization of a state-of-the-art smart city	Number of energy collaboration bases utilizing the results of the demonstration project	Approx.	FY2020: 60 locations
		Results	FY2020: 64 locations FY2021: 81 locations
3 Virtuous Circle of Environment and Economy	Emissions per floor area of operations	Approx.	FY2020 ：94 kg-CO_2/m^2/year FY2030 ： 84 kg-CO_2/m^2/year
		Results	FY2020 ：83 kg-CO_2/m^2/year
4 Intercity Cooperation and International Dissemination	④Number of times participated in international conferences, etc.	Approx.	FY2020 ： 6 times/year
		Results	FY2020 ： 6 times/year FY2021 ： 7 times/year
5 Thorough energy conservation	(5) Percentage of energy-efficient homes among newly constructed homes	Approx.	FY2020 ：50 FY2030 ：100
		Results	FY2020 ： 45
	6) Number of global warming action plans and reports submitted	Approx.	FY2020: 330 cases/year
		Results	FY2020: 343 cases/year FY2021: 326 cases/year
	(7) Percentage of Clean Energy Cars (of which Next Generation Cars) (Number of units in use)	Approx.	FY2020 ：20% (9,000 units) FY2030 ： 40
		Results	FY2020: 18% (7,741 units)
6 Sustainable Community Development	Number of new experimental initiatives	Approx.	FY2020: 16 cases
		Results	FY2020: 15 cases FY2021: 21 cases
	(ix) Total amount of waste and resources	Approx.	FY2025 ：1.15 million tons
		Achievements	FY2020: 1.2 million tons FY2021 ：1,178,000 tons
7 Maximize renewable energy and realize a water-based society	(10) Amount of renewable energy installed in the city	Approx.	FY2020 ：430,000 kW 2030 ：590,000 kW
		Results	FY2020 ：290,000 kW
	(11) Emission of electricity supplied to the city coefficient	Approx.	FY2030 ：0.37kg-CO_2/kWh
	Number of water stations installed	Approx.	FY2020: 10 locations
		Results	FY2020: 6 locations FY2021 ：7 locations

8 Strengthening Adaptation Measures	Designated area under the Green Space Preservation System	Approx. Results	FY2020 ：1,076 ha FY2020: 982 ha (From FY 2009)

7 How to revise the execution plan based on the progress of the previous execution

In revising the target, the city has adopted a new greenhouse gas emission reduction target for FY2030 (50% reduction (2013)), which symbolically displays the following issues and future vision of the city, while inheriting the city's objective "Zero Carbon Yokohama".

(Based on the "Decarbonization of the Earth" (compared to the ratio of the previous year), we have organized the following ideas in order to accelerate the realization of a decarbonized society in 2050.

(1) Issues to be addressed in the revision

- The actual results of management indicators that contribute to the reduction of greenhouse gas emissions, such as the amount of renewable energy equipment installed in the city and the percentage of newly built houses that are energy efficient, did not reach the target of 2020 (2020), and further measures will be necessary in the future.
- As outlined in the objectives of the Decarbonization Ordinance and the "Green Growth Strategy for Carbon Neutrality by 2050 " formulated by the Ministry of Economy, Trade and Industry (METI), the need to make global warming measures, which were previously considered a burden, the driving force for growth of companies.
- Given the high percentage of household emissions, which is a characteristic of the city's greenhouse gas emissions, new measures are needed to enable the city's residents to live comfortably with a decarbonized lifestyle.
- To facilitate the transition to decarbonization of the entire global supply chain through the incorporation of decarbonization elements into the management and activities of small and medium-sized enterprises in the city.

(2) Directions for Revision

- While following the "Zero Carbon Yokohama" and the future vision of Yokohama as displayed in the previous implementation plan, we will redefine the future vision of Yokohama in 2050 based on the purpose of the decarbonization ordinance.
- While anticipating the realization of a de-carbonized society in 2050, we will redefine our basic policy toward a 50% reduction of greenhouse gas emissions in FY2030 (FY2013 ()), and will place particular emphasis on initiatives that contribute to the circulation and sustainable development of the city's economy and to behavioral change in citizens and businesses.
- In order to achieve the FY2030 target, we will position medium- to long-term measures based on the expectation of maximizing the use of current technologies and creating new innovations toward 2050.
- In line with this revision, related plans (e.g. Yokohama City Strategy for Utilization of Renewable Energy) will be integrated into the actual plan.

Chapter 2 Basic Directions

1 "Yokohama's Vision for the Future in 2050" toward the Realization of a

The city revised its implementation plan on October 30, 2018 (月), setting forth the goal of "Zero Carbon Yokohama," which is to achieve decarbonization by 2050, and also presented five future visions of Yokohama to share with citizens and businesses.

Since the carbon neutrality declaration of 2050 , the focus on decarbonization has increased and the social context is undergoing a major transformation. The demand for companies to decarbonize their entire supply chain, and the growing interest of the younger generation (Generation Z) in decarbonizing their own operations, as well as the use of social networking sites such as , have created a huge wave of interest in daily life and business activities.

The impact of climate change, also known as the Climate Crisis, is also having a significant impact on the protection of urban infrastructure such as roads and rivers, as well as on the concept of disaster prevention and mitigation, through frequent 100-year floods.

In order to respond to these changes and meet the challenge of achieving the goal of a decarbonized society by 2050 , we need to share a clear vision with the city民 and business community and work together to achieve the technological, economic, and social systems and lifestyle changes necessary to realize this goal.

In the revision of the actual plan, we have once again revised the "Vision of Yokohama in 2050 " to achieve a decarbonized society, and have revised it to "Zero Carbon Yokohama - Achieve virtually zero greenhouse gas emissions by 2050 and become a sustainable metropolis". The three goals are: "a city where decarbonization permeates daily life and local communities", "a city where the city's economy is driven by decarbonization and sustainable development continues", and "a city where decarbonization and climate change impacts are addressed".

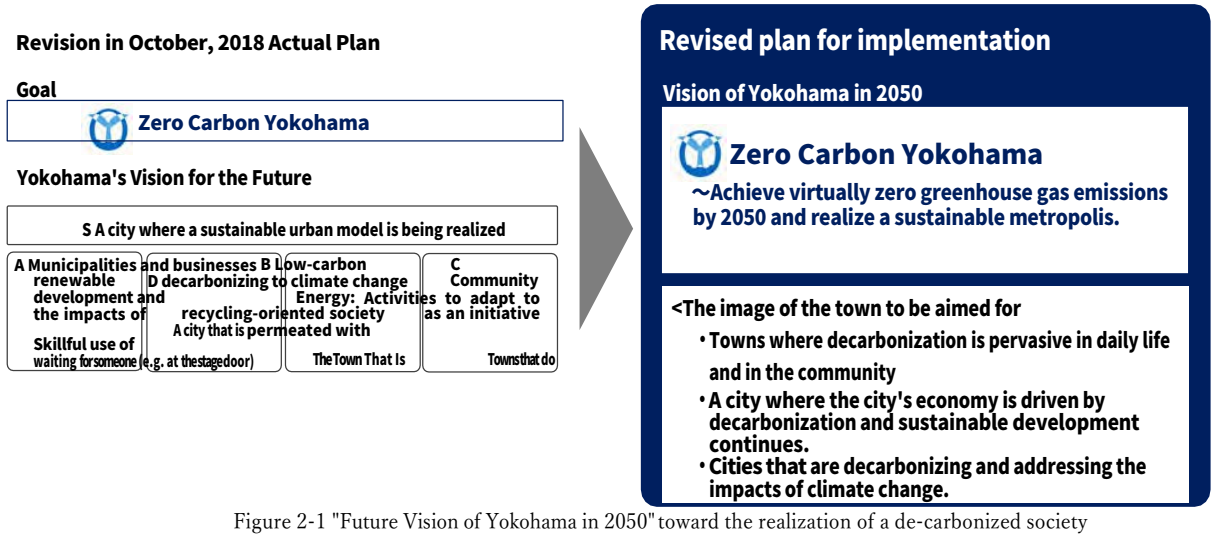


Figure 2-1 "Future Vision of Yokohama in 2050" toward the realization of a de-carbonized society

2 Potential Town Objectives

The following images of the three goals for the city will be displayed when they are realized in 2050 .

(1) Towns where decarbonization is pervasive in daily life and community

We aim to create a town where people can live comfortably while practicing a decarbonized lifestyle that contributes to decarbonization in their daily lives and activities.

<Image realized

- All generations recognize the importance of climate change countermeasures, and decarbonized lifestyles have taken root through energy-saving measures in equipment and activities, the use of renewable energy, and the use of products and services that contribute to decarbonization.
- The use of "higher energy efficiency homes"[16] such as ZEH (Net Zero Energy House)[15] with the highest levels of insulation[14] and airtightness[16] and environmentally friendly energy options are becoming more common, and people are living healthy, comfortable, and low greenhouse gas generation lives.
- In addition to the 3Rs (Reduce, Reuse, Recycle) , we are making effective use of resources and reducing the generation of waste止 by minimizing the consumption of resources and using them in a cyclical manner.
- Many city residents will participate in local activities, and in addition to the implementation of decarbonization initiatives, the preservation and creation of greenery will be promoted, etc,

  The water and greenery network, which also serves as a pathway for the wind and heat, is mitigating the heat environment.
- In response to the increasingly severe disasters caused by climate change, municipalities, businesses, cities, and other entities are working together to avoid or mitigate damage through auto-assistance, cooperative assistance, and public assistance efforts.

(2) A city where the city's economy is driven by decarbonization and continues to develop sustainably

We aim to create a city where the environment and the economy are in a virtuous circle, as companies in the city respond to the global decarbonization of their supply chains and practice decarbonization-driven management.

<Image realized

- The city's businesses are smoothly and steadily transitioning to a decarbonized economy, creating a "virtuous circle between the environment and the economy" with decarbonization as the driving force.
- Decarbonized management of the city's companies has become the norm and they participate in domestic and international decarbonized supply chains.
- The development of new technologies and the creation of decarbonized innovations have made the company globally competitive.
- International cooperation in the field of decarbonization is progressing, increasing the international presence of the city, and city companies are participating in overseas infrastructure business.
- The concept of a "circular economy," in which companies use resources in a sustainable manner, is becoming more prevalent and increasing the sustainability of business activities.

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[14] The highest level of heat insulation means the heat insulation performance grade 6 or 7 (the highest) in the Housing Performance Display System.

[15] "This refers to a house that aims to achieve zero annual energy consumption by significantly improving the insulation performance of the exterior and installing high-efficiency equipment systems to achieve significant energy savings while maintaining the quality of the indoor environment, and then introducing renewable energy sources to achieve an annual energy consumption gross margin of zero.

[16] Image on p. 60

(3) Decarbonization and a city that is responding to the impacts of climate change.

We will aim to create a city that is able to adapt to the effects of climate change and has advanced urban infrastructure that strengthens resilience, while responding to decarbonization by implementing urban development that saves energy and mitigates the heat island effect and replacing cars with next-generation automobiles.

<Image realized

- Energy-saving measures for buildings and city planning to mitigate the heat island effect are being implemented, and the use of distributed energy sources such as electricity and heat derived from renewable energy is progressing, leading to the development of a city with a decarbonized economy.
- With the development of infrastructure such as EV (electric car) recharging facilities and water stations, half of all cogwheel cars 大 are being replaced by next-generation vehicles such as EVs and FCVs (fuel cell vehicles). In addition, the development of an environmentally friendly transportation network is progressing, and the enhancement of a variety of transportation means is making it easier for everyone to get around the city.
- The construction of a recycling-oriented urban structure is progressing as various resources such as waste are being reused and utilized effectively as new energy sources.
- The development of robust urban infrastructures to cope with the effects of climate change and urban development utilizing green infrastructures will be promoted.

  This is a way to preserve the natural environment and strengthen resilience.

3 Role of each entity

City residents, businesses, and city entities will mutually cooperate and collaborate with each other to promote various initiatives in the city area.

(1) Role of the Municipalities

The city residents should deepen their understanding of climate change, promote energy-saving activities in their daily lives, and promote the use of renewable energy sources.

The company is expected to make active efforts to shift to a decarbonized lifestyle by, for example, making efforts to reduce its carbon footprint.

In addition, many neighborhood associations, NPOs, and other municipal groups are working on global warming countermeasures in the city, and it is expected that each group will work together with other entities to implement measures to decarbonize the city.

In terms of adaptation to climate change, it is expected that municipalities will collect disaster prevention information and information on heat stroke provided by the government and other organizations, and link it to "self-help" activities to protect their own lives and property, and promote "mutual assistance" utilizing local ties.

(2) Role of the business

Businesses are expected to promote more environmental education in the workplace to deepen understanding of changes in supply chain management and decarbonization management toward decarbonization, and to exercise autonomy and creativity in conducting business activities to reduce greenhouse gas emissions. In addition to the promotion of energy conservation and the introduction of renewable energies, etc. 入 , the provision of products, energy, and services is also expected to reduce the environmental burden throughout their life cycles.

It is also important to respond to global trends such as the development, demonstration and diffusion of technologies in collaboration with universities and research institutions, and the expansion of ESG investment by financial institutions.

In terms of adaptation to climate change, businesses are expected to mitigate damage in the event of a disaster, develop business continuity plans (BCP), and assess business risks and consider and implement adaptation measures in anticipation of future climate change impacts.

(3) Role of the City

The city will promote comprehensive and systematic measures to realize a decarbonized society and manage the progress of the plan in cooperation with the national government, the prefecture, related municipalities, businesses, and citizens, taking into account social conditions and other factors. In addition, the city will disseminate information on climate change to citizens and businesses in a broad and easy-to-understand manner, promote public awareness and environmental education, and promote initiatives by citizens and businesses. In addition, we will take the initiative in energy conservation and the introduction of renewable energy in our own business operations and facilities.

In terms of adaptation to climate change, we will implement soft-surface measures such as collecting and monitoring information on climate change, as well as hard-surface measures such as the development of infrastructure.

Column Directions for Achieving 2050 Decarbonization

In order to achieve decarbonization by 2050 , it is important to "reduce energy consumption大 significantly" and "shift energy sources to mainly renewable energy".

There are various paths to this process, and new methods may emerge as a result of technological innovation in the future, but the following is an example of a possible direction.

(1) Promote maximum energy conservation and electrification [17]

- Reduce energy consumption through maximum energy conservation and electrification
- Note that there are some areas where electrification is difficult to envision at this time, such as industrial heat sources and marine fuels.

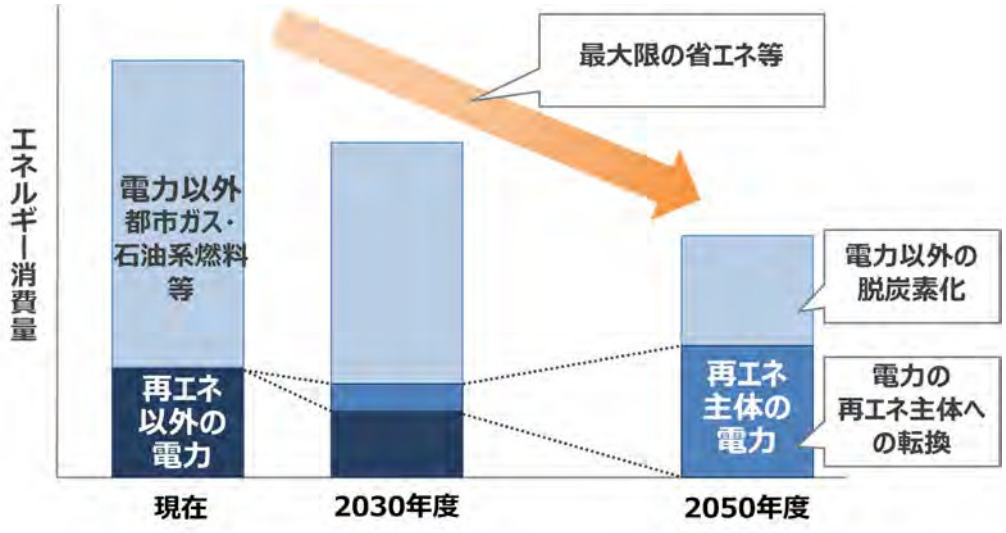
(2) Conversion of electricity to renewable energy

- By converting the use of electricity to renewable energy, CO_2 emissions associated with the use of electricity will be reduced to zero.
- According to the "Yokohama City Strategy for Utilization of Renewable Energy" (adopted in May 2020), the potential of renewable energy generation in the city is estimated to be about 10% of the estimated electricity use in 2050.
- At the foot of the table, we can only supply the energy that we can't get from other regions with abundant renewable energy potential.

(iii) Decarbonization of non-electricity

- In order to decarbonize activities that burn fossil fuels such as city gas and heavy oil, we will promote the conversion to alternative fuels such as biomass fuels, hydrogen fuels, and synthetic methane through methanation[18], as well as the implementation of new technologies such as CCUS(19).

  Assumed to be addressed by specialization and dissemination



[17] means the conversion of fuels consumed to obtain energy such as heat and power for heating, hot water, kitchen, auto, etc., to electricity.

[18] Technology that reacts CO_2 and hydrogen to produce methane, the main component of city gas.

[19] Abbreviation for "Carbon Dioxide Capture, Utilization and Storage," a technology for the capture, utilization and storage of CO

Chapter 3 Greenhouse Gas Reduction Targets

1 Targeted greenhouse gases

The greenhouse gases covered in the actual plan are carbon bioxide (CO_2), methane (CH_4), nitrogen dioxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SOx).

(SF_6) and nitrogen trifluoride (NF_3).

Table 3-1 List of Target Greenhouse Gases

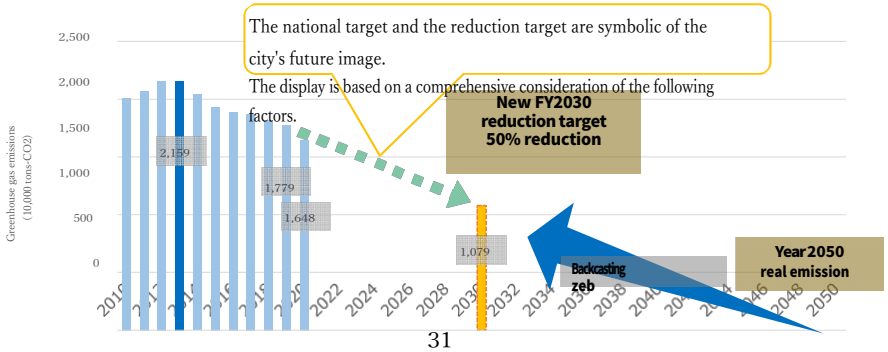
type	Global Warming Coefficient	Major emission sources
Carbon dioxide (CO_2)	1	Fuel combustion, waste, etc.
Methane (CH_4)	25	Waste, fuel combustion, agriculture, etc.
Nitrogen(N_2O)	298	Fuel combustion, waste, agriculture, etc.
Hydrofluorocarbons (HFCs)	HFC-134a□1,430 etc.	Refrigerants, aerosols, etc.
Perfluorocarbons (PFCs)	PFC-14 ：7,390 etc.	Semiconductor and liquid crystal manufacturing, etc.
Sulfur hexafluoride (SF_6)	22,800	Equipment using electrical insulating gas, etc.
Nitrogen trifluoride (NF_3)	17,200	Semiconductor and liquid crystal manufacturing, etc.

