

# The Situation of climate change adaptation in Tokyo



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# Today's contents

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1. Current situation of climate impact  
and adaptation in Tokyo
2. Movement related to adaptation  
and challenges
3. My research



# **1 . Current situation of climate impact and adaptation in Tokyo.**





# Changing Climate in Japan

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Japan originally has many natural hazards.

We have responded them historically.

And I thought we have reached an almost enough level of measures.

But Record extreme weather has increased recently, and many disasters are occurring.

# Climate disaster in Japan in a year

## Sep 2017 Typhoon and Weather front

- ✓ An hour precipitation recorded 90mm at Saeki and 85mm in Daiki, updated the first in observation history.
- ✓ 8dead, 59injured, 14houses destroyed, 531houses damaged, 6,623houses inundated.

## Jul 2017 Typhoon and Weather front

- ✓ 546mm/day updated the first in observation history.
- ✓ 39dead, 4missing, 1412houses destroyed, 94houses damaged, 1908houses inundated

## Jul 2018 Heavy rain

- ✓ The total rainfall from June 28 to July 8 exceeded 1,800 mm.
- ✓ 24, 48, 72 hours precipitation at the many points are the first in observation history.
- ✓ Many dead and missing people due to river floods and landslides.

## Jan 2018 Snow Storm

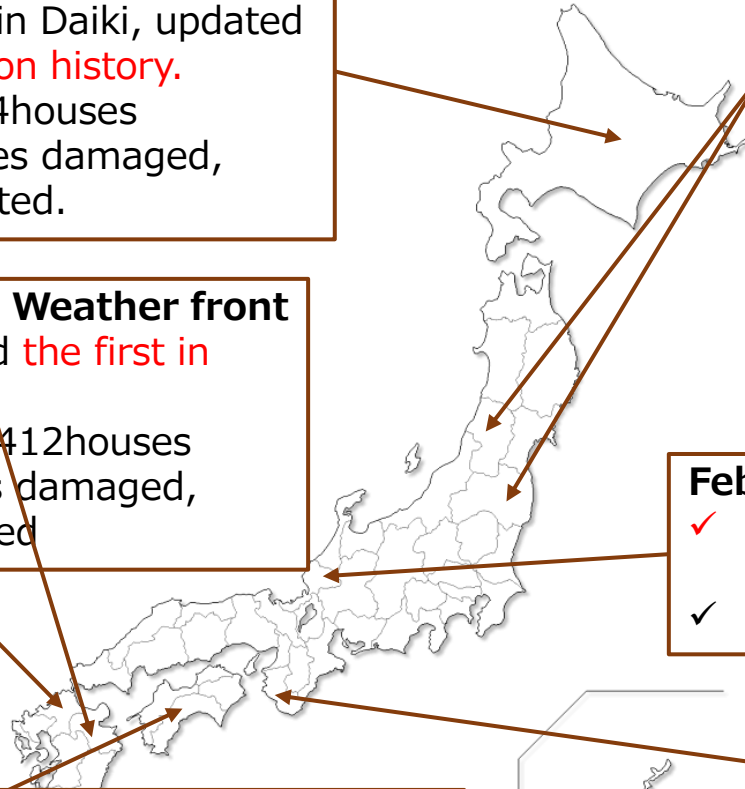
- ✓ 198 cm snowfall from Jan 22nd to 27th.
- ✓ 28.2 m/s wind speed in Sakata.
- ✓ Many Traffic disturbances, lifeline damages..

## Feb 2018 Heavy Snow

- ✓ Recordable heavy snow since 1981 Feb 3rd to 8th.
- ✓ Traffic disturbance.

## Oct 2017 Typhoon and Weather front

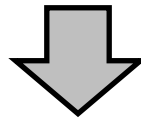
- ✓ 889mm of the 48-hour precipitation at Shingu
- ✓ 8dead, 215injured, 20houses destroyed, 630houses damaged, 5,882 houses inundated



Nov.2015 National adaptation plan

“Adaptation plan for the impact of climate change”

Jun.2018 The Climate change adaptation law

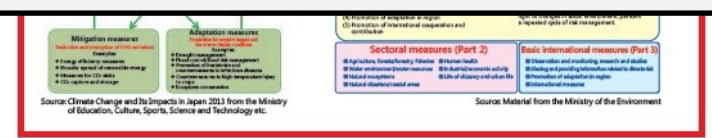


The adaptation plan and The law set out that municipalities will make **efforts** to tackle climate change adaptation measures.

# Adaptation in Tokyo Government



TMG has promoted measures taking into consideration the impact of climate change, including those for heavy rains and heatstroke and will develop these measures in a more systematic manner than ever to adapt to the impact on natural disasters, natural ecosystem, and human health in the medium to long term, in light of the latest knowledge and the move of the national government.



