Implementing Super-Levee

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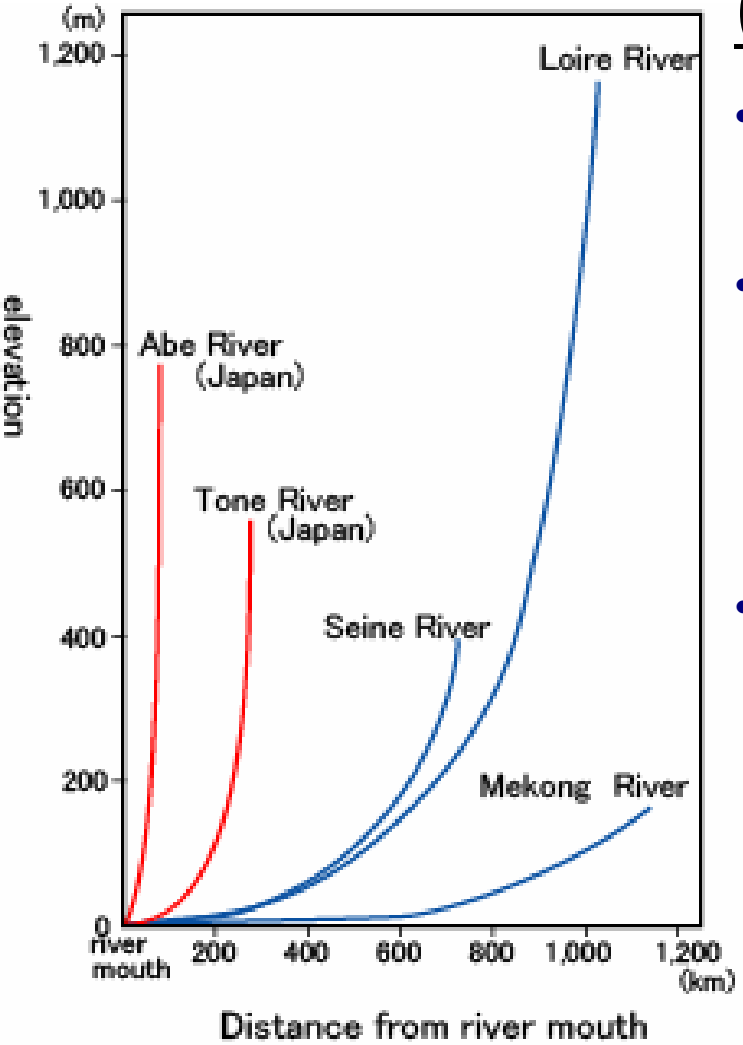
1. Overview of a “Super-Levee”