2 Greenhouse gas emission reduction target

As a target for the reduction of greenhouse gas emissions in 2030, we will aim for a "50% reduction of greenhouse gas emissions in comparison with 2013". We also aim to achieve virtually zero greenhouse gas emissions by 2050.

Table 3-2 Greenhouse Gas Emission Reduction Targets

Target year (target year)	Base year Greenhouse gas emissions	Greenhouse gas emission reduction target Greenhouse gas emission target amount】【Greenhouse gas emission target amount
Fiscal year 2030	Fiscal Year 2013 21.59 million t-CO_2]	**▲50** 10.79 million t-CO_2]
Year 2050	long vowel mark (usually only used in katakana)	**Virtually zero greenhouse gas emissions**



fiscal year (usu. April 1 to March 31)

Figure 3-1 Concept of setting a new 2030 GHG emission reduction target

3 FY2030 reduction target for pro-competitive products

(1) Direction of current trend case, 2030 fiscal year trend case, etc.

trend

The "status quo trend case" is the basis for thinking when estimating departmental reduction targets and reduction expectations,

The "2030 fiscal year trend case" and "50% reduction case" will be as follows

item	way of thinking
status quo case	emissions if the current global warming countermeasures are maintained, and the amount of emissions from activities such as human population, etc. Emissions can increase or decrease depending on the increase or decrease in volume and other factors.
FY2030 trend case	emissions if the past downward trend in emissions continues through FY2030 if global warming countermeasures are implemented at the same pace as in the past. The following is a summary of the results of the survey.
50% reduction case	emissions if necessary measures are implemented and a 50% reduction is achieved in FY2030 It will be.

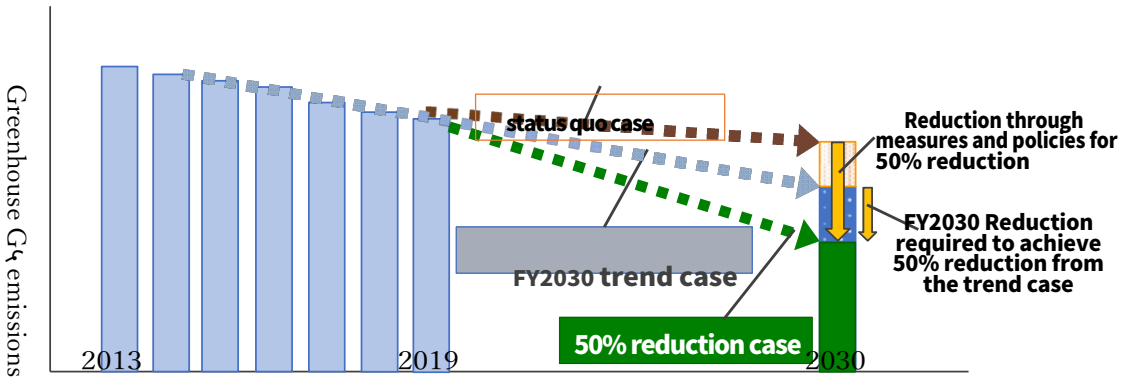


Figure 3-2 Direction of thinking about the current trend case, FY2030 trend case, etc.

The latest year of actual GHG emissions at the time of the implementation of the actual plan is FY2020, but since the actual emissions for that year appear to be affected by the new coronavirus infection, which is not seen in previous years, the actual emissions up to FY2030 are used in "(2) Estimation of Emissions in the Current Trend Case" and "(3) Setting of Emission Reductions for Each Department Based on the FY2030 Trend Case" in this chapter. (3) Setting of departmental emission reduction targets based on the FY2030 trend case", actual emissions up to FY2020 will be used for estimation.

(2) Estimation of emissions in the current trend case

Actual results for FY 2019 are used for FY 2030 and FY 2050,
Future emissions are estimated for the current trend case, assuming that no additional measures are taken after 2020 (FY2020).

Table 3-3 Estimating the Current Trend Case

Dept. and gas type		Method of Estimation / Main Idea
CO_2	family department	Results of Yokohama City future human population estimation (mid-level estimation)[20] and emissions
	business department	Estimation based on the assumption that the proportionality of Deferral with emissions in FY 2019
	industrial division	Deferral with emissions in FY 2019
	energy conversion department	Estimated using a 5-year moving average of emissions
	transportation dept.	Emissions from automobiles and railroads are estimated on the assumption that they are proportional to the results of the estimation of future human population in Yokohama City (mid-level estimation). As for ships Deferral in emissions for FY 2019.
	waste department	The amount of emission concerning general waste is the result of the estimation of the future population of Yokohama City. （中位推計）と比例すると仮定して推計。 Industrial wastes. The emissions to be achieved in the year 2019 will be the same as the emissions in the year 2019.
Other 6 Gas	CH_4, N_2O, HFCs, PFCs, SF_6, NF_3	Estimated using a 5-year moving average of emissions

As a result of the estimation, the estimated total greenhouse gas emissions under the current trend case are expected to be 17.59 million tons-$CO_{(2)\ in}$ FY2030 and 16.91 million tons-CO_2 in FY2050.

Table 3-4 Estimation results for the current trend case

Dept. and type	Fiscal Year 2013 (million tons-CO_2)	Estimated value for FY2030		Estimated value for 2050	
		Greenhouse Gas Emissions (million tons-CO_2)	Reduction rate of FY2013	Greenhouse Gas Emissions (million tons-CO_2)	Reduction rate of FY2013
family department	501	421	▲16% (16%)	385	▲23% (23%)
business department	487	336	▲31% (-31%)	336	▲31% (-31%)
industrial division	245	179	▲27% (-27%)	179	▲27% (-27%)
energy conversion department	451	390	▲13% (-1.5)	390	▲13% (-1.5)
transportation dept.	390	348	▲11% (11%)	320	▲18% (18%)
waste department	53	47	▲10%	45	▲14% (-)
Other 6 gases	33	36	△8	36	△8
total amount	2,159	1,759	▲19%, no.	1,691	▲22% (22%)

[20] Medium estimates for 2030 result in 3,665 thousand and 3,346 thousand for 2050.

Source: https://www.city.yokohama.lg.jp/city-info/seisaku/torikumi/shien/jinkosuikei.html

(3) 2030 Setting of departmental reduction targets based on the fiscal year trend case approach

The reduction target for FY2030 (FY2030) for each department has been set based on the following ideas (1) to (3).

(i) While emissions at the 50% reduction in FY2030 are expected to be 10.79 million tons, the estimated emissions in the Trend Case are expected to be 12.36 million tons (-43% reduction), a difference of 1.57 million tons.
(2) 1.57 million tons is allocated proportionally to the three pro-competitive categories of households, energy conversion, and transportation based on the amount of emissions in FY2013 (2013).
(3) The forecast for waste and other 6 gases is based on the national reduction rate and the target values based on the city's business operations.

Figure 3-3 Additional reductions required for 50% reduction in FY2030 from FY2030 trend case

In this way of thinking, the reduction guideline (emission amount and reduction rate of 2013) for each cell's product is as shown in Table 3-5, where the red line is circled.

Table 3-5 FY2030 GHG emission reduction targets by department (Unit: 10,000 tons-CO_2)

Dept. and type	2013 Fiscal year emissions	2019 Fiscal year emissions	Fiscal year 2030			(Reference) National Reduction ❹ (Reference) (approximate) (FY2013) (proportional to FY2013)
			Trend Case〉 Emissions (FY2013 proportional ratio)	allotment	Emissions (at 50% reduction) (approximate value) (FY2013 ratio) (FY2013 ratio)	
family department	501	431	284 (-43%)	▲58	**226 (-55%)**	▲66% (-66%)
business department	487	336	164 (-66%)	-	**164 (-66%)**	▲51% (▲51%)
industrial division	245	182	115 (-53%)	-	**115 (-53%)**	▲38%.
energy conversion section	451	385	302 (-33%)	▲51	**251 (-44%)**	▲47% (-47%)
transportation dept.	390	356	312 (-20%)	▲48	**264 (-32%)**	35% ▲35
waste departmental special care* (e.g., medical care, etc.)	53	48	(33) (-36%)	-	**33 (-36%)**	▲15%.
Other 6 Gas*.	33	40	(25) (-25%)	-	**25 (-25%)**	▲27% (-27%)
total amount	2,159	1,779	1,236 (-43%)	▲157	**1,079 (-50%)**	▲46%.

*The emissions of "Trend Case" for waste department prohibition and other 6 gases are different from other fields, and the reductions in the city's administrative operations and the reductions in the national government's

Estimation is based on the standard value, which is different from other departments.

4 Reduction required to achieve 50% reduction from FY2030 emissions (current trend case)

Based on the reduction estimates from 2020 to 2030 (FY2030 to), i.e., the estimated emissions in FY2030 (in the current trend case), the overall reduction estimate required for a 50% reduction is 6.81 million tons-CO2, and the reduction estimates for each of our categories are as follows

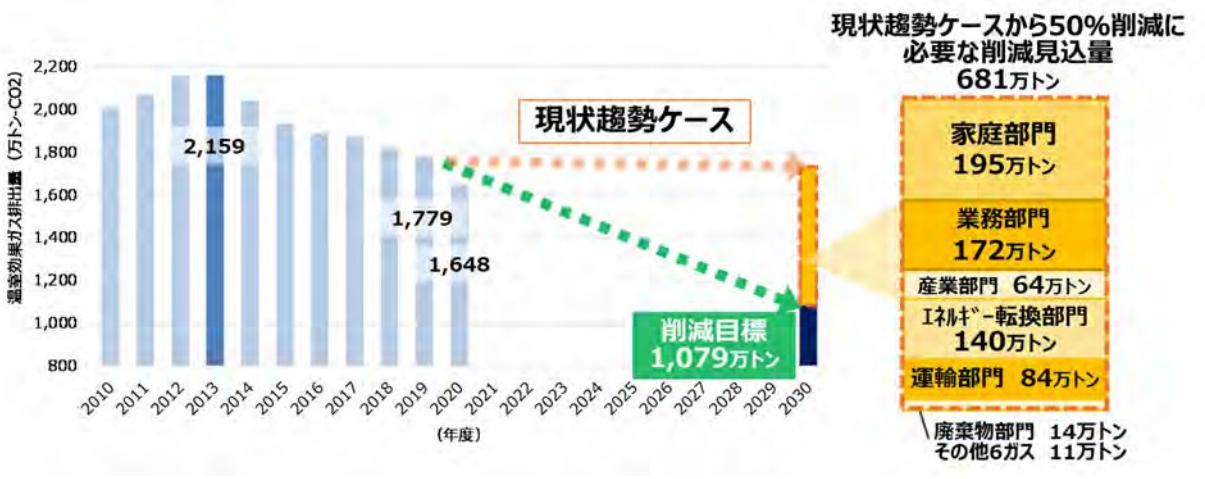


Figure 3-4 Additional reductions required for 50% reduction in FY2030 from the FY2030 status quo

trend case Table 3-6 Reduction expectation in the residential sector

here dita ry occu pati onal grou p (Ya mat o peri od) 門	Energy Conserv ation/R enewab le Energy (lessening the significance or value of the previous word) the likes of	Measure Name	Directions as of FY2030	curtailme nt expected quantity
family department	energy conservatio n	• Energy conservation in new/existing homes (improved insulation, LED lighting, high-efficiency water heaters (heat pump water heaters, household fuel cells, etc.), energy-efficient appliances, etc.) • Energy conservation actions (energy management) (e.g., lifestyle change, etc.).	• ZEH standard for new homes is standard • LED lighting penetration rate ：100%, etc.	500,000 tons
	Re- energ y, etc.	• Diffusion of photovoltaic power generation equipment in residences 38	• Installed photovoltaic power generation capacity: 450,000 kW (FY2020: 140,000 kW*)	110,000 tons
		• Switch to 100% renewable electricity	• Number of households switching to 100% renewable electricity ：10% of all households (approx. 170,000	270,000 tons

Table 3-7 Business Department Reduction Estimates

hereditary occupational group (Yamato period)	Energy conservation/renewable energy, etc.	Measure Name	Directions as of FY2030	curtailment expected quantity
business department	energy conservation	• Implementation of energy conservation measures in commercial facilities, offices, etc. (improvement of insulation performance, introduction of LED lighting and energy-saving equipment (heat pump water heaters, etc.), energy conservation measures, etc.) Guy management, etc.)	• Energy savings of approx. 2%/year	960,000 tons
	Re-energy, etc.	• Spread of solar power generation facilities in commercial facilities, business establishments, etc.	• Installed solar power generation equipment : 60,000 kW (FY2020: 29,000 kW*)	15,000 tons
		• Switch to 100% renewable electricity	• Number of businesses switching to 100% renewable electricity : 10% of all businesses (FY2020: almost 0%)	150,000 tons
		• Improvement of CO_2 emission factor of electricity	• CO_2 emission factor of electricity : 0.25 kg-CO_2/kWh (FY2020: approx. 0.45 kg-CO_2/kWh)	600,000 tons
			total amount	1.72 million tons

*Calculated from the amount of installation of 10kW or more FIT certified portion, etc. (to be equally divided among business and industrial sections)

Table 3-8 Industrial Division Reduction Estimates

hereditary occupational group (Ya	Energy conservation/renewable energy, etc.	Measure Name	Directions as of FY2030	curtailment expected quantity

mat o peri od) ｢｣				
industrial division	energy conservation	• Implementation of energy-saving measures at the plant and other facilities (LED lighting and high-efficiency equipment) (e.g., input, energy management, etc.)	• Energy savings of approx. 1 %/year	270,000 tons
	Re-energy, etc.	• Spread of photovoltaic power generation equipment in industrial plants, etc.	• Installed solar power generation equipment : 60,000 kW (FY2020: 29,000 kW*)	17,000 tons
		• Improvement of CO_2 emission factor of electricity	• CO_2 emission factor of electricity :0.25kg-CO_2/kWh (FY2020: approx. 0.45 kg-CO_2/kWh)	350,000 tons
			total amount	640,000 tons

*Calculated from the amount of installation of 10kW or more FIT certified portion, etc. (to be equally divided among business and industrial sections)

Table 3-9 Energy Conversion Department Reduction Estimates for門

here dita ry occu pati onal grou p (Ya mat o peri od) 門	Energy conserv ation/r enewa ble energy, etc.	Measure Name	Directions as of FY2030	curtailme nt expected quantity
ṫ™Ṽ|conversion section	energy conservatio n	• Implementation of energy conservation measures	• Implementation of energy conservation measures	1.35 million tons
	Re- energ y, etc.	• Improvement of CO_2 emission factor of electricity	• CO_2 emission factor of electricity ：0.25kg-CO_2/kWh (FY2020: approx. 0.45 kg-CO_2/kWh)	44,000 tons
			total amount	1.4 million tons

Table 3-10 Reduction Estimates for Transportation

here dita ry occu pati onal grou p (Ya mat o peri od) 門	Energy conserv ation/r enewa ble energy, etc.	Measure Name	Directions as of FY2030	curtailme nt expected quantity

transportation dept.	energy conservation	• Popularity of Electric Cars • Promote use of autos, public transportation, etc. • Implementation of energy conservation measures (implementation of energy conservation行 activities (e.g. eco-driving) in the auto car sector, implementation of emission reduction measures in railroads and shi)	• Electric cars: 55 (FY2020: approx. 18%), etc.	680,000 tons
	Re-energy, etc.	• Improvement of CO_2 emission factor of electricity	• CO_2 emission factor of electricity ：0.25kg-CO_2/kWh (FY2020: approx. 0.45 kg-CO_2/kWh)	160,000 tons
			total amount	840,000 tons

Table 3-11 Reduction Estimates for Waste

section	Energy conservation/renewable energy, etc.	Measure Name	Directions as of FY2030	curtailment expected quantity
waste department	-	• Reduction of incineration of plastics and other waste	• Amount of plastic incinerated at incineration plants: approx. 61,000 tons/year (FY2020: approx. 100,000 tons/year), etc.	140,000 tons
			total amount	140,000 tons

Table 3-12 Reduction Estimates for Six Other Gases

type	Energy Saving/ Re-energy, etc.	Measure Name	Directions as of FY2030	curtailment expected quantity
6ふっ化硫黄 et al.	-	• Implementation of emission reduction measures (e.g., emission reductions from fuel combustion)	• Implementation of energy conservation measures, reduction of emissions by upgrading to low emission equipment, etc.	110,000 tons
			total amount	110,000 tons

5 Targeted reduction of energy consumption in FY2030

Energy consumption at 50% reduction in FY2030 is calculated based on the energy consumption in the FY2030 trend case and on the amount of reduction measures anticipated in each of our factories for 50% reduction.

In order to grasp the reductions achieved through energy conservation in the city area, a reduction target for energy consumption in FY2030 will be set as in the previous actual plan, and the target will be raised to a 34% reduction (168 PJ) compared to FY2013 ().

The energy consumption in FY2030 for each department and the reduction rate of the crimp in FY 2013 are assumed as a guideline.

Table 3-13 Energy Consumption Results and Targets (Unit: PJ)

Dept. and type	Actual		FY2030 Target	
	Fiscal Year 2013	Fiscal Year 2019	amount of consumption	Reduction of the ratio against FY2013 ❹ (❹)
family department	54.5	49.8	40	▲27% (-27%)
business department	45.6	37.2	29	▲37% (-37%)
industrial division	26.8	22.3	20	▲26% (-26%)
energy conversion department	72.5	62.2	41	▲43% (-43%)
transportation dept.	54.6	49.8	39	▲29%.
waste department	-	-	-	-
Other 6 gases	-	–	–	-
total amount	254	221	**168**	**▲34%.**

In order to achieve the target for FY2030, we will promote local production and local consumption of renewable energy within the city and aim to install 690,000 kW of renewable energy equipment in FY2030.

The amount of installed capacity in FY2030 is a guide for each type of renewable energy.