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## **2. Movement related to adaptation and challenges**

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# Movement related to adaptation



Worst-case flood prediction map

- ✓ According to the future prediction, the course of the typhoon may move to the east side than it is now.
- ✓ Therefore, it can be said that this map considered part of climate change risk.
- ✓ This map is excellent in considering complex disasters.
- ✓ However, sea level rise is not considered.

Tok

渋谷区

目黒区

品川区



- the same time as storm surge
- ✓ Assuming the worst situation, anticipate breaking of embankment etc



# Movement related to adaptation

Torrential rain

In June 2014 TMG revised the Tokyo Heavy Rainfall Muster Policy.

It has been revised taking into account the increasing strong rain in recent years.

Drainage facility measures

✓ However, risks of climate change in the future are still largely unconsidered.

Retention facility measures

Flood resistant building  
Water stop facility

Individual facility measures

Communication

Hazard map



Evacuation measures

Climate change adaptation in Tokyo has only just begun

Some bureaus in TMG have begun to consider adaptation independently based on the national policy.

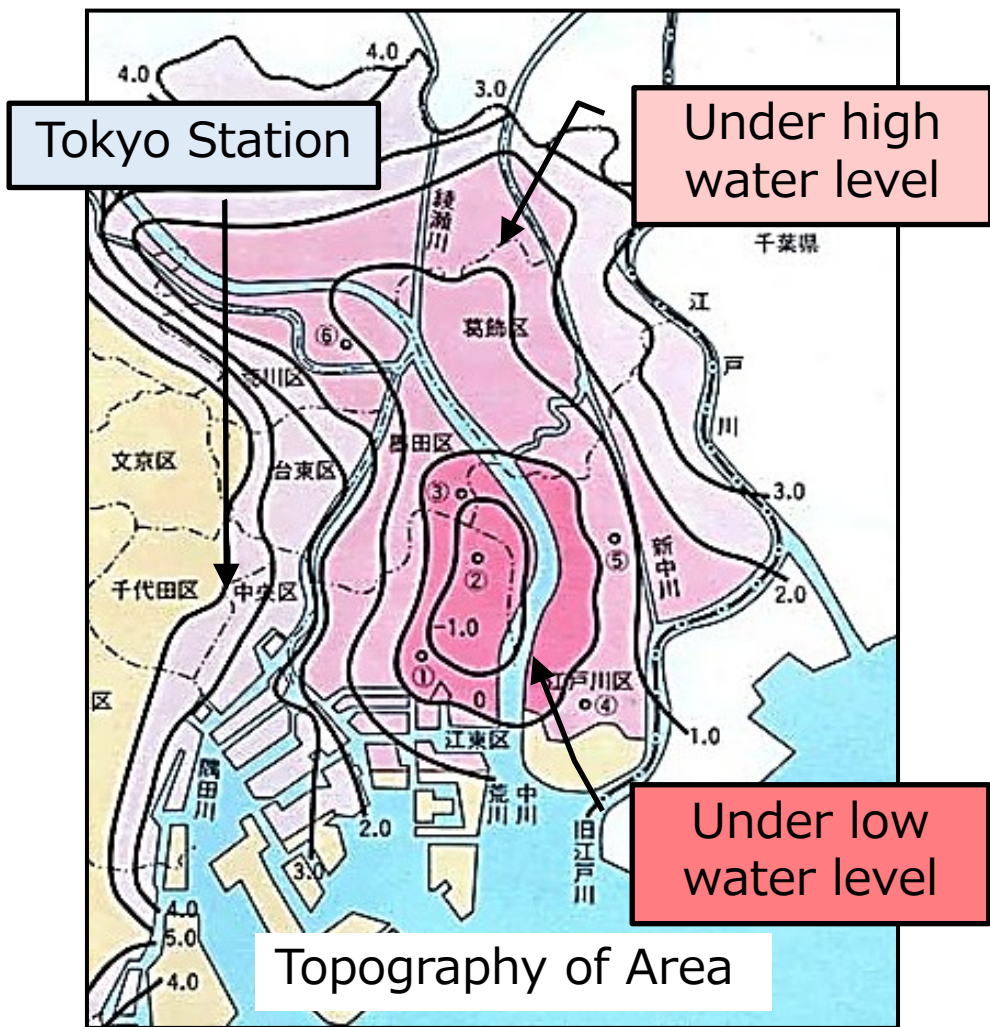
Future Challenge

This becomes measures of a single function considered in a narrow range.

# Can you imagine?

## Future Challenge

It may be necessary to change the place to live.



