



# Yokohama City Climate Change Adaptation Strategy Outline (June 2017)

In light of climate change-linked large-scale disasters in Japan and overseas and developments in Japan and the international community, Yokohama is taking **the adaptation measures in “Yokohama City Action Plan for Global Warming Countermeasures” that it is implementing in each sector and compiling them into a cross-sector Adaptation Policy.**

## Chapter 1. Background

### 1. What is “adaptation” to climate change?

- According to a report by the Intergovernmental Panel on Climate Change (IPCC), **there is no longer any doubt that the earth is warming** and **we are facing climate change** that has never been experienced.
- Climate change measures consist of both "mitigation measures" and "adaptation measures" and these must be advanced in unison.

#### Mitigation

**Suppressing greenhouse gas emissions, the cause of climate change**

Countermeasure examples:

- ◆ Energy-saving measures
- ◆ Introduction of renewable energy

#### Adaptation

**Responding to the effects of climate change to minimize/avoid damage**

Countermeasure examples:

- ◆ Storm/flood damage, sediment disaster measures
- ◆ Heatstroke, infectious disease measures

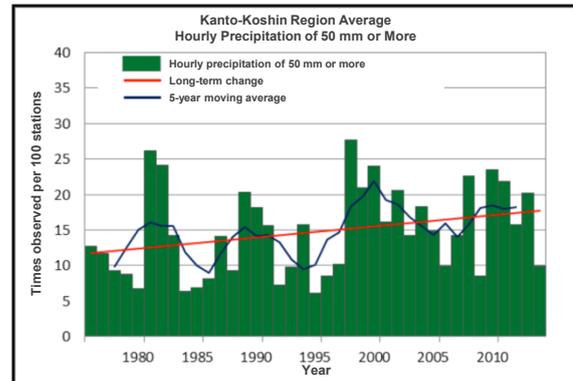
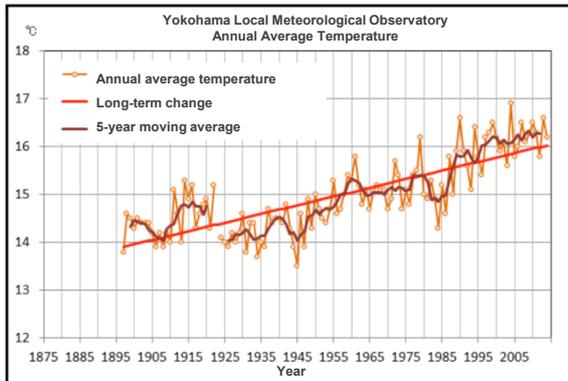
### 2. Background and history of Yokohama’s adaptation

Date	Background/History
March 2011	Yokohama City Action Plan for Global Warming Countermeasures formulated based on the Act on the Promotion of Global Warming Countermeasures <b>with the focus on mitigation measures to reduce greenhouse gas emissions (CO<sub>2</sub>, etc.)</b> .
March 2014	<b>Action Plan thoroughly revised</b> given the changes in the circumstances surrounding Japan’s global warming countermeasures and energy policy. <b>Adaptation measures positioned and promoted</b> ahead of the Japanese government and other cities. *Three measures promoted up until now: 1) prevention/reduction of heatstroke 2) prevention/reduction of damage caused by heavy rain 3) monitoring in cooperation with citizens
November 2015	<b>National Plan for Adaptation to the Impacts of Climate Change formulated by Japan.</b> → Promoted national measures and <b>positioned the promotion of local government efforts</b>
November 2016	<b>Paris Agreement enacted.</b> Promotion of adaptation measures also positioned in international framework.

### 3. Long-term climate change in Yokohama and forecasts

#### 3-1. Long-term climate change

- **Climate change has already occurred in the city** - the annual average temperature observed by the Japan Meteorological Agency's Yokohama observatory has **risen about 1.8°C in the past 100 years**.
- **The number of days when hourly precipitation is 50 mm or more** at AMeDAS stations in the Kanto-Koshin region is **on the rise**.



Source: Japan Meteorological Agency's Tokyo District Meteorological Observatory  
"Climate Change Report 2015 – Kanto-Koshin, Hokuriku, Tokai Regions"

#### 3-2. Climate change forecasts

- The average temperature in Kanagawa Prefecture is expected to rise **about 3°C in the roughly 100 years** from the present (1980-1999) to the future (2076-2095) and the **number of midsummer days per year will increase by about 40 days**.
- It is estimated that the number of times hourly rainfall in the prefecture is 50 mm or more **will increase mainly in the summer and autumn**.

## Chapter 2. Basic Matters

### 1. Significance and purpose

1. It will compile efforts to cope with abnormal weather and other unprecedented effects of climate change **from the perspective of adaptation and in a cross-sector manner, promote current measures in each sector and aim to develop a sustainable city**.
2. By collecting and transmitting information on climate change risks and adaptation, it will **protect life and property by encouraging understanding and action by citizens and businesses** and **minimize or avoid damage** from the effects of climate change.
3. Since **mitigation measures and adaptation measures are the two pillars of climate change countermeasures** and must proceed in unison, adaptation measures will encourage citizens and businesses to understand climate change and **further promote mitigation measures**.