Table 3-14 Actual Installation of Renewable Energy Facilities目 Target (Unit: kW)

Types of Renewable Energy	track record		FY2030 Target
	Fiscal Year 2013	FY2020	
solar power (generation)	88,000	194,000	570,000
Power generation	0.4 million	0.2 million	0.2 million
Low water power	0.1 million	0.1 million	0.1 million
Biomass power generation Sludge digestion gas power generation)	94,000	96,000	116,000
total amount	190,000	290,000	**690,000**

Chapter 4: Measures

1 Basic Policy and Key Initiatives

In order to realize "Zero Carbon Yokohama - Achieve virtually zero greenhouse gas emissions by 2050 and realize a sustainable city", which is the vision of Yokohama in 2050 to realize a decarbonized society, the city, businesses and municipalities will mobilize all their energies to achieve it. In order to achieve this goal, the city will establish a "basic policy" targeting the year 2030, and will newly set up "priority initiatives" as leading projects that will drive the entire project.

(1) Basic Direction

Targeting the year 2030, we have established seven "basic policies" for decarbonization and adaptation to climate change in a wide range of areas.

(2) Priority Initiatives

We will continue to work toward achieving the goals of the 2030-2030 plan in particular, while also anticipating the realization of decarbonization by 2050.

(In order to achieve a 50% reduction in greenhouse gas emissions in FY2030, the city is working to achieve a cyclical and sustainable development of the city's economy, and to achieve a 50% reduction in greenhouse gas emissions in FY2030.

The five initiatives that have been selected and restructured to contribute to the change in the behavior of people and businesses will be designated as "Priority Initiatives" as leading projects that will drive the entire project.

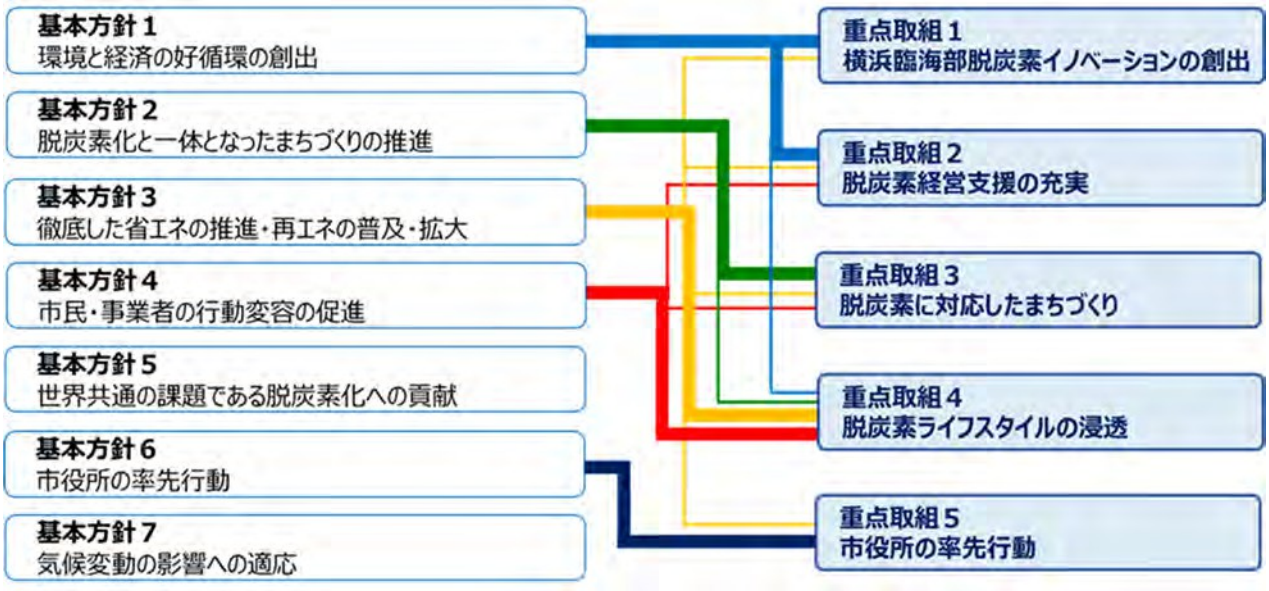


Figure 4-1 Relationship between basic policy and priority actions

2 Image of initiatives for FY2030

In order to achieve our goal for the year 2030 (2030 12), we will promote initiatives in each field such as housing/buildings, industry/economy, transportation, infrastructure, etc. The following is an image of initiatives in each field.


まちづくり
住宅・建築物
ZEB
省エネ性能の
より高い住宅
脱炭素行動
脱炭素先行地域
水素ステーション
再エネ切替
市役所
交通インフラ
国際会議の開催
CO₂
バイオマス発電
メタネーション等
新技術の実証・実装
CO₂
陸上電力供給
H₂
水素等カーボンフリー
燃料運搬船
国際貢献

3 Measures for each basic policy

(1) 《Direction 1》 Creation of a virtuous circle between the environment and the economy

The era in which global warming countermeasures are regarded as a constraint or a cost to economic growth is over. The concept of GX (Green Transformation) is important.

In order to link global warming countermeasures to the city's economic cycle and sustainable development, we will create a virtuous circle between the environment and the economy, motivated by decarbonization, while taking advantage of Yokohama's potential.

counter-measure
1 Creation of decarbonization innovation and carbon neutrality in the Yokohama waterfront area in collaboration with the government and industry Port formation
2 Enhancing support for the transition of small and medium-sized enterprises to decarbonized management
3 Aiming to implement decarbonized lifestyles, create a virtuous cycle between the environment and the economy, and achieve sustainable growth in corporate activities Building a Circular Economy
4 Strengthening the attraction and concentration of companies related to decarbonization
5 Promotion of advanced and sustainable urban agriculture through smart agriculture, etc.

indicator

item	standard value	Target value
Percentage of businesses that have implemented decarbonization initiatives	23% (%) (Fiscal year 2021)	40%. (Fiscal year 2030)
Emissions per business floor area	90 kg-CO_2/㎡/year (Fiscal year 2021)	44 kg-CO_2/㎡/year (Fiscal year 2030)
CO_2Emissions in Waterfront Area	7,423,000 t-CO_2 (2028)	4.8 million t-CO_2 (Fiscal year 2030)
Building a Circular Economy	long vowel mark (usually only used in katakana)	implementation

target area

counter-measure	Examples of Specific Efforts
1 Creating decarbonized innovation in the Yokohama waterfront area in collaboration with government and industry. Formation of carbon neutral ports **Priority Action 1**	- Creation of decarbonization innovation in the waterfront area in collaboration with the government and industry Support for the growth of startups and entrepreneurs who will be responsible for new economic growth Development of advanced projects utilizing DX and decarbonization - Promotion of carbon neutral port formation - Promote the construction of supply chains for water, ammonia, synthetic methane, liquid synthetic fuels, etc. in collaboration with private companies, Kawasaki City, etc. Promote use of next generation energy sources such as water - Formation of algal beds and shallow areas that function as "blue carbon" to absorb CO_2. -
2 Enhancing support for the transition of small and medium-sized enterprises to decarbonized management **Priority Action 2**	- Basic support for SDGs and decarbonization management, promotion of business in green sectors - Promote decarbonization and SDGs initiatives in cooperation with financial institutions, etc. Promote the introduction of facilities that contribute to decarbonization - Implementation of decarbonization-related financing schemes - Promote acquisition of decarbonization-related initiatives for small and medium-sized enterprises - Hardware development of shopping malls and support for promoting SDGs
3 Establishment of a circular economy that aims to practice a low-carbon lifestyle, create a virtuous circle between the environment and the economy, and achieve sustainable growth in corporate activities **Priority Action 4**	- Promote initiatives through public-private partnerships that link the practice of decarbonized lifestyles with the establishment of a circular economy that aims for a virtuous cycle between the economy and the environment and sustainable growth of business activities, in order to realize decarbonization.
4 Strengthening the attraction and concentration of companies related to decarbonization **Priority Action 1**	- Attracting companies and promoting investment in the decarbonization sector
5 Promote advanced and sustainable urban agriculture through smart agriculture, etc.	- Promotion of smart agriculture using ICT, etc. - Promote energy-saving agricultural facilities that contribute to reducing the use of fossil fuels.

Column Direction of Industrial Structure Transformation Toward a Decarbonized Society

In May 2022, the Japanese government released an interim report on the "Clean Energy Strategy," a strategy for linking global warming countermeasures to economic growth. The report states that in order to simultaneously achieve decarbonization and economic growth and development is important to not only change the current energy supply and demand structure but also to drastically change the industrial structure. The industrial structure must also undergo a major transformation. In addition to the current energy demand-supply structure, a major shift in the industrial structure will also be an important perspective for the simultaneous realization of economic growth and development.

In addition, the Roundtable Meeting of Experts on Clean Energy Strategies held in May 2022 called for the realization of more than 150 trillion yen in new investment in the decarbonization sector over at least the next 10 years through public and private sector cooperation, and the establishment of a GX investment strategy.

The committee expressed its intention to display this as a 10-year roadmap for the development of the next 10 years.

(2) 《Basic Policy 2》 Promoting decarbonization and urban development in tandem

In both urban and suburban areas, various stakeholders will build and share a vision for the future based on natural and social characteristics of the region, and while solving regional issues through the introduction of renewable energy and other measures, promote urban development that is integrated with decarbonization, and take the opportunity of the International Garden and Greenery Exposition to create a new sustainable urban model. We will also promote efforts to create a new sustainable urban model on the occasion of the International Horticultural Exposition.

In addition, the city will promote the use of public transportation such as railroads and buses, promote the use of autos and mobility management [21] through consultation among citizens, businesses and the city, and aim to shift to a lifestyle that is not overly dependent on the use of the car.

counter-measure
1 Promote initiatives in the "Minato Mirai 21 District" as a decarbonizing first mover.
2 Creation of a sustainable urban model at the International Horticultural Exposition, and the legacy of Kamisegawa
Promotion of City Planning
3 Promote decarbonization and urban development in the region through the creation of model districts, etc.
4 Promotion of decarbonized urban development in conjunction with large-scale land use changes, such as the return of US military facilities
5 Development of road and rail network, promotion of public transportation use and low carbon
6 Promote use of shared bicycles, etc.
7 Maintain and low-carbon regional transportation

indicator		
item	**standard value**	**Target value**
CO_2 emissions from electricity consumption in decarbonized regions	-	effective zero (Fiscal year 2030)
Implementation of model projects for decarbonization in suburban areas	-*	development (Fiscal year 2030)
Creating a sustainable urban model at the International Horticultural Exposition	-	Model Creation (2027)
Extension of Cyclo-car Passage Space	86km (Cumulative total) (Fiscal year 2021)	103km (Cumulative total) (Fiscal year 2025)

Assuming implementation of model projects in three districts in FY2022

target area


[21] The direction in which the mobility of each person is desirable both socially and personally (from excessive use of cogwheels to appropriate use of public transportation, etc.). (e.g., by using communication as the core of transportation policy to encourage change).

counter-measure	Examples of Specific Efforts
1 Promote initiatives in the "Minato Mirai 21 District" as a decarbonization destination area. **Priority Action 3**	- Creation of an urban decarbonization model through the initiatives of the "Minato Mirai 21 District" as a first decarbonization area
2 Creation of a sustainable urban model for the International Horticultural Exposition and promotion of urban development in Kamisegaya by leveraging the legacy of the exposition **Priority Action 3**	- Creation of a decarbonization model that incorporates the world's most advanced technologies Creation of an urban development model - that takes advantage of green infrastructure - Promote urban development in the suburbs by leveraging the legacy of the 2027 International Horticultural Exposition
3 Promote decarbonization and urban development in the region through the creation of model districts, etc. **Priority Action 3**	- Implementation of model projects for decarbonization in suburban areas - Realization of an environmentally friendly town by promoting the introduction of advanced facilities and renewable energy to new developments. - Promotion of decarbonization by introducing renewable energy, etc. using the opportunity of large-scale land conversion - Promotion of urban development utilizing renewable energy in suburban residential areas
4 The return of US military facilities and other large scale Promotion of decarbonized urban development through land use change **Priority Action 3**	- Promotion of decarbonization associated with the use of former military facilities
5 Development of road and rail network, promotion of public transportation use and low carbon	- Promote seamless [22] transportation by improving road and rail networks - Promote the use of public transportation and low-carbon transportation Promote the use of environmentally friendly fuels -
6 Promote use of bicycles, such as shared bicycles.	- Promote use of shared bicycles, etc. - Promotion of Cyclocycles
7 Maintain and lower carbonize local transportation	- Promotion of efforts to secure means of transportation in line with local needs, such as new bus services - Promoting a low-carbon society through mobility management that encourages a shift from excessive use of private cars to public transportation with less environmental impact. progress

[22] Refers to having connectivity to multiple modes of transportation.

(3) 《Directive 3》 Thorough promotion of energy conservation and diffusion and expansion of renewable energy

In order to reduce energy consumption, we will improve the thermal insulation performance of homes, install high-efficiency equipment and energy-efficient home appliances, expand the use of next-generation automobiles, and install infrastructure facilities such as EV chargers and water stations in anticipation of mandatory compliance with the ZEH standard for new homes by 2030. We will also aim to promote the diffusion and expansion of renewable energy 大 by promoting local production for local consumption, switching to 100% renewable energy and promoting wide-area cooperation with regions with abundant renewable energy potential.

counter-measure	
1	**Promote the spread of homes and buildings with higher energy efficiency**
2	**Diffusion of next-generation automobiles, etc. and infrastructure development**
3	**Promotion of decarbonization of large emitters through the use of the plan document system, etc.**
4	**Promotion of energy management and construction of self-distributed networks**
5	**Promote switchover to renewable electricity**
6	**Promote local production and local consumption of renewable energy such as solar power generation**
7	**Promotion of wide-area collaboration on renewable energy**

indicator

item	standard value	Target value
Number of new homes with high energy efficiency*.	62,212 戸 (Fiscal year 2021)	198,000 戸 (Cumulative total until FY2030)
Next Generation Cars (EV, PHV, FCV) and Percentage of Hybrid Cars	18%. (FY 2020)	55%. (Fiscal year 2030)
Number of people who switched to renewable energy due to initiatives implemented by the City (Households and establishments)	828 cases (Fiscal year 2021 (Cumulative total up to)	10,000 cases (Cumulative total until FY2030)

From FY2026 onward, all new houses will be built with high energy efficiency due to the mandatory compliance with energy conservation standards.

target area

counter-measure	Examples of Specific Efforts
1 Promote the spread of homes and buildings with higher energy efficiency **Priority Action 4**	- Establishment of the "Yokohama Consortium for the Promotion of Healthy and Energy-Efficient Housing (tentative name)." - Conduct technical seminars on the design and construction of "higher energy efficiency housing" and consider a system for registration and announcement of the operators of such housing. - Promote dissemination and awareness-raising through collaboration with various entities, such as the "Yokohama Energy-Saving Housing Academy". - Consideration of visualization of homes with high energy efficiency, etc. Consideration of measures to promote installation of renewable energy - City planning tax reduction measures - Buildings with high energy efficiency through the use of CASBEE Yokohama, etc. - Promotion of dissemination
2 Diffusion of next-generation automobiles, etc. and infrastructure development **Priority Action 4**	- Promotion of Next-Generation Cars, etc. - Promotion of EV charging infrastructure with the aim of realizing an electric car society Promote development of water and hydrogen stations
3 Utilizing the plan document system, etc. **Promoting decarbonization of large emitters**	- Promote decarbonization of businesses in the city through the global warming action plan system, etc.
4 Energy Management **Promotion of self-distributed network construction**	- Promote the introduction of energy management and self-distributed energy facilities (fuel cell systems, cogeneration systems, etc.) that also contribute to the improvement of resilience.
5 Promotion of switching to renewable electricity **Priority Action 4**	- Promotion of local production for local consumption through the use of renewable energy (environmental value) at incineration plants - Promotion of switchover to electricity generated from renewable energy sources in households and business sections by utilizing joint purchasing schemes in cooperation with other municipalities, etc.
6 Promote local production and local consumption of renewable energy such as solar power generation **Priority Action 4**	- Promote the installation of photovoltaic power generation equipment and storage batteries by utilizing joint purchasing schemes in cooperation with other municipalities, etc. - Promote the installation of solar power generation equipment through the use of PPA (Power Purchase Agreement) for private companies, etc. Targeting new buildings above a certain size and promoting the introduction of renewable energy Operation of the system for the purpose of
7 Promotion of wide-area collaboration on renewable energy **Priority Action 4**	- Promotion of wide-area collaboration on renewable energies that contributes to the establishment of a regional circulation coexistence zone

(4) 《Basic Policy 4》 Promoting behavioral change among citizens and businesses

In order to achieve a 50% reduction of greenhouse gas emissions in FY2030, it is essential for citizens and businesses to take measures against global warming as their own responsibility. Therefore, the city, its citizens, and its businesses must work together to promote awareness of the importance of decarbonization.

In order to achieve the goal of a decarbonized society in 2050, we will work together with various entities to promote a shift to a decarbonized lifestyle by spreading awareness at every opportunity and providing environmental education to various generations.

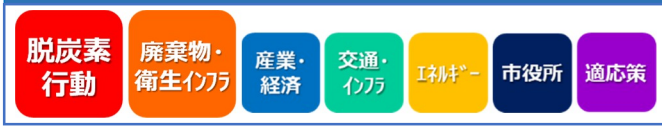
In addition, based on the Yokohama City Basic Plan for the Disposal of General Waste, we will promote reduction measures at all stages from collection, transportation, and disposal, such as thorough separation of waste, promotion of reduce, measures against waste by tonnage, and measures against plastics.

counter-measure
1 Dissemination and awareness-raising in collaboration with diverse entities
2 Creation and development of decarbonized lifestyle innovations that accelerate behavioral change among citizens
3 Enhancement of environmental education for children who will lead the next generation in cooperation with educational institutions in the city
4 Fostering the next generation of environmental education and awareness
5 Formation of a recycling-oriented society by enhancing measures to reduce plastic waste and waste products.

indicator

item	standard value	Target value
Percentage of citizens who act to decarbonize	57.5% (%) (Fiscal year 2021)	71%. (Fiscal year 2030)
Amount of plastic incinerated at incineration plants	101,000 t (2020)	61,000 t (Fiscal year 2030)

target area



Column Examples of Major Efforts to Raise Awareness

Courses held by cooperative partners in YES (Yokohama Eco-Schools)

Spread awareness through leaflets, etc.