Area 116km<sup>2</sup>

Area of under high water level  
Source : Ministry of Land, Infrastructure and Transport, 2006

Population 2.5M

Resident population for the area flooding on the floor.  
Source :Koto 5 Ward large-scale flood disaster broad evacuation plan

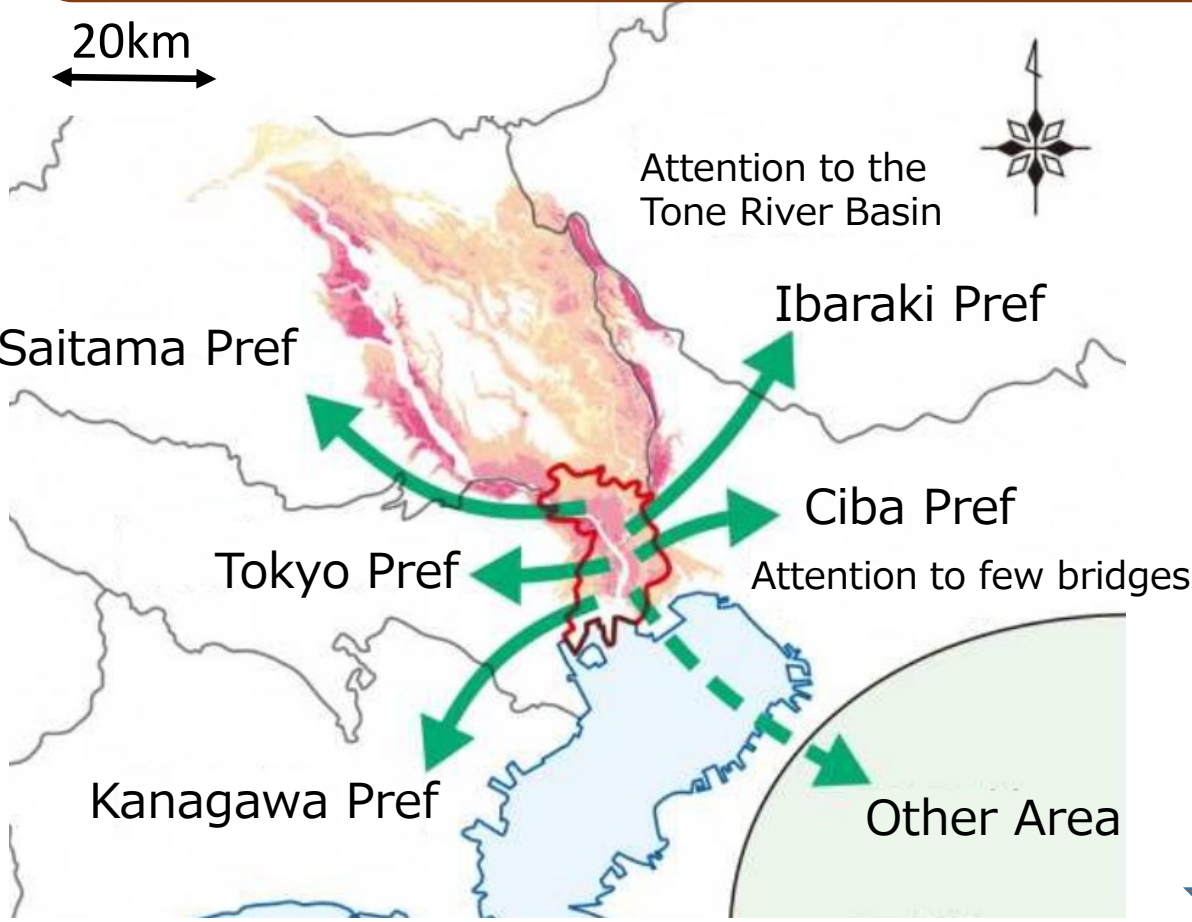
Inundation depth 10 m

Inundation period 2weeks

Source :Koto 5 Ward large-scale flood disaster broad evacuation plan

# Broad Evacuation plan (Aug 2018)

Future Challenge  
It may be not functional measures.



evacuation information.  
930hpa Typhoon or  
400mm/3days(Arakawa river basin)

72-24 hours  
Announcement  
voluntary broad  
evacuation information

24-9 hours  
Recommendation  
voluntary broad  
evacuation

9-0 hours  
Direction vertical  
evacuation within the  
region

Source :Koto 5 Ward large-scale flood disaster broad evacuation plan



### 3. My research



## Future Challenge

This becomes measures of a single function considered in a narrow range.

### ◆ **Integration of adaptation measures**

Challenges are different depending on the area, combination of measures and integration are also different. Citizens knows local conditions the most .

# Need Citizens Coop for adaptation

## Future Challenge

This becomes measures of a single function considered in a narrow range.

### ◆ **Integration of adaptation measures**

Challenges are different depending on the area, combination of measures and integration are also different. Citizens knows local conditions the most .

## Future Challenge

It may be necessary to change the place to live.

### ◆ **Critical change for adaptation measures**

Only citizens who live there can decide the future city.



# Need Citizens Coop for adaptation

## Future Challenge

It may be not functional measures.

### ◆ **Functional adaptation measures**

Measures that citizens do not understand do not work in emergencies.

The information from the government is sometime not clearly understand for citizens. Citizen's opinions are often fragmentary and abstract.

- ◆ How do you provide the information to the citizen in an easy-to-understand way?
- ◆ How do you integrate citizen opinion, make it concrete, and provide it that the government official is easy to implement?



# Thank you for your attention

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