## 2. Basic strategies

Five Basic Strategies	Basic Thinking
1. Promote measures to protect citizens' lives and property	We will promote relevant measures to protect citizens' lives and property from the effects of climate change such as the increase of residential flooding caused by heavy localized rain and heatstroke caused by heat waves.
2. Improve city resilience	We will promote the creation of a sustainable city by making people, communities and urban areas strong against disasters and improving city resilience.
3. Incorporate the perspective of adaptation into city measures	Within the measures we are implementing in each sector, we will incorporate the perspective of adaptation into measures with deep implications for the effects of climate change.
4. Create a virtuous environmental-economic circle by promoting adaptation measures	By understanding and utilizing city businesses' adaptation-related technology, information, etc. and promoting adaptation measures, we will generate a virtuous circle of the environment and the economy.
5. Promote collaboration between cities in Japan and overseas	We will promote information-sharing, SDG initiatives, etc. based on inter-city collaboration through the climate change networks Yokohama is a part of in Japan and overseas.

## 3. Various roles

• Based on these five basic strategies, we will promote all kinds of initiatives and measures through **partnership and cooperation between citizens, businesses and government.**

### 1. Citizens

Citizens are expected to deepen their understanding of climate change and adaptation measures, gather and use information on disaster prevention, heatstroke, infectious diseases, etc. and **take measures to protect their own life and property as well as help each other through local connections** such as neighborhood councils, associations, etc.

### 2. Businesses

Businesses are expected to deepen their understanding of climate change and adaptation measures, **reduce damage from disasters and formulate business continuity plans (BCPs)** as well as, based on future climate change, **incorporate the perspective of adaptation into their business, provide technology and information and conduct analysis at research institutions.**

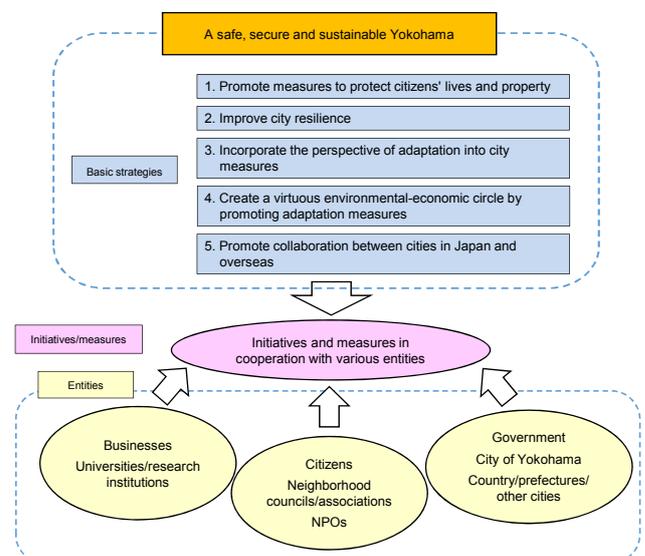
### 3. Government

Based on national and social developments, we will **gather information and monitor the situation** as well as formulate an adaptation policy, action plan, etc. to **include climate change and the perspective of adaptation in the measures we promote.**

We will **transmit/share climate change information across a broad spectrum, promote public awareness raising and environmental education, and strengthen initiatives in cooperation with various entities.**

We will promote the use of the technology, information, etc. of city businesses.

**We will promote collaboration between cities in Japan and overseas.**



## Chapter 3. Sector-Specific Effects and Policies

- From the seven sectors and items for which the national government conducted an impact assessment, we **selected the items that affect Yokohama**.
- We **classified these items into four areas** – **1. Agriculture/natural environment**, **2. Storm/flood damage, sediment disasters, etc.**, **3. Heatstroke, infectious diseases, etc.** and **4. Industry/economic activity** – and **formed policies for measures** to promote.

Areas Classified by Yokohama		Policies for Measures
1. Agriculture/ natural environment	a. Agriculture	1. Gather and share information on effects, etc. on agriculture 2. Offer technical assistance to farmers, etc. 3. Offer economic assistance to farmers, etc.
	b. Water environment/ water resources	1. Monitor the water environment 2. Conserve water source forests 3. Conserve water and greenery 4. Maintain water source facilities, etc. 5. Counter land subsidence due to groundwater extraction
	c. Natural ecosystem	1. Monitor the ecosystem 2. Conserve the ecosystem
2. Storm/flood damage, sediment disasters, etc.		1. Provide disaster prevention information and raise awareness 2. Monitor river water levels, tide levels, etc. 3. Maintain river and sewerage facilities 4. Prevent basin flooding 5. Protect against storm surges and high waves 6. Prevent disasters on precarious land 7. Create a resilient city
3. Heatstroke, infectious diseases, etc.		1. Raise awareness/call attention to heatstroke prevention measures 2. Prevent the spread of/call attention to infectious diseases 3. Monitor weather and air pollution
4. Industry/economic activity		1. Generate climate change-related city industries 2. Manage energy supply and demand

## Chapter 4. Policies for Cross-Sector Measures

- We formed three cross-sector measures to promote – **1. Promotion of climate change monitoring**, **2. Promotion of citizen and business efforts** and **3. Promotion of inter-city cooperation in Japan and overseas**.

Cross-Sector Measures	Policies for Measures
1. Promotion of climate change monitoring	1. Promote monitoring in each sector
2. Promotion of citizen and business efforts	1. Promote information use and efforts by citizens 2. Promote information use and efforts by businesses
3. Promotion of inter-city cooperation in Japan and overseas	1. Promote cooperation between Japanese cities 2. Promote inter-city cooperation through international networks 3. Share information/cooperate internationally through inter-city collaboration