Initiatives in cooperation with companies

counter-measure	Examples of Specific Efforts
1 **Dissemination and awareness-raising in collaboration with diverse entities** **Priority Action 4**	- Promote change in behavior toward decarbonization and the achievement of the SDGs through collaboration with a wide range of actors, including businesses, municipal organizations and universities - Development of public awareness through regional councils based on the Law Concerning the Promotion of the Measures to Cope with Global Warming - Promoting environmental awareness through various experiences such as interacting with greenery - Promotion and awareness of ethical consumption
2 **Creation and development of decarbonized lifestyle innovations that accelerate behavioral change among citizens** **Priority Action 4**	- Promote behavioral change among city residents through green x digital decarbonized lifestyle innovation, etc. - Development of information dissemination using digital technology - Promote initiatives through public-social partnerships that link the practice of decarbonized lifestyles and the creation of a circular economy to drive a virtuous cycle between the environment and the economy and the sustainable growth of business activities 長 - Developing a decarbonized lifestyle campaign -
3 **Enhancement of environmental education for children who will lead the next generation in cooperation with educational institutions in the city** **Priority Action 4**	- Promotion of environmental education in the comprehensive learning time of primary and secondary schools in the city. - Creation of learning contents in cooperation with private businesses, etc. for the purpose of raising the awareness of the children who will lead the next generation
4 **Fostering the next generation of environmental education and awareness** **Priority Action 4**	- Promotion of the fostering new leaders in cooperation with universities, businesses and municipal organizations
5 **Formation of a recycling-oriented society by enhancing measures to reduce plastic waste and waste products.**	- Promotion of measures against plastic waste based on the Plastic Resources Recycling Law, etc. - Raise awareness of食 product loss reduction, plastic waste reduction, etc. in cooperation with international organizations, companies, etc. - Promotion and enlightenment contributing to the circular economy by maximizing the use of resources, minimizing consumption, and preventing the generation of waste.

(5) 《Directive 5》 Contribute to decarbonization, a common global challenge

In order to link global warming countermeasures to the cyclical and sustainable development of the city's economy, it is important for companies in the city to participate through international technical cooperation and promotion of overseas infrastructure business.

The City will participate in international conferences and networks with a strong international presence related to decarbonization, sharing knowledge and communicating Yokohama's initiatives to the world in order to attract more people and businesses from Japan and abroad, as well as to build a global reputation.

As the role of cities in combating global warming grows, domestic urban and regional networks are becoming increasingly important.

counter-measure

1 Promote technical cooperation and overseas infrastructure business to overseas cities

2 Hold international conferences related to decarbonization, strengthen ties with international city networks and increase presence through information dissemination

3 Strengthen collaboration and disseminate information with national and domestic zero carbon cities, etc.

indicator

item	standard value	Target value
Number of participation in international conferences, etc.	seven times (Fiscal year 2021)	seven times (Fiscal year 2030)

target area

国際貢献　産業・経済　脱炭素行動

Column. Promoting Intercity Collaboration Outside the Country on Decarbonization

The city has received awards and funding for its environmental initiatives through activities in domestic and international city networks. We will continue to use international networks such as C40 and CNCA to communicate our city's decarbonization efforts and share opinions and issues with cities such as Barcelona that are taking advanced steps.

COP26 (Glasgow, U.K.)

counter-measure	Examples of Specific Efforts
1 **Technical cooperation with overseas cities Promotion of gravity and overseas infrastructure business**	- Promotion of international technical cooperation to overseas cities through the Y-PORT project Supporting the development of overseas infrastructure - business by companies in the city - Promote international technical cooperation with Asian, African, and other cities in the fields of water, wastewater, waste, etc.
2 **Organize international conferences related to decarbonization, and increase presence by strengthening ties and disseminating information with international city networks**	- Hosting the Asia Smart City Conference - Disseminate the city's advanced initiatives at international conferences, workshops, etc. Promote initiatives in cooperation with Asian cities and European - regions.
3 **Strengthen collaboration and disseminate information with national and domestic zero-carbon cities, etc.**	- Promotion of coordinated efforts by the Environmental Issues Task Force of the 9 Metropolitan Cities and the City Councils - Promotion of global warming countermeasures through cooperation with domestic cities utilizing networks such as the Zero Carbon Municipal Council - Promote collaboration with designated city natural energy councils - Cooperation with Doshi Village, Yamanashi Prefecture, etc. -

Column Asia Smart City Conference to be Held

The Asia Smart City Conference brings together representatives from Asian cities, government agencies, international organizations, academic institutions, and private companies to discuss how to create sustainable cities where economic growth and a favorable urban environment are compatible.
The conference has been held every fall since 2012. At this conference, representatives from each city present their proposals.
Various global opinions will be shared, such as urban issues and visions for growth displayed, innovative solutions proposed by private companies and academic institutions, and measures taken by international organizations to support public-private partnerships at the 支 level. Held online in 2021, the main event was attended by approximately 1,400 535 organizations in 35 countries and regions.

(6) 《Basic Direction 6》 City Hall's ❹first actions

Yokohama City Hall is one of the largest emitters of greenhouse gases in the city, accounting for about 5% of the city's total greenhouse gas emissions.

We will aim for the reduction target in the "Yokohama City Global Warming Countermeasures Action Plan (City Hall version)" and make concerted efforts to achieve it.

counter-measure
1 Efforts in new construction and renovation of public buildings
2 Efforts to expand the introduction of renewable energy
3 Efforts in Public Use Cars
4 Use of facilities and actions taken by staff
5 Initiatives that take advantage of the characteristics of our main business

indicator		
item	**standard value**	**Target value**
Greenhouse Gas Emissions at City Hall (Reduction target for city hall version: 50% reduction)	note (supplementary information) symbol 920,000 t-CO_2 (Fiscal year 2013)	460,000 t-CO_2 (Fiscal year 2030)
Percentage of solar power generation equipment installed	310 facilities (number of facilities installed) (2020)	Public facilities where it can be installed. Approx. 50 (Fiscal year 2030)
Percentage of high-efficiency lighting such as LED in public facilities	34%. (2020)	100%. (Fiscal year 2030)
Percentage of next-generation automobiles installed in public car models, etc.	28%. (2020)	100%. (Fiscal year 2030)

The base value is the value for fiscal year 2013, which is the base year in the "Yokohama City Plan for Global Warming Countermeasures in Practice (City Hall version).

target area


counter-measure	Examples of Specific Efforts
1 **Efforts in New Construction and Renovation of Public Buildings** **Priority Action 5**	- Installation of high-efficiency lighting (e.g., LEDs) in public facilities - Implementation of ESCO business Implementation of energy-saving renovation, etc. - Promotion of the use of wood in public buildings - Use of VPP (Virtual Power Plant) for public facilities - Continue DR (Demand Response) business -
2 **Efforts to expand the introduction of renewable energy** **Priority Initiatives 4 and 5**	- Further installation of renewable energy facilities in public facilities through PPA, etc. Appropriate maintenance and management of renewable energy facilities, etc. - Promotion of greening of power used
3 **Efforts in Public Use Cars** **Priority Action 5**	- In principle, introduction of next-generation automobiles in general public car models - Use of carpooling, preferential use of more fuel-efficient cars, etc., for public use Efficient Use of Cars
4 **Use of facilities and actions taken by staff** **Priority Action 5**	- Further promotion of energy management by the entire government Appropriate operation of facilities utilizing the management standard based on the "Law Concerning the Rational Use of Energy". - Implementation of facility management by thorough improvement of operation and energy saving measures Promotion of reduction of emission of equipment using fluorocarbons - Promote reductions in greenhouse gas emissions and other emissions associated with energy conservation practices and events undertaken by all employees.
5 **Initiatives that take advantage of the characteristics of the main business** **Priority Action 5**	- Promote initiatives in the general waste management business (reduce plastic waste, promote local production for local consumption of environmentally friendly energy, etc.) Promote initiatives in the sewage and wastewater treatment business (increase efficiency when upgrading facilities, upgrade sludge incinerators with the latest technology, etc.) - Promotion of initiatives in the waterworks business (using natural energy) Priority maintenance of self-flow facilities (e.g., water treatment plants), etc.) - Promote initiatives in the high-speed rail business (e.g., introduction of new carriages) - Promotion of initiatives in the auto car business (introduction of environmentally friendly car models, etc.) - Promote initiatives in the education business (e.g., environmental considerations when rebuilding school facilities) - Promotion of initiatives in the hospital business (promotion of energy conservation in cooperation with energy service providers)

(7)《Directive 7》 Adaptation to climate change impacts

In order to adapt to the more severe and frequent disasters and rising temperatures caused by the effects of climate change, we have divided them into four areas: agriculture and natural environment, floods and sandstorms, heat stroke and infectious diseases, and industry and economic activities. In each of these areas, we will promote adaptation to climate change and resilience through measures based on relevant plans, including nature-based solutions (NbS), such as water circulation, flood control measures, and improvement of regional disaster preparedness.

counter-measure
1 Promotion of adaptation measures in agriculture and the natural environment
2 Promote adaptation measures in the areas of floods, flooding, and landslides, etc.
3 Promote adaptation measures in areas such as heat stroke and infectious diseases
4 Promotion of adaptation measures in the field of industrial and economic activities

indicator		
item	standard value	Target value
Increased safety of watersheds against heavy rainfall River] Riverbank Protection Maintenance❹※1 Completion of measures in areas targeted for improvement❹*2	Rivers 90% Downstream water 85 (End of fiscal year 2021)	River 91% Dewater 88 (as of the end of fiscal year 2025)
Number of green infrastructure installations*3	9 locations/year (Fiscal year 2021)	10 locations/year (Fiscal year 2025)
Newly designated area for green space preservation system*4	31.9 ha/year (Fiscal year 2021)	60.0 ha/year (Fiscal year 2025)

1 Percentage of riverbank protection in the 28 planned rivers requiring drastic flood control measures (rainfall of approx. 50 mm/hr)

2 Areas subject to maintenance at the target flooding level (hourly rainfall: approx. 50 mm, approx. 60 mm)

3 Number of applications of water retention and infiltration functions in redevelopment of public facilities, etc.

4 Linked to Yokohama Green Up Plan [2019-2023]

target area

Column Promotion of measures based on relevant plans

Climate change adaptation measures are based on the River Improvement Plan and the Yokohama City Public Water and Sewerage Project Plan.

Yokohama City is promoting initiatives based on related plans in each of the following areas: promoting the development of waterways and other infrastructure; promoting initiatives to protect, create, and nurture attractive water and greenery unique to Yokohama based on the Yokohama City Basic Plan for Water and Greenery; and promoting the preservation of vegetation and biodiversity based on the Yokohama City Environmental Management Plan.

counter-measure	Examples of Specific Efforts
1 **Promotion of adaptation measures in agriculture and the natural environment**	- Promotion of the use of agricultural land as green infrastructure Economic support for farmers, etc. - Resuscitate the water cycle using green infrastructure - Promote initiatives to create a positive water environment and water cycle - Monitoring of water environment - Land subsidence prevention through groundwater harvesting Preservation and utilization of cohesive woodlands 用Creation of habitats for diverse vegetation - Promoting the creation of a rich ocean - Formation of seaweed beds and shallow areas that function as "blue carbon" to absorb CO_2. - Monitoring of ecosystems -
2 **Water, flood, and sediment disasters** **Promoting Adaptation**	- Promote measures to prevent flooding as much as possible, such as river improvement and the construction of drainage facilities - Promote community development to reduce flood damage through the use of green infrastructure, etc. Disseminate information for appropriate evacuation procedures using hazard maps and disaster prevention applications, etc. - Improvement of the disaster prevention organization system by utilizing the certification system of the condominium disaster preparedness improvement system, etc. 用 River water levels, tides, etc. Development of coastal protection facilities - Measures for cliff areas, etc. - - -
3 **Promote adaptation measures in areas such as heat stroke and infectious diseases**	- Spreading awareness and alerting the public about heat stroke countermeasures - Promotion of city planning that takes into account the heat environment by using urban environmental climate maps, etc. - Reduction of waste heat through energy conservation, etc. - Promotion of surface improvement and securing of wind passages Information on heat island countermeasures - Measures to Prevent the Spread of Infectious Diseases and Warnings - Monitoring of meteorological and TA pollution -
4 **Promotion of adaptation measures in the field of industrial and economic activities**	- Promote measures to prevent flooding as much as possible, such as river improvement and improvement of drainage facilities (reiterate) - Promote community development to reduce flood damage through the use of green infrastructure, etc. (reiterated) - Reduction of waste heat through energy conservation, etc. (reiterated) - Promotion of surface improvement and securing of wind passages (reiterated)

4 Priority Initiatives

(1) 《Priority Action 1》 Creation of decarbonization innovation in the Yokohama waterfront area

2050 In order to realize a decarbonized society by 2050, new technological innovations must be created from a medium- to long-term perspective.

The city has a concentration of industries that support the Japanese economy, such as energy-related industries, manufacturing, logistics, etc., mainly in the coastal area. 費As a major energy consumption area, it is important to take advantage of this potential and focus on innovation creation in cooperation with the government and local companies, which will lead to decarbonization and sustainable economic development both domestically and internationally.

Direction of efforts

Taking advantage of the city's potential in the waterfront area (心), we will promote initiatives for the creation of new decarbonizing innovations in hydrogen, ammonia, synthetic methane, liquid synthetic fuels, etc., in collaboration with local companies and other entities, and promote the formation of carbon neutral ports through collaboration with the concentration of industries in the waterfront area. We will also promote the formation of carbon-neutral ports through collaboration with the cluster of waterfront industries.

[Examples of specific measures

- Promotion of carbon neutral port formation
- Promote the construction of supply chains for water, ammonia, synthetic methane, liquid synthetic fuels, etc. in collaboration with private companies, Kawasaki City, etc.
- Promote use of next generation energy sources such as water
- Attracting companies and promoting investment in the decarbonization sector

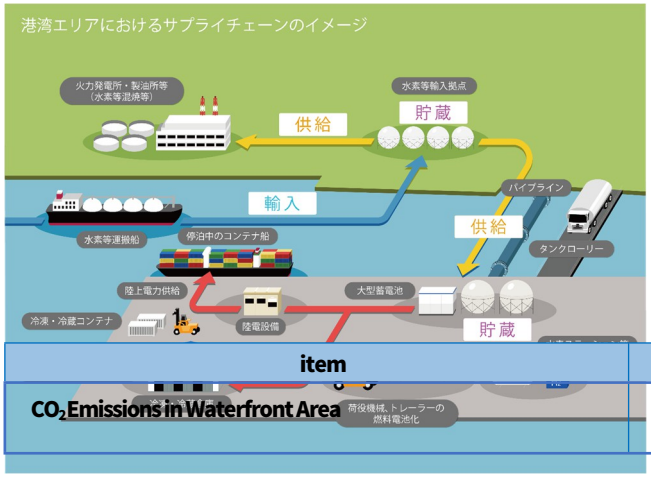
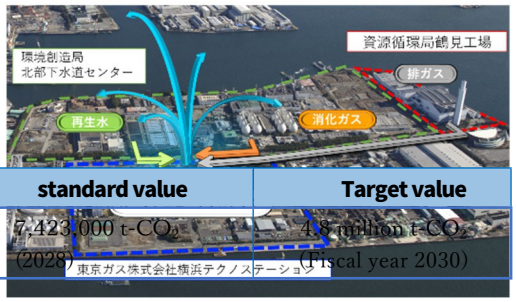


Image of carbon neutral port formation

Image of the water and hydrogen supply chain



Initiatives in the Suehiro Decarbonization Model District

[Indicators (reiterated)

item	standard value	Target value
CO_2 Emissions in Waterfront Area	7,423,000 t-CO_2 (2028)	4.8 million t-CO_2 (Fiscal year 2030)

Itinerary

Fiscal year 2030	Year 2050
Creating decarbonized innovation	Toward the creation of decarbonized innovation Mounting and Deployment

(2) 《Focused Approach 2》 Enhancement of Support for Carbon Free Management

In order to reduce greenhouse gas emissions and promote the recycling and sustainable development of the city's economy, it is important for companies in the city to engage in decarbonized management and increase their participation in the supply chain as well as their business opportunities. It is important to increase the participation of local companies in the supply chain and to increase trading opportunities. Therefore, it is necessary to focus on measures to enhance support for decarbonized management and to create a virtuous cycle between the environment and the economy.

Direction of efforts

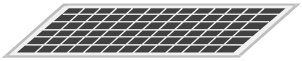
We will work with financial institutions and other organizations to support the transition to a circular economy, which will lead to energy conservation and other decarbonization initiatives and growth, as well as the transition of small and medium-sized enterprises in the city to decarbonized management for sustainable development.

[Examples of specific measures

- Basic support for SDGs and decarbonization management, promotion of business shift to green sectors (consultation, consulting, holding seminars, subsidy programs, etc.)
- Promote decarbonization and SDGs initiatives in collaboration with financial institutions (enhance consulting and financing)

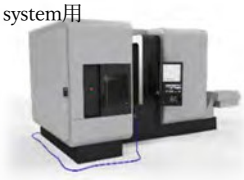
Global warming countermeasures, support, etc.
Provide easy-to-understand information on

Improvement of consultation system and utilization of loan system用



solar power (generation)

LED Lighting



Thorough energy conservation, introduction of renewable energy, facility renewal

Reduction of CO_2 emissions

item	standard value	Target value
Percentage of businesses that have implemented decarbonization initiatives Practice of decarbonized management	23% (%) (Fiscal year 2021)	40%. (Fiscal year 2030)

[Indicators (reiterated)

Itinerary

Fiscal year 2030 — Year 2050

Supporting and promoting decarbonized management

(3) 《Priority 3》 Urban development for decarbonization 1) Urban development in the center of the city

The Ministry of the Environment has designated at least 100 decarbonization regions for the next five years as a concentrated period to promote the realization of a decarbonized society by starting a decarbonization domino in the region.

The energy consumption in these areas is high due to the concentration of large facilities and the low renewable energy potential of the area. Using the best areas of the city as models for decarbonization ahead of others will contribute significantly to a 50% reduction in energy consumption by 2030 (2030: 12). Through such efforts, it is necessary to spread the trend of decarbonization to other areas.

Direction of efforts

In the "Minato Mirai 21 District", a decarbonization-advanced area, we aim to achieve "virtually zero" CO_2 emissions from electricity consumption by 2030 (FY2030) together with participating facilities, and build an advanced model of decarbonization in a metropolitan city.

[Examples of specific measures

- Creation of an urban decarbonization model through the initiatives of the "Minato Mirai 21 District" as a first decarbonization area

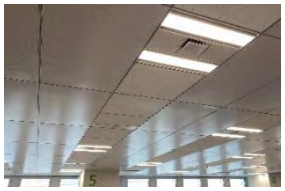

Minato Mirai 21 District

◇ Decarbonization of Electricity

Installation of photovoltaic power generation facilities on rooftops of facilities in the preceding areas and in unused spaces of public facilities in the city, and supply of renewable energy through wide-area cooperation with local municipalities with high renewable energy potential, etc.

◇ Low and decarbonized heat in district heating and cooling

As a part of the low-carbon heat and energy saving measures for the largest district heating and cooling system in Japan, we are upgrading and reinforcing the heat source of the existing plant and installing the latest equipment with high energy usage efficiency.



◇ Energy Conservation and Energy Management

Energy conservation and regional energy management to create electricity supply/demand adjustment, etc.

◇ Promotion of resource recycling and change in behavior

Expanding the recycling of waste by reducing and utilizing food waste and plastic bottles generated by restaurants, etc.

Implementing to encourage changes in the behavior of citizens and businesses toward decarbonization.

[Indicators (reiterated)

item	standard value	Target value
CO_2 emissions from electricity consumption in decarbonized regions	-	effective zero (Fiscal year 2030)

Itinerary

Year 2030 Year 2050

(4) 《Priority Action 3》 Urban planning for decarbonization (ii) Urban planning in suburban areas

民生In the suburban areas of the city, issues such as the need for regional transportation and support for shopping have become apparent, and the need for regional revitalization based on a large-scale land use change has become apparent.

Given the fact that 30% of our city's CO_2 emissions are attributable to our residential areas, it is necessary to focus on advanced model projects in the suburban areas to promote decarbonization, solving local problems and creating liveliness in an integrated manner, and to expand decarbonization efforts to the city民 level of daily life.

Direction of efforts

We will create a sustainable urban model at the International Garden and Horticulture Exposition and utilize its legacy in the urban development of Kamisegawa, and promote urban development aiming at a decarbonized society by developing advanced model projects that promote "decarbonization" and "solving local issues and creating liveliness" in a unified manner, focusing on the suburban areas.

[Examples of specific measures

- Creating a sustainable urban model at the International Horticultural Exposition
- Promoting urban development in Kamisegaya by leveraging the legacy of the International Horticultural Exposition
- Implementation of model projects for decarbonization in suburban areas Decarbonization through local production and local consumption of renewable energy and to solve local problems and to create a lively community. Promoting the creation of a harmonious society

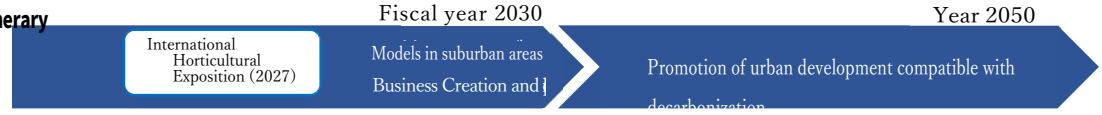
Image of Yokohama decarbonization model project

Image of the International Horticultural Exposition (Source: Draft Basic Plan for the 2027 International Horticultural Exposition)

item	standard value	Target value
Implementation of model projects for decarbonization in suburban areas	*	development (Fiscal year 2030)
[Indicators (reiterated) **Creating a sustainable urban model at the International Horticultural Exposition**	-	Creation of a model (2027)

*Assumes implementation of the model project in three districts in FY2022.

Itinerary



(5) 《Focused Effort 4》 Spreading a low-carbon lifestyle

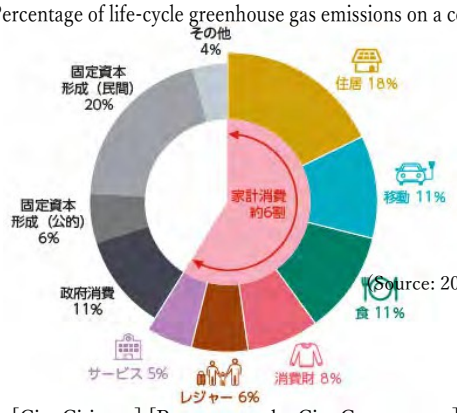
見In addition, 60% of the life cycle greenhouse gas emissions in Japan are attributed to household activities. In order to realize a decarbonized society, it is necessary to change the daily activities of each citizen to a decarbonized lifestyle.

The results of the municipal awareness survey and the awareness survey on decarbonization and the SDGs show that awareness of global warming is increasing due to the and social conditions高 . Although the results are gradually becoming evident, especially in energy conservation, further promotion is needed.

Therefore, while looking back on past efforts, we will focus on changing the behavior of those who are interested in the concept of "decarbonization x lifestyle". (It is important to consider the development of new contents and methods, such as combining (food, clothing, housing, work), enjoyment, digital, sustainability, and economy, and to develop from verification to implementation.

<Reference

(i) Percentage of life-cycle greenhouse gas emissions on a consumption basis



(Source: 2022 Environmental White Paper and Recycling-based Society White Paper)

White Paper on Vegetable Diversity

② [City Citizens] [Requests to the City Government] Measures against Global Warming

H28: 13.4% (out of 10th place) → R3: 23.5% (5th place) (2021 Yokohama City People's Opinion Survey)

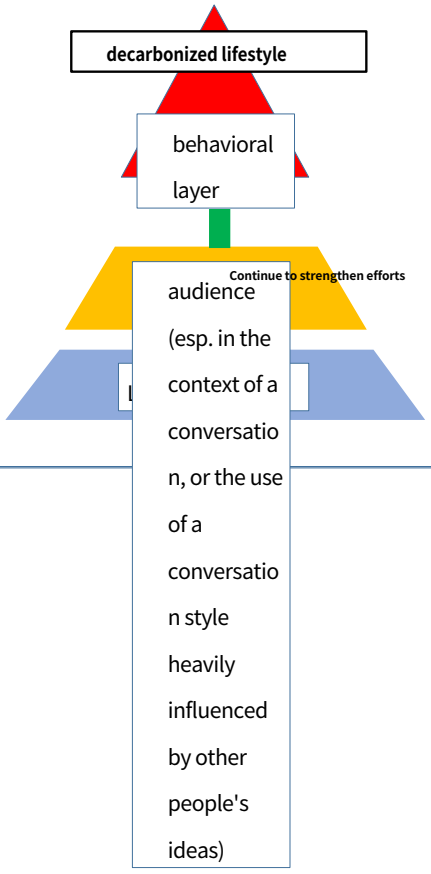
Businesses] Over 80% of businesses recognize the need to decarbonize.

(Attitude survey on decarbonization and SDGs in FY2021)

3) Direction of target demographics

While continuing to promote awareness-raising activities to raise the level of interest from "low awareness" to "high awareness" (i.e., citizens who are environmentally conscious and fully aware of the need for global warming countermeasures), we are also working to increase the level of interest from "low awareness" to "high awareness" by promoting the use of "low awareness" and the use of "high awareness" in the community.

It is important to facilitate the transfer to the behavioral layer.



(6) 《Focused Approach 4》 Penetration of decarbonized lifestyles ①Improve energy-saving performance of housing

The new "Basic Energy Plan" and "Global Warming Countermeasures Plan" adopted by October 2021 set forth the government's policy of "ensuring that the average energy efficiency of the housing stock meets the ZEH standard by 2050".

In addition, as a concrete measure to realize this policy, the Japanese government has decided to promote energy-saving performance that exceeds the ZEH standard高 in addition to raising the energy efficiency of new houses by making it mandatory for them to comply with the energy efficiency standard. Therefore, it is necessary for the city to further promote the spread of "higher energy-saving homes" that exceed the ZEH standard in order to further reduce the emission of pro- and pro-competitive greenhouse gases in the city area.

Direction of efforts

We will promote the use of heat insulation and energy saving in all types of housing and the introduction of renewable energy by communicating the benefits of health, comfort, economy, disaster prevention, etc. in an easy-to-understand manner to the citizens of the city.

Supporting the technical development of designers and builders in the city will help stimulate the city's economy.

[Examples of specific measures

- Establishment of the "Yokohama Consortium for the Promotion of Healthy and Energy-Efficient Housing (tentative name)".
- Conduct technical seminars on the design and construction of "higher energy efficiency housing" and consider a system for registration announcement of the operators of such housing.
- Promote dissemination and awareness-raising through collaboration with various entities, such as the "Yokohama Energy-Saving Housing Academy".
- Consideration of visualization of high energy efficiency and other high quality housing
- Consideration of measures to promote installation of renewable energy
- City planning tax reduction measures

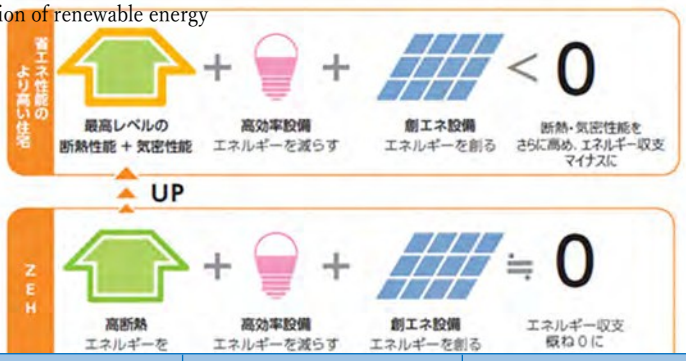
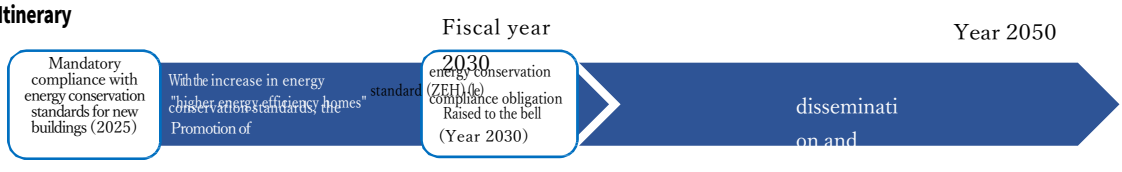


Image of "higher energy efficiency" and ZEH

item	standard value	Target value
Number of energy-efficient new homes in use note (supplementary information) symbol [Indicators (reiterated)	62,212 戸 (Fiscal year 2021)	198,000 戸 (Cumulative total until FY2030)

From FY2026 onward, all new houses will be built with high energy efficiency due to the mandatory compliance with energy conservation standards.

Itinerary



(7) 《Focused Approach 4》 Penetration of decarbonized lifestyles ② Introduction of renewable energy

It is estimated that the potential of renewable energy generation in the city area is about 10% of the estimated consumption of electricity in the year 2050 . In order to convert the electricity used in the city to renewable energy, it is essential to supply renewable energy from outside the city, and it is necessary to promote the introduction of renewable energy through wide-area cooperation.

Direction of efforts

We will promote the introduction of renewable energy through collaboration with other municipalities, such as joint purchase campaigns for renewable electricity in collaboration with nine prefectures and cities, and joint purchase of solar power generation equipment and storage batteries in collaboration with Kanagawa Prefecture.

The city will take the initiative in expanding renewable energy by installing solar power generation equipment in public facilities and utilizing renewable energy (environmental value) at the incineration plant.

[Examples of specific measures

- Promotion of wide-area collaboration on renewable energies that contributes to the establishment of a regional circulation coexistence zone
- Further installation of renewable energy equipment in public facilities through PPA , etc.
- switchover to electricity generated from renewable energy sources in households and business sections by utilizing joint purchasing schemes in cooperation with other municipalities, etc.
- installation of photovoltaic power generation equipment and storage batteries by utilizing joint purchasing schemes in cooperation with other municipalities, etc.
- Promotion of local production for local consumption through the use of renewable energy (environmental value) at incineration plants

Municipalities that have signed the agreement

Yokohama-machi, Niigata Prefecture

Iwate Pref.

(Kuji City, Niinami City, Kuzumaki Town, Fudai Village, Karu 米 Town, Nodai Village, Kusuma Village, and Yono Town,

(Koganei Town)

item	standard value	Target value
Number of people who switched to renewable energy due to initiatives implemented by the City (Households and establishments)	828 cases (Cumulative total until FY2021)	10,000 cases (Cumulative total until FY2030)

Aizuwakamatsu City, Koriyama City, Fukushima Prefecture

Kamisu City, Ibaraki Prefecture

[Indicators (reiterated)

Itinerary

Fiscal year 2030

local production and local

Year 2050

Re-energy local production for local

(8) 《Focused Approach 4》 Penetration of a low-carbon lifestyle

(iii) Coordinated efforts to implement decarbonized lifestyles and build a circular economy

The new system is a shift from the traditional linear economy, which is based on large scale production and consumption, to a linear economy, which is based on the investment in raw materials and the production of large scale products.

It is important to shift to an economic system that maximizes added value while minimizing input and resource consumption (circular economy).

The transition to a circular economy is closely related to the activities of the municipal population, especially consumption, and can be regarded as an initiative in the same direction as the implementation of decarbonized lifestyles. Therefore, we believe that the promotion of the change of behavior will be more effective if we focus on the implementation of initiatives to implement decarbonized lifestyles and the establishment of a circular economy in the daily life of the city.

Direction of efforts

In order to realize de-carbonization, we will promote initiatives that combine the practice of de-carbonized lifestyles and the establishment of a circular economy that aims for a virtuous cycle between the environment and the economy and sustainable growth of business activities through public-private partnerships.

[Examples of specific measures

- create and promote pioneering and sustainable business and regional models for attractive decarbonized lifestyles that contribute to the circular economy, etc.

Implementation of Social Contribution Programs

What is the Circular Economy?

In addition to conventional 3R initiatives, resource investment
Economic activities that generate added value through servicing, etc., while reducing input and consumption and making effective use of stock.
Maximizing the value of resources and products, resources
Aimed at minimizing consumption and preventing the generation of waste.

Source:2021 Environmental White Paper and Recycling-based Society White Paper
The White Paper on Vegetable Diversity (Ministry of the Environment)

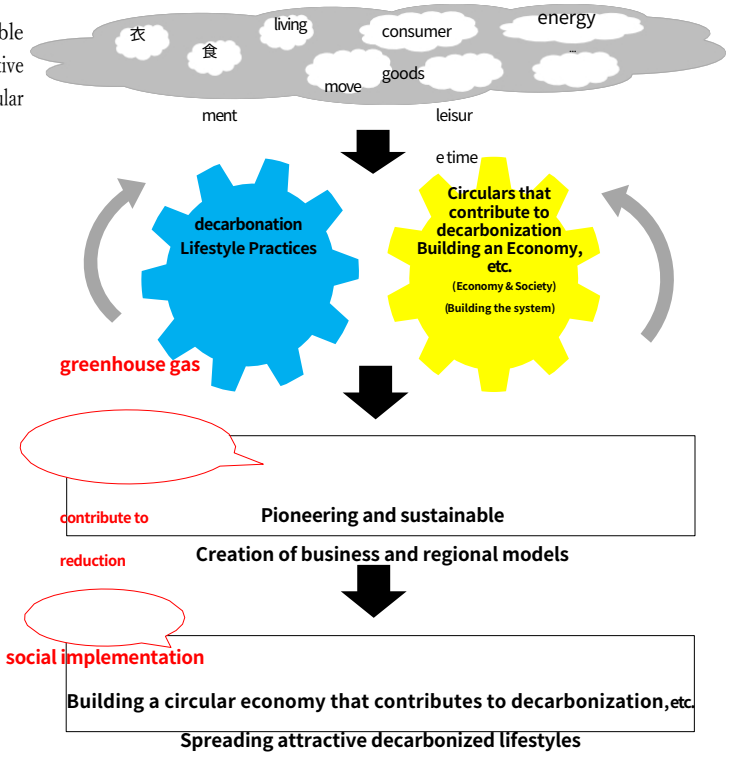


Image of Public-Private Partnerships

[Indicators (reiterated)

item	standard value	Target value
Building a Circular Economy	long vowel mark (usually only used in katakana)	implementation

Itinerary Year 2030 Year 2050

(9) 《Priority Action 4》 Penetration of decarbonized lifestyles ④Development of decarbonized lifestyle campaigns, etc.

民However, this has not necessarily translated into actions with greater CO_2 reduction potential, such as the installation of solar power generation equipment and other renewable energy sources, the introduction of next-generation autos, and the switch to renewable electricity.

In order to reduce emissions in the household sector and in the transportation sector, it is necessary to further promote the city's CO_2-reducing high-efficiency consumption behavior through campaigns and other measures.

Direction of efforts

We will select and strengthen effective initiatives from existing efforts and, based on analysis of past efforts, consider and implement effective campaigns and other measures.

[Examples of specific measures

- In addition to reducing CO_2 emissions, the installation of photovoltaic power generation equipment leads to electricity savings, electricity bill savings, and improved disaster prevention, so we are calling for more installation of such equipment.

(e.g., strengthen ties with inter-jurisdictional cooperation efforts in Kanagawa Prefecture, nine prefectures and cities, etc.)

- Conduct an analysis of past initiatives and examine incentives to further promote the introduction of renewable energy such as solar power generation equipment and the switch to renewable electricity consumption.
- Promote initiatives for the diffusion of next-generation automobiles, etc.

<Examples of existing initiatives

introducing renewable energy to an alternative energy source入

0円ソーラー

power switch

Kanagawa Prefecture
Publicity Cooperation: Yokohama City
Initial cost is "0" to install solar power generation equipment, and by inviting prospective customers and placing a bulk order, solar power generation equipment can be installed at a low cost due to economies of scale.

Implementing entity: Nine prefectures and cities
Switching to renewable electricity at a discount due to economies of scale resulting from an increase in the number of purchasers

みんなで

自然の電気

[Indicators (reiterated)

item	standard value	Target value
Number of people who have switched to renewable energy due to initiatives implemented by the city (world) (Obi / Office)	828 cases (Cumulative total until FY2021)	10,000 cases (Cumulative total until FY2030)
Next Generation Cars (EV, PHV, FCV) and Hybrid Cars Percentage of Cars	18% (FY 2020)	55% (Fiscal year 2030)

Itinerary

Year 2030

Year 2050

(10) 《Focused Effort 5》 ❹Preemptive Action by City Hall

As one of the largest greenhouse gas emitters in the city (emitting about 5% of the city's total emissions), and as a city that encourages its citizens and businesses to take action against global warming, the city of Yokohama must set an example for its citizens and businesses by focusing its efforts on the reduction targets in the "Yokohama Global Warming Action Plan (City Hall version)".

Direction of efforts

In order to achieve the reduction target of the Yokohama City Global Warming Prevention Plan (City Hall version), we will take measures in new construction and renovation of public buildings, expand the introduction of renewable energy, reduce greenhouse gas emissions in public carriages, and improve the public carriages.

We will promote initiatives that take the initiative, such as thorough implementation of measures against用.

[Examples of specific measures

- Efforts in new construction and renovation of public buildings (e.g., installation of high-efficiency lighting such as LED in public facilities)
- Efforts to expand the installation of renewable energy (further installation of renewable energy equipment in public facilities through PPAs, etc. (reiterated))
- (e.g., in principle, introduction of next-generation automobiles in general public car models, etc.)
- Efforts to reduce greenhouse gas emissions through facility operations and staff (e.g., energy conservation practices, reduction of greenhouse gas emissions from events, etc.)

item	standard value	Target value
[Indicators (reiterated) **Greenhouse Gas Emissions at City Hall** **(Reduction target for city hall version: 50% reduction)**	920,000 t-CO_2 (Fiscal year 2013)	460,000 t-CO_2 (Fiscal year 2030)
Percentage of solar power generation equipment installed	310 facilities (number of facilities installed) (2020)	Public facilities where it can be installed. Approx. 50 (Fiscal year 2030)
Percentage of high-efficiency lighting such as LED in public facilities	34%. (2020)	100%. (Fiscal year 2030)
Percentage of Next-Generation Cars, etc. in Public Cars	28%. (2020)	100%. (Fiscal year 2030)

The base value is the base year in the "Yokohama City Plan for the Implementation of Global Warming Countermeasures (City Hall version)" (2013).

Figures for the fiscal year are shown.

City Hall with great environmental performance

Next Generation Cars

Itinerary

Fiscal year 2030

FY2030 Greenhouse Gas Emissions

Year 2050

Achieving decarbonization

Chapter 5 Promotion Structure and Progress Management

1 Promotion Structure of the Plan

In addition, the city, businesses, universities and other schools, research institutions, municipal organizations, and the municipal government will work together to promote measures to achieve a 50% reduction in greenhouse gases by 2030 and "Zero Carbon Yokohama" decarbonization by 2050.

(1) Promotion System of City Hall

In order to vigorously promote the citywide global warming countermeasures, the "Global Warming Countermeasures Headquarters" has been established as the most subordinate organization of the city mayor since 2011 (23). The Global Warming Prevention Headquarters will be in charge of overall coordination and implementation of the measures to combat global warming as the promotion system of the City Hall.

In order to achieve the target, it is necessary for the entire city government to work together to vigorously promote measures to achieve the target. At the same time, the establishment of sub-committees headed by deputy city mayors and the establishment of cross-district working groups will be implemented as necessary to formulate and promote measures on a practical level.

This will further strengthen cross-agency consideration and coordination of policies, measures, and projects to be undertaken by each district bureau headquarters. In addition, information will be shared among the wards, bureaus, and headquarters as a whole through various opportunities, and efforts will be promoted in cooperation with the national government, prefectures, and other related organizations.

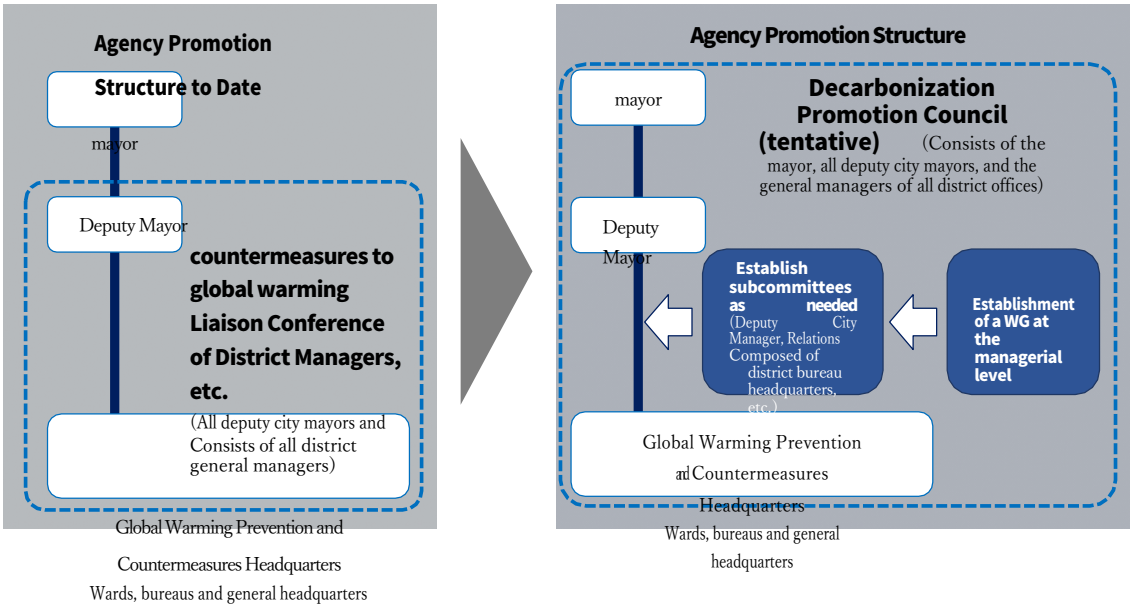


Figure 5-1 Agency Promotion Structure

(2) Cooperation system with various entities

As a framework for cooperation with citizens and businesses, we will work in collaboration with various entities, taking into account the movements of the national government, etc., by utilizing frameworks such as the Council for the Promotion of Measures to Cope with Global Warming and the Council of Businesses for the Prevention of Global Warming. We will also utilize various networks such as Yokohama Eco-School (YES) and Yokohama Smart Business Association (YSBA) to share advanced decarbonization technologies, knowledge, and initiatives, and to promote awareness of global warming countermeasures.

2 Progress management of the plan

In order to ensure the effectiveness of the plan and its steady implementation, we will periodically check, monitor, and evaluate the status of initiatives in accordance with the PDCA cycle, and continuously review and revise the plan and initiatives as appropriate.

First, as a plan, we will examine future measures and budget measures based on the results of progress management. Regarding the budget, we will promote it through strategic and comprehensive budgeting, including the maximum use of government subsidies. We will also review and revise the plan as necessary based on the progress of the plan and the domestic and international situation surrounding global warming countermeasures.

Next, in "Do" (implementation), we aim to achieve the plan's target by steadily promoting the measures set forth in the implementation plan, and by promoting efforts in cooperation with various entities such as citizens and businesses.

In addition, as a Check (inspection and evaluation), the city will quantitatively monitor and publish the greenhouse gas emissions in the city every year in order to grasp the status of achievement of the greenhouse gas emission reduction target and other targets. In addition, the progress of each measure in this plan will be checked and a report will be compiled and published every fiscal year, as well as reported to the City Council based on the Decarbonization Ordinance and to the Environmental Creation Council.行

Finally, in the Action phase, based on the status of greenhouse gas emissions and the progress of the plan, we will identify measures that should be further promoted and improvements that should be made, and reflect them in initiatives for the following fiscal year and beyond.

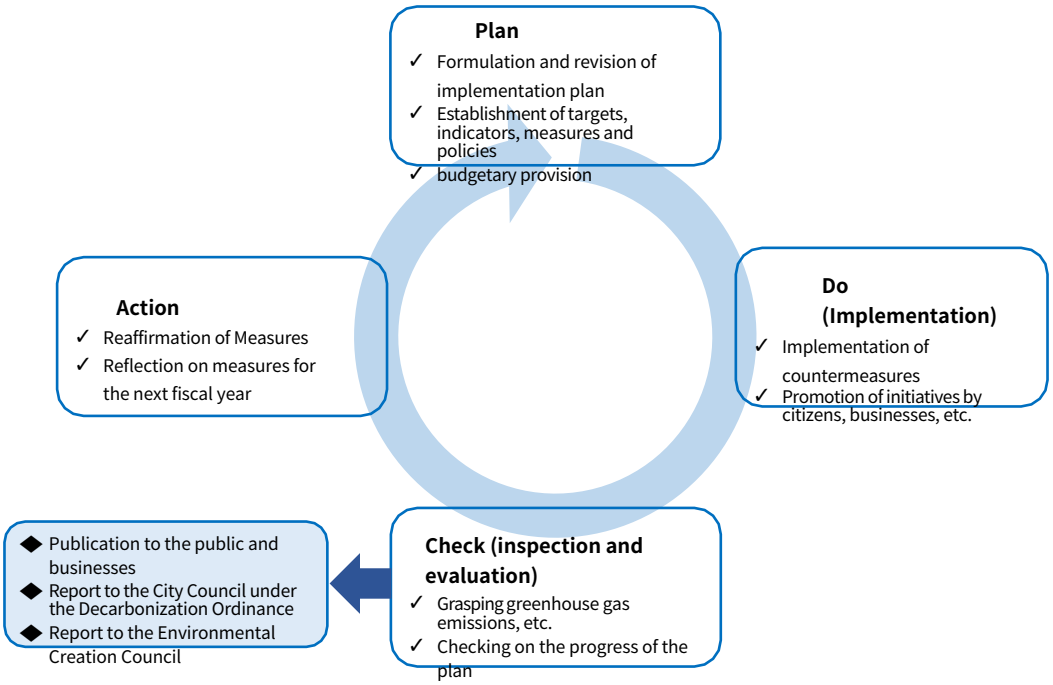


Figure 5-2 Progress management of the plan

reference data

Yokohama City Ordinance on the Promotion of the Formation of a Decarbonized Society

June 8, 2021

Ordinance No. 37

The Yokohama City Ordinance on Promotion of the Formation of a Decarbonized Society is hereby promulgated. Ordinance on the Promotion of the Formation of a Decarbonized Society in the City of Yokohama

As seen in the recent spate of natural disasters, the effects of global warming are a serious concern for Yokohama City. In order to fulfill its responsibility as a major city with significant greenhouse gas emissions, City of Yokohama, together with its businesses and citizens, must make every effort to realize a decarbonized society by 2050.

The creation of a decarbonized society is an important element for current and future citizens, and to achieve this goal, collaboration between industry, academia, and government, as well as the understanding and cooperation of citizens, is essential. In promoting the creation of a decarbonized society, the goal is not to shrink the economy, but to develop related industries as new growth industries. In particular, Yokohama should play an active role as a platform for new technological innovation and demonstrate its presence as a zero-carbon city in order to contribute to the decarbonization of Japan and the world through technologies originating in Yokohama.

This ordinance is hereby enacted to promote the formation of a decarbonized society by fulfilling our responsibility to the next generation, promoting global warming countermeasures, and promoting the circulation and sustainable development of the city's economy, in order to realize a society where no one is left behind.

(Purpose)

Article 1. This ordinance is enacted in accordance with the Law Concerning the Promotion of the Measures to Cope with Global Warming (Law No. 117 of 1998, hereinafter referred to as "the Law"). (hereinafter referred to as "the Law"), the City of Yokohama (hereinafter referred to as "the City") This ordinance shall clarify the responsibilities of the City of Yokohama (hereinafter referred to as "the City"), businesses and citizens with regard to the promotion of the formation of a decarbonized society in the City of Yokohama. In addition to clarifying the responsibilities of the city, businesses, and citizens with regard to the promotion of the formation of a decarbonized society in the City of Yokohama (hereinafter referred to as "the City"), the City will promote measures to combat global warming and to achieve a cyclical and sustainable development of the city's economy by establishing the basic matters for measures to promote the formation of a decarbonized society and by promoting such measures in a comprehensive and systematic manner, The purpose is to contribute to the sustainable development of the present and future healthy and cultural lifestyles of the city's citizens.

(Definition)

Article 2. In this Ordinance, the meanings of the terms listed in the following items shall be as prescribed respectively in those items.

(1) Decarbonized Society Greenhouse gases (substances defined in Article 2, Paragraph 3 of the Act. The same shall apply hereinafter). (i.e., substances defined in Article 2, Paragraph 3 of the Act) and the amount of greenhouse gases absorbed through the preservation and enhancement of absorption.

(2) Renewable Energy Yokohama City Ordinance on Preservation of Living Environment, etc. (Yokohama City Ordinance, December 2002

(No. 58) means renewable energy as defined in Article 146-2 of the Act on the Prohibition of the Use of Renewable Energies (Act No. 58 of 1950).

(3) Renewable energy, etc. Renewable energy and innovative advanced energy utilization technology (refers to new technology that contributes to the supply of renewable energy, dramatic improvement in energy efficiency, and diversification of energy sources. The same shall apply hereinafter). (2) "Renewable energy, etc.

(4) Introduction, etc. of Renewable Energy, etc. means the following matters (a) Introduction of renewable energy, etc.

(a) Introduce innovative advanced energy utilization technologies.

(c) conservation and efficiency in the use of energy, electrification of energy, and equalization of electricity demand.

(5) Decarbonization

The term "greenhouse gas reduction" refers to the reduction of greenhouse gas emissions and the preservation and enhancement of absorption of greenhouse gases generated by socioeconomic and other activities in the city area.

(City Responsibilities)

Article 3. The City shall be responsible for formulating and implementing comprehensive and systematic measures to promote the formation of a decarbonized society.

2 (2) In formulating and implementing the measures stipulated in the preceding paragraph, the City shall endeavor to work in close cooperation with the national government, other local governments, universities and other research institutions, businesses, citizens, and private organizations organized by businesses and citizens.

3 (1) In constructing and maintaining city-owned facilities, procuring electricity and energy to be used in city-owned facilities, and implementing other projects, the city shall take the initiative in promoting the introduction of renewable energy, etc.

4 In addition to the provisions of the preceding paragraph, the City shall give consideration to decarbonization when implementing measures.

(Responsibility of the operator)

Article 4. (1) Business operators shall, in the course of their business activities, exercise their autonomy and creativity, and shall actively endeavor to promote the formation of a decarbonized society.

2 Business operators shall endeavor to cooperate with measures implemented by the City to promote the formation of a decarbonized society.

(Citizen Responsibilities)

Article 5. In their daily lives, citizens shall actively endeavor to promote the formation of a decarbonized society through the introduction of renewable energy and other means.

2 Citizens shall endeavor to cooperate with measures implemented by the City to promote the formation of a decarbonized society.

(Basic Policy on Policies)

Article 6. The City shall comprehensively and systematically promote measures for the promotion of the formation of a decarbonized society in accordance with the following basic policies

(1) To promote the circulation and sustainable development of the city's economy through the promotion of the formation of a decarbonized society, by striving to develop and cluster industries related to the promotion of the formation of a decarbonized society, and to foster human resources.

(2) To promote the introduction of renewable energy, etc. in accordance with regional characteristics and trends in technological development.

(3) Promote the introduction of renewable energy, etc., in accordance with the business type of the business.

(4) Promote the introduction of renewable energy, etc., in accordance with the diverse lifestyles of citizens.

(5) To promote the introduction of renewable energy, etc. for the purpose of improving functions related to disaster prevention and contributing to the resolution of other regional issues.

(Basic Plan)

Article 7 In order to comprehensively and systematically promote measures for the promotion of the formation of a decarbonized society, the city shall formulate a basic plan for the promotion of the formation of a decarbonized society (hereinafter referred to as the "basic plan"). Article 7 The city shall formulate a basic plan for the promotion of the formation of a decarbonized society (hereinafter referred to as the "Basic Plan").

2 The basic plan shall set forth the following matters

(1) Comprehensive, medium- and long-term goals and basic measures for promoting the introduction of renewable energy, etc.

(2) Basic measures that contribute to the circulation and sustainable development of the city's economy, including the development and concentration of industries related to the promotion of the formation of a decarbonized society.

(3) In addition to what is listed in the preceding two items, matters necessary for the comprehensive and systematic promotion of measures to promote the formation of a decarbonized society.

3 (2) In formulating the basic plan, the city shall take necessary measures to reflect the opinions of business operators, citizens, and private organizations organized by them.

4 (2) When the City has formulated the basic plan, it shall make it public without delay.

5 The provisions of the preceding two paragraphs shall apply mutatis
mutandis to changes in the basic plan. (Promotion of Local Production for
Local Consumption of Renewable Energy, etc.)

Article 8 In order to promote local production for local consumption of renewable energy, etc. (meaning consumption of renewable energy, etc. produced within the city limits within the city limits), the city shall take measures to support business activities that make effective use of renewable energy, etc. produced within the city limits. Article 8 The city shall take measures to support business activities that effectively utilize renewable energy, etc. produced within the city limits in order to promote the local production and local consumption of renewable energy, etc. (which means the consumption of renewable energy, etc. produced within the city limits).

(Promotion of collaboration through renewable energy, etc.)

Article 9 The City shall take measures to expand the introduction of renewable energy, etc. produced outside the City limits into the City limits in order to mutually promote the City and other local governments through cooperation with other local governments through renewable energy, etc.

(Increased demand for renewable energy, etc.)

Article 10. In order to stimulate demand for renewable energy, etc., the City shall take measures to support businesses and citizens who use renewable energy, etc.

(Promotion of efforts to introduce renewable energy, etc. in buildings)

Article 11. The city shall implement the following measures for new construction and renovation of buildings (buildings stipulated in Article 2, Item 1 of the Building Standards Law (Law No. 201 of 1950)). Article 11 The city shall promote the formation of a decarbonized society by introducing renewable energy, etc., improving energy consumption performance (energy consumption performance as defined in Article 2, Item 2 of the Act on Improvement of Energy Consumption Performance of Buildings (Act No. 53 of 2015)), and other measures when constructing or renovating buildings (referring to buildings as defined in Article 2, Item 1 of the Building Standards Act (Act No. 201 of 1950)). (2) The Government of Japan shall take taxation measures and other measures to promote efforts to improve energy consumption performance (which means energy consumption performance prescribed in Article 2, item 2 of the Act on Improvement of Energy Consumption Performance of Buildings (Act No. 53 of 2015)) and to promote the formation of a decarbonized society.

(Support for related industries)

Article 12. In order to promote the circulation and sustainable development of the city's economy through the development and concentration of industries related to the promotion of the formation of a decarbonized society, the city shall take measures to support business activities that contribute to the promotion of the formation of a decarbonized society, which are conducted by businesses in said related industries.

(Promotion of R&D, etc.)

Article 13. In order to improve technologies that contribute to the promotion of the formation of a decarbonized society, the city shall take measures to promote research and development and to disseminate the results thereof, in cooperation with business operators, universities and other research institutions.

(Publication of Implementation Status)

Article 14. Every fiscal year, the Mayor shall report to the Municipal Assembly on the implementation of measures to promote the formation of a decarbonized society, and shall publicly announce such information through the use of the Internet or by other means.

(Promotion of learning and dissemination of knowledge, etc.)

Article 15. The city shall promote learning and disseminate knowledge on the promotion of the formation of a decarbonized society in order to deepen the understanding of business operators and citizens on the necessity of introducing renewable energy, etc. for the promotion of the formation of a decarbonized society.

2 The city shall reduce or absorb greenhouse gases equivalent to all or part of the amount of greenhouse gas emissions that are difficult to reduce by developing and preserving forests and introducing renewable energy, etc., elsewhere. (2) To promote the use of renewable energy, etc.

(2) The JEMAI shall provide information to business operators and citizens, and take other
measures. (Development of a system, etc.)

Article 16. The City shall develop the necessary systems and take the necessary financial measures to implement measures to promote the formation of a decarbonized society.

(Delegation)

Article 17. Matters necessary for the enforcement of this ordinance shall be determined by the mayor.

Supplementary Provisions

This ordinance shall come into effect as of the date of promulgation.

Climate Change Adaptation

The adaptation areas and purposes are selected based on the national climate change adaptation plan and the seven areas and purposes that the government has evaluated the impact of adaptation measures.

In addition, in order to make it easier for citizens and businesses to understand, the selected areas and items were organized into four categories (agriculture and natural environment, floods and landslides, heat stroke and infectious diseases, and industry and economic activities) for the City of Konoshima.

(1) Method of impact assessment

In the "Yokohama City Climate Change Adaptation Policy", the city has selected and evaluated the impacts on the city in accordance with the seven areas and each item for which the government has conducted impact assessments.

The assessment of current and projected climate change impacts is based on the following criteria: severity, urgency, and confidence.

Each of the three is evaluated from the following perspectives for each of the smallest units.

Evaluation from three perspectives: social, economic, and environmental.

Urgency: Evaluated from two perspectives: "time of onset of impact" and "time when adaptation and important decisions need to be made".

Conviction Level: Evaluated from two perspectives: "type, quantity, quality, and consistency of evidence" and "degree of agreement with the opinion.

In addition to the national government's impact assessment, the Kanagawa Prefecture's impact assessment displayed in the Kanagawa Prefecture Global Warming Prevention Plan (revised in October 2016) was also used as a reference in assessing the impact on the City.

(2) Impact on the City

A Agriculture and natural environment

Although we are a large city, we have a rich and varied water and green environment with woodlands, farmlands, parks, streams, and waterside areas close to our daily life, which nurtures a rich natural ecosystem and is greatly the attractiveness of our city.

In agriculture, the agricultural production is one of the highest in the prefecture, and a large consumption area and various types of agriculture coexist in the prefecture. The effects on agriculture include a decrease in the quality of various agricultural products due to the rise in temperature, as well as the production and quality of livestock products.

There are also concerns about the effects of the decline in rainfall. There are also concerns about the impact of heavy rainfall and other factors such as soil erosion on the agricultural production base.

There are concerns over the long term.

As for the impact on the water environment, there are concerns that rising water temperatures will lead to deterioration of water quality in rivers and an increase in the number of red tides occurring in Tokyo Bay.

The impact on the ecosystem is likely to be a change in habitat and the establishment of non-native species, such as an increase in the distribution of southern species due to higher temperatures and water temperatures. There may also be significant changes in the seasons of life, such as the blooming of flowers and arrival of migratory birds.

(a) flood, and landslide disasters, etc.

The topography of the city consists of hills, plateaus, and the riverbed and coastal lowlands carved by numerous rivers. The dense urbanization of the coastal lowlands and the development of residential areas on the hillsides in the suburbs have resulted in the loss of the original water recreation and retention functions, which has caused flooding damage to the city.

To this end, river and sewerage projects have worked together to promote comprehensive flood control measures. As a result, the level of flood control safety has been greatly improved and flooding has been kept to a minimum 小 even during heavy rainstorms that have caused flooding in the past.

However, the increase in the frequency of torrential rainfalls in recent years and the arrival of giant tropical storms are thought to be the effects of climate change.

The occurrence of such natural phenomena, which are expected to increase in the future, may cause extensive damage, such as river flooding and urban flooding.

There are 8 river basins in the city, and the city's population is approximately 1.3 million people in the Tsurashi River basin and approximately 260,000 people in the Sakai River basin.

The Ooka River basin contains approximately 430,000 people, the Kashio River basin approximately 530,000 people, the Kawaio River basin approximately 530,000 people, the Kamao River basin approximately 530,000 people, the Ooka River basin approximately 430,000 people, the Miya River and Samurai River basins approximately 90,000 people, and the Inoe River and Takinogawa River basins approximately 200,000 people. The other coastal areas have a population of about 400,000, and are affected differently by floods.

In the coastal area, the Japanese coastal water level has been rising (+1.1mm/year) since the 1980's and it is predicted that even if greenhouse gas emissions are reduced, a certain level of rise in sea level will be unavoidable in the future. Therefore, the medium- to long-term rise in sea level and the occurrence of storm surges and high waves due to the increase in strong typhoons and other factors could lead to flooding.

There are concerns about water hazards and the impact on port facilities.

In cliffs, there are concerns about landslide disasters due to torrential rains.

Such natural disasters can also affect urban infrastructure and lifelines, such as water and transportation systems.

c. Heat stroke, infectious diseases, etc.

The risks of heat stroke and infectious diseases are significant because they directly affect our lives.

Every year, heat stroke cases due to high summer temperatures occur, and there is concern that rising temperatures and the increase in the number of older adults will continue to increase the risk of heat stroke as well as heat stress-related deaths.

The rise in water and air temperatures may also increase the risk of food poisoning and infectious diseases due to the rapid growth of bacteria, as well as the possibility of the emergence of infectious diseases not already present in Japan due to the expansion of the habitat of mosquitoes that carry infectious diseases.

In addition, the formation of air pollutants is accelerated by rising temperatures, and there is concern that the prolonged period of high temperatures may lead to higher concentrations of photochemical smog.

d. Industrial and economic activities

The increase in the number of extremely hot days may increase the use of air-conditioning equipment and affect the supply and demand of energy due to the effects of climate change. If a major power outage were to occur over a wide area, it would have a significant impact on the lives of the local people and economic activities.

As for the impact on the manufacturing industry, the rise in average temperatures may affect the production and sales processes of business operators. There are also indications that flooding due to an increase in extreme events such as torrential rains may cause direct and physical damage to production facilities and equipment.

大Regarding the impact on finance and insurance, there have been an increasing number of cases of large-scale natural disasters caused by large scale typhoons, which have resulted in a long period of stagnation of corporate production activities and huge insurance payments.

Regarding the impact on the tourism industry, there is concern about a decrease in the number of tourists due to unfavorable weather conditions.

On the other hand, new business opportunities may emerge in the future as investment in the field of adaptation increases.

(3) List of major impacts of climate change in the city according to national sectors

field	approximate size	approximate size	National Impact Assessment			Impact on the City	Measures in the City
			important 大 nature (of a person)	emergency nature (of a person)	confidence degree (angle, temperature, scale, etc.)	Current impact (■), future projected impact (▲)	
agriculture	agriculture	wet-land rice	◎	◎	◎	Decrease in quality (White unripe grains, lower ratio of high quality rice, etc.)	(a) Promotion of adaptation measures in agriculture and the environment
		vegetable	-	△	△	■▲ Quality loss due to altitude disturbance Need to re-evaluate crop patterns and develop varieties and cultivation techniques	
		fruit tree	◎	◎	◎	Growth disturbance due to high temperatures (e.g., poor grape coloration) Early growth and increased risk of frost damage due to sudden low temperatures in spring	
		animal husbandry	◎	△	△	Decrease in productivity	
		Diseases and weeds	◎	◎	◎	Residence of diseases and insects at higher temperatures	
		Agricultural Production Infrastructure	◎	◎	△	Damage to farmland and agricultural facilities due to heavy rain, etc.	
Water Environment - Water Resources	Water environment	rivers	◇	□	□	Decrease in dissolved oxygen and deterioration of water quality due to increased water temperature	
		Coastal and closed water area	◇	△	□	Red tide occurs in Tokyo Bay and dissolved oxygen in the bottom layer declines.	
	Water Resources	Water supply (surface water)	◎	◎	△	Increased drought risk	
(natural) vegetative ecosystem	terrestrial ecosystem	Natural forests secondary forest	◎	△	◎	Movement and expansion/contraction of suitable distribution areas	(a) Promotion of adaptation measures in agriculture and the environment
		Land and Wildlife ecosystems	◇	△	□	Life cycle changes (e.g., time of birth) Emergence of southern organisms	
		Effects of wildlife	◎	◎	-	Time of change in the migratory season of birds Life cycle changes (e.g., time of birth) Emergence of southern organisms	
	light water ecosystem	rivers	◎	△	□	Life cycle changes (e.g., time of birth) Emergence of southern organisms	
	littoral ecosystem	Temperate and subarctic zones	◎	◎	△	Life cycle changes (e.g., time of birth) Emergence of southern vegetation	
	Marine ecosystems		◎	△	□	Life cycle changes (e.g., time of birth) Emergence of southern vegetation	
	Residential Season		◇	◎	◎	Life cycle changes (generation time, flowering time etc.)	
	Variation in distribution and populations	Native species				Changes in distribution area and life cycle (e.g., time of birth)	

Natural Hazards - Coastal Areas	rivers	flood	◎	◎	◎	The frequency of occurrence of major storms has been increasing over time.	(a) Promote adaptation measures in the areas of flood, water and landslide disasters, etc.
		endosperm	◎	◎	△	The frequency of occurrence of major storms has been increasing over time.	
	littoral	sea level rising	◎	△	◎	Rise in sea level	
		strong current Large wave	◎	◎	◎	Increased risk of storm surge and high waves Damage to ports and fishing breakwaters	
	the future	Streams, landslides, etc.	◎	◎	△	Landslides and other disasters occur due to torrential rain, etc.	
	Other	Strong winds, etc.	◎	△	△	Increase in the number of strong weather events	
health	heat of summer	death risk	◎	◎	◎	■▲ Increase in excess deaths due to rising temperatures	c. Promotion of adaptation measures in the field of heat stroke, infectious diseases, etc.
		heatstroke	◎	◎	◎	Increase in the number of people transported for heat stroke	
	infectious disease	Waterborne and foodborne infections	-	-	□	Increased risk of waterborne and foodborne infections 大 Increase in poisoning and gastrointestinal infections	
		at foot-associated zoonosis infectious disease	◎	△	△	Possibility of mosquito-borne infections Possibility of infectious disease occurrence that has not yet occurred in Japan	
		Other Infectious Diseases	-	-	-	Seasonal changes and changes in risk of occurrence Unexpected occurrence of infectious diseases	
	Other	Global Warming and against the combined effects of TA pollution stray bullet-runner-up	-	-	△	■▲高High concentrations of photochemical smog and PM2.5 due to a prolonged warming period	
Industrial and Economic Activities	manufacturing industry		◇	□	□	Concerns that corporate activities will be affected by changes in average temperatures, torrential rain, etc.	d. Promotion of adaptation measures in the field of industrial promotion and economic activities
	energy	energy supply and demand	◇	□	△	Impact of ▲ temperature rise on energy consumption	
	Finance and Insurance		◎	△	△	In the event of a climate change-related disaster, the city's small- and medium-sized enterprises will be able to obtain the necessary funds for disaster recovery. Potential for financial needs	
	tourist trade	leisure	◎	△	◎	■▲ Decrease in tourists due to unfavorable weather	
People's Life - Urban Life	Urban infrastructure and lifelines (lessening the significance or value of the previous word) the likes of	Water, transport ation, etc.	◎	◎	□	Short duration strong rain, increased drought, and strong sea level Impact on infrastructure, lifelines, etc., due to increased 風.	(a) Promote adaptation measures in areas such as floods and 土sand disasters
	Other	due to heat For Residence affect	◎	◎	◎	Increased risk of heat stroke	c. Appropriateness in the field of heat stroke, infectious diseases, etc. Promotion of response measures

*Legend of the national impact assessment

Significance】◎ ：Extremely significant	◇ ：Not particularly significant		-◎Not particularly significant
Urgency】◎◎◎High	△ ：Medium	□ ：Low	- ：Cannot be evaluated at present
Confidence level】◎◎(High)High	△ ：Medium	□ ：Low	- ：Cannot evaluate at present

Major domestic and international trends related to global warming countermeasures, etc.

Japanese imperial year December 31, 1949	Major Events in the World ◎ Yokohama City, Kanagawa Prefecture, Japan	International Trends	Domestic Trends	Yokohama City Trends
1992 1992	◎Bubble Economy Collapse Agenda 21 adopted at the United Nations Conference on Environment and Development (Earth Summit)	May 5th Adoption of the United Nations Framework Convention on Climate Change		
Heisei 5 1993	◎ J-League season begins Establishment of Nikkei Island Completion of Yokohama Landmark Tower		August, 2011 Publication of Guidelines for the Formulation of Regional Plans for the Promotion of Global Warming Countermeasures	12 月 Developing an Energy Vision for Yokohama City
Heisei 6 1994	Started measurement of asbestos concentration in the environment Started heat island research	March 1st Framework Convention on Climate Change enters into force.		
Heisei 7 1995	Hanshin-Awaji Earthquake	Publication of the Second Assessment Report (SAR) by the IPCC		
Heisei 8 1996				
Heisei 9 1997	Yokohama International Stadium completed Keidanren's Environmental Action Plan Diamond Grace Incident (Tokyo Bay Tanker Oil Spill)	Adoption of the Kyoto Protocol	Establishment of Global Warming Prevention Headquarters	
Heisei 10 1998	Nagano Winter Olympics		June 1st, 2011 Establishment of the Global Warming Prevention and Countermeasures Program Outline October ▪ Law Concerning the Promotion of the Measures to Cope with Global Warming (Global Warming Prevention Law) enacted and implementation plan formulated. definitional obligation	
Heisei 11 1999	Yokohama Zoo Zoorasia opens. Yokohama Breeding Center opens.			
Heisei 12 2000	◎Okinawa Summit held ◎Hideki White River won the Nobel Prize in Chemistry			
Heisei 13 2001	◎Ryoji Noyori won the Nobel Prize in Chemistry Yokohama Triennale 2001 opens Hosted (and held every three years thereafter)	Release of the Third Assessment Report (TAR) by the IPCC		December 1st, 2011 Establishment of the Yokohama City Global Warming Prevention Plan
Heisei 14 2002	◎Masatoshi Kobashiba won the Nobel Prize in Physics ◎Ko Na Na received the Nobel Prize in Chemistry Soccer World Cup to be held in Yokohama Red Brick Warehouse opens		March 1st, 2011 Revision of the Tables for the Promotion of Global Warming Countermeasures June 1st, 2011 Revision of the Law Concerning the Promotion of the Measures to Cope with Global Warming Revision for the implementation of the Kyoto Protocol (implementation will start from the effective date of the Kyoto Protocol).	
Heisei 15 2003			June 1st, 2011 Publication of the 2nd edition of the Guidelines for the Development of Regional Plans for the Promotion of Global Warming Countermeasures.	March, 2012 Formulation of Yokohama City Hall Global Warming Prevention Action Plan

Heisei 16 2004	Minatomirai Line opens			
2005 2005	◎Expo 2005 Aichi, Japan "EXPO 2005 AICHI, JAPAN 25th National Marine Conservation Project TUAT held in Yokohama	February: The Kyoto Protocol enters into force.	April 1st Establishment of Kyoto Protocol Target Achievement Plan	
Heisei 18 2006			July 1st, 2011 Revision of Kyoto Protocol Target Achievement Plan	November 2011 Revision of the Yokohama City Global Warming Prevention Plan
Heisei 19, 2007 2007		Release of the Fourth Assessment Report (AR4) by the IPCC	March 1st, 2011 Publication of the 3rd edition of the Guidelines for the Development of Regional Plans for the Promotion of Global Warming Countermeasures.	March 1st , 2011 Revision of Yokohama City Hall Global Warming Prevention Action Plan
2008 2008	Makoto Kobayashi, Toshihide Maskawa, Yo Nambu Kogaro won the Nobel Prize in Physics, respectively. ◎Nobel Prize in Chemistry awarded to Osamu Shimomura	Commencement of the first commitment period under the Kyoto Protocol	March 1st, 2011 Complete revision of the Kyoto Protocol Target Achievement Plan June 1st, 2011 Revision of the Law Concerning the Promotion of the Measures to Cope with Global Warming Obligation to formulate a Directional Public Organization Action Plan (Area Policies)	March, 2011 Formulation of the Yokohama Regional Energy Vision July, 2011 Selected as a model city for the environment
2009 (Heisei 21) 2009	◎Eco-points to promote replacement of green appliances Held the 20th National Green Protection Gathering in Yokohama Y150 Opening of the National Exposition in Tokyo		June 2012 Greenhouse Gas Reduction Announced a target for the customer (2020 (2021)) (15% reduction compared to 2005 by 2) June 2012 Global Warming Prevention Site Publication of the manual for the formulation of the implementation plan (zone policy version) of the Dual Public Entity September 2012 Greenhouse Gas Reduction Announced a target for the customer (2020 (2021)) By 1990 (Heisei 2) 2) 25% reduction compared with the previous fiscal year)	March 1st, 2012 Establishment of Yokohama City's CO-DO30 (CO-Direction of Action for De-global Warming)
2010 2010	Nobel Prize in Chemistry awarded to Akira Suzuki and Eigishi Negishi ◎● Return of the low comet probe "Hayabusa 18th APEC Leaders' Meeting held in Yokohama			
2011 2011	Tōdai Nihon Taikai Earthquake, Fukushima Daiichi Nuclear Power Plant nuclear power plant accident			March 1st, 2012 Establishment of the City of Yokohama Global Warming Action Plan (Area Policies). March 1st, 2012 Formulation of the Yokohama City Global Warming Action Plan (Project). December 1st, 2011 Selected as a "Future City for the Environment

Fiscal year ended March 31, 2012 2012	Observation of a full-range moon ◎Tokyo Sky Tree opens Shinya Yamanaka was awarded the Nobel Prize in Physiology and Medicine. Dance Dance Dance Dance @ Yokohama 2012 Held	End of the first commitment period of the Kyoto Protocol		
2013 2013	◎Damage to Tōshima Island Yokohama Fire Festival 2013	Start of the second commitment period of the Kyoto Protocol (-2020) Publication of the Fifth Assessment Report (AR5) by the IPCC (~2014)	March 1st, 2011 Decision by the Headquarters for the Promotion of Global Warming Countermeasures on the current policy of global warming countermeasures. 25% reduction target by COP19 on a zero-based basis recheck Revision of the Law Concerning the Promotion of the Measures to Cope with Global Warming Nitrogen added to greenhouse gas list. April, 2015) Global Prevention Plan in the Government November 1st, 2011 New target for GHG reduction Our current target is to achieve by FY2020 (2020) a target of 2005 (Heisei 17). 3.8% decrease compared with the previous fiscal year	
2014 2014	◎Consumption tax increased from 5% to 8%. Hiroshi Amano, Isamu Redzaki, and Shuni-Nakamura win the Nobel Prize in Physics. Damage from landslides and flooding caused by Typhoon No. 18	3 月 IPCC 38th General Assembly held in Yokohama, Japan for the first time		Revision of the Yokohama City Global Warming Action Plan March 1st, 2012 Establishment of the City of Yokohama Global Warming Action Plan (City Hall version).
Heisei 27 2015	◎Foreign tourists are dramatically increasing Yokohama Marathon, the city's first full marathon with citizen participation Return of the former Kamisegawa communications facility All areas of Zoorasia open	September: "Sustainable Development Goals (SDGs)" adopted at the UN Summit December 1st, 2011 Climate Change Framework The Paris Agreement, a new international framework, is adopted at the 21st Conference of the Parties (COP21) to the Convention.	7 月 "Long-Term Energy Supply and Demand Determination of "Views • Determination of the "Japan's Commitment Draft Reduction of 26% by 2030 compared to 2013 (crimp) November "Impact of Climate Change Cabinet Decision on "Adaptation Plan to	March 1st, 2012 Yokohama City Energy Action Plan established.
Fiscal year ended March 31, 2016 2016	Start of use of the "My Number" system According to the 2015 census, the number of people in Yokohama City reached 3.72 million, the highest ever.	11 月 "Paris Agreement" enters into force	April April, 2011 Full-surface electricity pricing automation May 1st "Global Warming Countermeasures Plan" approved by the Cabinet Revision of the Law Concerning the Promotion of the Measures to Cope with Global Warming 11 月 Decision to conclude the "Paris Agreement" December 1st, 2011 "Sustainable Development Determination of "Guidelines for implementation of the SDGs	June, 2011 Yokohama City Basic Plan for Water and Greenery revised.

Fiscal year ended March 31, 2012 2017	◎Start of Premium Friday ◎Torrential Earthquake in Northern Kyushu Yokohama North Route" and "Minami Honmoku Hama Road" opened	June 1st: President Trump pledges to withdraw from the Paris Agreement.	March 1st, 2012 Publication of "Long-Term Low Carbon Vision April 1st Release of "Long-Term Global Warming Prevention Platform Report Revision of the Feed-in Tariff (FIT) Law for Renewable Energy City gas retail sales at full scale 自 June 2017 Environmental Cabinet approved the White Paper	June, 2011 Yokohama City's Direction of Climate Change Adaptation
Heisei 30 2018	◎The total number of foreigners residing in Japan 2% of the total (the largest number ever) Hot summer (51 tropical nights in Yokohama, emergency medical care for heat stroke) 1711 members, the largest number ever)	Publication of the 1.5° C Special Report by the IPCC December · Conference of the Parties to the United Nations Framework Convention on Climate Change (COP24) adopts implementation guidelines for the Paris Agreement.	April, Establishment of the Fifth Basic Plan for the Environment June, 4th Basic Plan for the Promotion of Establishing a Sound Material-Cycle Society formulated. Promulgation of Climate Change Adaptation Law July 1st The Fifth Basic Energy Plan approved by the Cabinet November 1st , 2012 Establishment of Climate Change Adaptation Plan December 1st Revised Energy Conservation Law in effect	June 2012 Selected as SDGs Future City October, 2012 Yokohama City SDGs Future City Plan Revision of the Yokohama City Global Warming Action Plan November 1st, 2011 Revision of Yokohama City Environmental Management Plan
2019	◎Early 20th year of the sexagenary cycle is changed to "2025. ◎Consumption tax increased from 8% to 10%. ◎Akira Yoshino won the Nobel Prize in Chemistry Rugby World Cup 2019 to be held in Yokohama Sotetsu/JR direct line begins service. Garden Necklace Yokohama" registered in the first Garden Tourism Registration System. Application to host the 2027 International Horticultural Exposition approved.	November 米 The United States formally notifies the United Nations of its withdrawal from the Paris Agreement.	June 1st , 2012 Achievement of the Paris Agreement Long-term strategy as a long-term strategy approved by the Cabinet	
2019 2020	◎New coronavirus infection rages, first emergency call ◎Tokyo 2020 Olympic and Paralympic Games postponed one year New Yokohama City Hall completed. Yokohama-Kita-South line opens		January 1st Establishment of Environmental Innovation Strategy June 1st, 2012 Green Growth Strategy for carbon neutrality by 2050 October 1st, 2011 The Prime Minister pronounced the decarbonization mandate for 2050. At the start of the national and local carbon reduction conference	May, 2012 Yokohama City Strategy for Utilization of Renewable Energy is formulated.

2021-3 2021	◎Start of vaccination against new coronavirus ◎Hosting of Tokyo Olympics and Paralympics	February 1st, 2011 formally returns to the Paris Agreement. April 1st Climate Change Summit November · At the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP26), the Paris Rulebook, which outlines important issues such as implementation guidelines for the Paris Agreement, is completed. IPCC Sixth Assessment Report (natural science basis, impacts, adaptation, and [illegible] released.	June 1st , 2011 Decision on Regional Decarbonization Roadmap October 1st, 2011 Revision of the Global Warming Prevention Plan approved by the Cabinet The Sixth Basic Energy Plan approved by the Cabinet Climate Change Adaptation Plan approved by t[illegible]	February Establishment of Zero Carbon Municipal Council June 2012 Yokohama City Ordinance on the Promotion of the Formation of a Decarbonized Society comes into effect.

*Men's names omitted.

*Timeline is listed by "year".

History of the Revision of the Action Plan for Global Warming

The revision of the actual plan was based on discussions at the City Council and within the Agency, as well as opinions expressed by members of the Environmental Creation Council. The revision process is as follows.

2020 (10)月	Declaration of decarbonization by 2050 by Japanese government.言
2020 (12月	) National "National-Local Decarbonization Conference" is launched by the national government.足
June 2021	The national government will formulate a "Green Growth Strategy for Carbon Neutrality in 2050" The national government decides on a "Regional Decarbonization Roadmap".
	Yokohama City Ordinance on the Promotion of the Formation of a Decarbonized Society" goes into effect.
2021 (2021) 10月	National government's "Global Warming Prevention Plan," "The Sixth Basic Energy Plan," and "Climate Change
	Revised "Motion Adaptation Plan
2021 11月	Report on the revision of the actual plan to the Environmental Creation Council of Yokohama City.
September 2022	Conducted public comments on the revised draft
～TET-10 月	
2022 (12)月	Yokohama City Council Resolution passed at the 4th regular meeting of the 2022 Yokohama City
Council	

Glossary of Words

go ahead of

energy mix

It refers to the balance in power generation between electricity (石 coal, oil, natural gas), water (力), nuclear power, and renewable energy; the optimal combination is being sought, taking into account the characteristics of each power source, such as CO_2 emissions, cost, and stable supply.

greenhouse gas

The sun's rays pass through the earth's atmosphere and warm the surface of the earth. The warmed surface radiates heat into space in the form of red light , but the Tao gas absorbs some of this heat. The reason for this is that there are gases in the Talekko that absorb heat (red infrared rays). This is why the Tentative Environmental Impact Assessment (TIA) was established. The more greenhouse gases in the atmosphere, the stronger the greenhouse effect becomes and the higher the temperature near the earth's surface becomes, leading to global warming. Currently, emissions are calculated for seven gases: bi-oxidized carbon (CO_2), methane (CH_4), ni-nitrogen (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3).

-ist (used after a noun indicating someone's occupation, pursuits, disposition, etc.)行

carbon-neutral

The balance between greenhouse gas emissions and removals (neutral) is achieved by subtracting the amount of carbon dioxide and other greenhouse gases absorbed through afforestation and forest management from the amount of carbon dioxide and other greenhouse gases emitted, so that the total is effectively zero.

Carbon Neutral Port

This project aims to reduce greenhouse gas emissions to zero through the development of an input environment that enables large, stable, and inexpensive import and storage of water, ammonia, fuel, and other substances at ports, which are nodes of international logistics and industrial centers; the upgrading of port functions in consideration of decarbonization; and collaboration with waterfront industries, which are concentrated in the area. The project aims to achieve zero greenhouse gas emissions overall through the development of an environment that allows for the input and storage of goods.

Climate-related Financial Information Disclosure Task Force (TCFD)

A task force established by the Financial Stability Board (FSB) to encourage companies to recognize the risks and opportunities of climate change and incorporate them into their business strategies.

climate change

A長 periodic change in temperature and weather patterns. These changes may be due to natural phenomena such as changes in the solar cycle, but since the , climate change has been caused mainly by human activities such as the burning of fossil fuels (coal, oil, gas, etc.).

Intergovernmental Panel on Climate Change (IPCC)

What is the United Nations Intergovernmental Panel on Climate (IPCC)?
An intergovernmental organization established in 1988 by the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP) to provide a comprehensive assessment of human-induced climate change, impacts, adaptation and mitigation measures from scientific, technical and socio-economic perspectives.

Conference of the Parties to the United Nations Framework Convention on Climate Change (COP)

The highest decision-making body of the United Nations Framework Convention on Climate Change. It is attended by all parties to the Convention and reviews and makes decisions on the implementation of the Convention. It meets once a year.

Glasgow Climate Agreement

An agreement adopted at COP26 in 2021, based on the "Paris Agreement" adopted in 2015 to reduce greenhouse gas emissions around the world, how to respond to the effects of climate change (adaptation), and money to support climate change measures in developing countries. (funds), and other important issues were summarized. One of the most important messages of the meeting was the call for countries to take ambitious measures toward carbon neutrality (virtually zero greenhouse gas emissions) by mid-century and the critical milestone of 2030, in order to achieve the 1.5° C目 goal of the Paris Agreement.

Synthetic fuels

A fuel produced by synthesizing carbon bi-oxide and hydrogen.

Feed-in Tariff (FIT)

A system under which the government commits to purchase electricity generated from renewable energy sources for a fixed period of time at a fixed price from electric power companies. Electricity力 companies collect part of the purchase cost from consumers in the form of a levy to support the introduction of high-cost renewable energy.

come行

supply chain

The flow of raw material procurement, manufacturing, transportation, etc., until the product reaches the consumer.

Circular Economy

In addition to conventional 3R initiatives, it is an economic activity that generates added value through services while reducing resource input and consumption and making effective use of stock, aiming to maximize the value of resources and products, minimize resource consumption, and prevent waste generation.

Auto-Distributed Energy

A generic term for energy supplied from relatively compact power generation facilities located close to energy consumption areas. Specifically, it includes renewable energy such as photovoltaic power generation, cogeneration systems such as fuel cells, and energy storage devices such as storage batteries.

Water and ammonia power generation

A method of power generation using water or ammonia as fuel. It is intended to be free of CO_2 emissions during combustion.

smart city

Sustainable cities and regions that continue to solve various urban and regional problems and create new value through high-level management (planning, maintenance, management, operation, etc.) while taking advantage of new technologies such as ICT .

smart agriculture

A new type of agriculture that utilizes robotics and information and communication technology (ICT) to promote efficiency, precision, and high-quality production.

distance between outstretched thumb and middle finger (approx. 18 cm)行

decarbonized society

A society that has achieved carbon neutrality.

Decarbonized first regions

In order to achieve carbon neutrality by 2050, the project aims to achieve virtually zero CO_2 emissions from electricity consumption by consumers in their lives (for example, for those in their homes, in their communities, in their workplaces, etc.) and to achieve reductions in other greenhouse gas emissions, including for transportation and heat use, consistent with the FY2030 target for Japan as a whole, in accordance with the regional characteristics. It will be a model of "actual decarbonization domino".

Regional Circulation Co-residence Area

The aim is to maximize the vitality of the region by complementing and supporting each other's resources according to regional characteristics, while forming an autonomous and decentralized society in which each region makes maximum use of its local resources such as beautiful natural scenery.方

Global Warming Countermeasures Plan

The government's comprehensive plan based on the Law Concerning the Promotion of the Measures to Cope with Global Warming, which was approved by the Cabinet on May 13, 2016, and is scheduled to be implemented by 2021.

（Revised on October 22, 2021 月 46% reduction of greenhouse gas emissions in 2030 (FY2013)

The roadmap to the realization of the new approximate target is drawn by describing the measures and policies that will support the new 2030 fiscal year objective (the "Progression").

Global Warming Prevention Plan System

This is a system that requires businesses in Yokohama that emit greenhouse gases above a certain scale (global warming countermeasure businesses) to prepare and publish a global warming countermeasure plan and report on the status of implementation.

adaptation

The process of adjusting to the actual or projected climate and its effects. In human systems, adaptation seeks to mitigate or avoid harm or take advantage of beneficial opportunities. In some natural systems, human intervention may facilitate adjustment to expected climate and its effects.

Electric Cars (EV)

Cars that do not have gasoline engines but instead use electric motors. 行Since bi-oxide carbon and exhaust emissions are not emitted during driving, there are benefits such as preventing global warming and air pollution, as well as less noise during driving.

middle of a country

Fuel Cell Cars (FCV)

An automatic car powered by an electric motor and powered by electricity generated from a chemical reaction between water and oxygen in a fuel cell. Since bi-oxide carbon and exhaust gases are not emitted during driving, this leads to global warming countermeasures and prevention of air pollution, and there is less noise during driving.

school (e.g. of ikebana)行

Paris Agreement (1985)

The agreement was adopted at COP21 held in Paris in 2015 (2015) and entered into force in 2016 (2016). It is a new international framework for reducing greenhouse gas emissions after 2020, replacing the Kyoto Protocol, and for the first time in history, it is a fair agreement in which all countries participate.

heat island phenomenon

In urban areas, the increase in human-made structures, the increase in concrete and asphalt covering of the ground surface, the consequent decrease in natural land area, and the increase in human waste heat from air conditioning, etc., have changed the heat yield balance on the ground surface, and the temperature in typical urban areas is now lower than in the suburbs.
A phenomenon of high altitude. This phenomenon is known as a "heat island" because the isotherms in the distribution of surface air temperatures in and around the city can be seen to surround the urban area like an island with the urban area as the center of the center.

blue carbon

Carbon absorbed and captured by marine organisms (plankton, seaweed, seagrasses, saltwater marsh plants, etc.). Named in a 2009 UNEP report.

just (e.g. "just wait here")行

metanation

A technology that uses the reaction of carbon-nitride and hydrogen to produce methane, the main component of city gas. 用The methane (synthetic methane) produced by the recovery of water from renewable energy sources and carbon dioxide emitted from combustion is a carbon-neutral city gas that can be used in existing infrastructure and facilities.

and ... and行

Yokohama Eco School (YES)

Zero Carbon Yokohama" is a citywide participatory project that supports environment-related lectures and events, such as those related to global warming countermeasures and eco-lifestyles, held by municipal organizations, businesses, universities, and public administration, and aims to expand Zero Carbon Yokohama into a citywide movement.

Yokohama SDGs Design Center

An organization jointly established and operated by the City of Yokohama and private businesses, it is an intermediary support organization for solving environmental, economic, and social issues in Yokohama by connecting the needs and seeds of various entities in and outside the city toward the achievement of the SDGs.

Yokohama Smart Business Association (YSBA)

The council aims to utilize and develop the knowledge from the YSCP (Yokohama Smart City Project) demonstration experiment見 , respond flexibly to changing energy-related services, and realize the decarbonization of the city目 . The council also aims to deploy the technologies and systems developed to date both domestically and internationally.

and others行

resilience

In the fields of disaster prevention and the environment, this concept refers to the resilience of a society or organization to quickly restore its functions in the face of unexpected events.

A to Z

CCUS

Carbon dioxide capture, utilization, and storage is a technology for the capture, utilization, and storage of bi-oxide carbon.

DR (Demand Response)

The owner of the energy resource on the customer side or a third party controls the energy resource to change the electricity demand pattern. There are two types of DR depending on the pattern of demand control: "down DR" to reduce (suppress) demand and "up DR" to increase (create) demand.

DX

A coined word combining the words "digital" and "innovation. The use of digital technology to create new services and value that could not be realized before, and to transform society and services.

ESG Investment

This type of investment takes into account environmental, social, and governance factors in addition to conventional financial information. Long-term risk management for climate change and other factors are also considered.

GX (Green Transformation)

The government's proposal to combine economic growth and environmental protection, and to quickly move to carbon neutrality, which means "zero greenhouse gas emissions by 2050," refers to changes in the entire economic and social system.

MaaS (MaaS Mobility as a Service)

This is a service that combines multiple public transportation and other transportation services in an optimal way to meet the trip-based transportation needs of local residents and travelers, and offers search, reservation, payment, and other services in one package at一括. By linking with other services other than transportation in destination areas such as tourism and medical care, this service improves convenience of transportation and helps solve local issues. It also contributes to improving convenience of transportation and solving regional issues by linking with non-transportation services in target areas such as tourism and medical care.

PDCA

A system that aims to improve operations, etc. through a cycle of "Plan" → "Do" → "Check" → "Act" (improvement).目

PPA (Power Purchase Agreement)

A contract in which the facility installation company (PPA company) installs photovoltaic power generation equipment in the facility, and the facility side purchases the electricity generated by the equipment. Since the facility does not own the equipment, the facility can use the electricity from the renewable energy without having to bear the initial cost and maintain the equipment.

RE100

An international initiative for companies to use 100% renewable energy to power their own operations.

Science Based Targets (SBT)

A greenhouse gas emission reduction target set by companies with a target year of 5 to 15 years in the future, consistent with the standard required by the Paris Agreement (which aims to limit the global temperature increase to a level well below 2° C above the pre-industrial age (Well Below 2° C) and to aim for a limit of 1.5° C).

SDGs (Sustainable Development Goals)

The 2030 Agenda for Sustainable Development, the successor to the Millennium Development Goals (MDGs) established in 2001, was adopted at the United Nations Summit in September 2015 by the unanimous vote of the member nations, and aims to achieve a sustainable and better world by 2030. It consists of 17 goals and 169 targets, and is a global goal that "everyone on earth should strive for a sustainable and better world by 2030.

He pledges to "leave no one behind".

VPP (Virtual Power Plant)

A VPP is an initiative in which energy resources (storage batteries, power generation equipment, demand response, etc.) owned by buildings and homes are controlled remotely and integrated using high-level energy management technology to function as if they were a single power plant (virtual power plant), and used to adjust supply and demand. VPP is expected to have various effects such as reducing bi-oxidation carbon, reducing generation costs, reducing grid stabilization costs, and improving energy self-sufficiency (reducing dependence on fossil fuels).

ZEB (Net Zero Energy Building)

The building is designed to achieve significant energy savings while maintaining the quality of the indoor environment by reducing the energy load through advanced building design, actively utilizing natural energy through the use of passive technology, and introducing high-efficiency equipment systems, as well as to achieve an extremely high level of energy autonomy by introducing renewable energy. A building that aims to achieve zero annual gross receipts from energy consumption by introducing renewable energy sources.

ZEH (Net Zero Energy House)

The quality of the indoor environment will be maintained through significant improvements in the thermal insulation performance of the exterior walls and the installation of high-efficiency equipment systems.

A house that aims to achieve zero annual energy consumption by introducing renewable energy, etc. after achieving significant energy savings.

Zero Carbon Yokohama

The language used to express the goal of Yokohama City's global warming countermeasures: "virtually zero greenhouse gas emissions (decarbonization) by 2050.

January 2023, Yokohama City Global
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