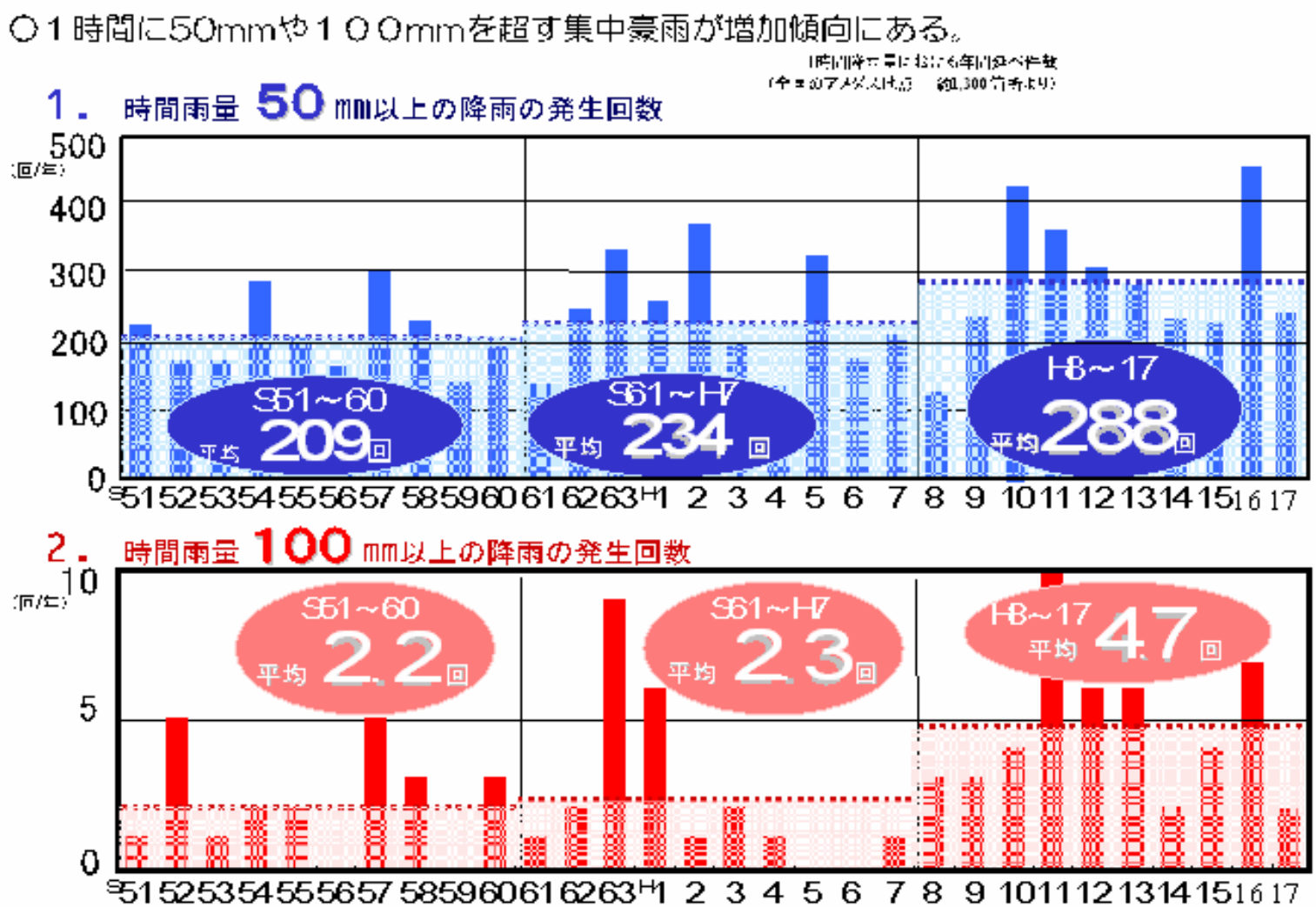


(1) Natural conditions of Japan

- Japanese rivers have steep slopes in comparison with other countries.
- Japanese rivers are prone to flooding because rainfall tends to be concentrated during specific annual periods (June and September) .
- Geographically, mountain ranging from 2,000 to 3,000m in height formed on the center of the national, the rivers that flow seaward from these mountain ranges are steep and relatively short.

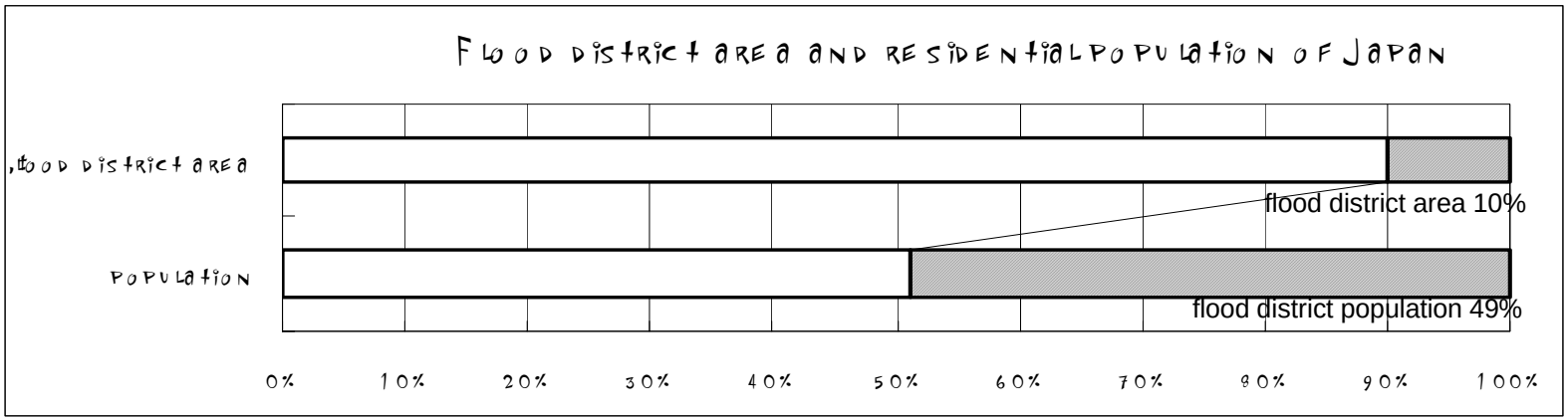
Meteorological conditions in recent years

- Recent years in Japan, it is increasing hard rain.

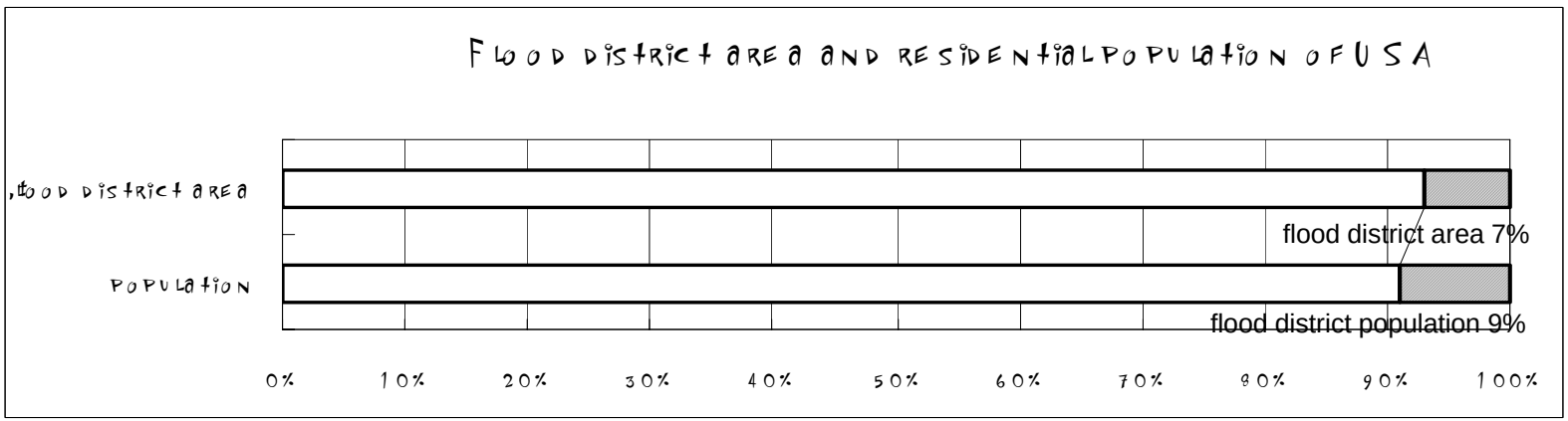


(2) Social conditions of Japan

- The inundated district is about 10% of a nationwide soil in Japan, and the population of about 50% lives there.



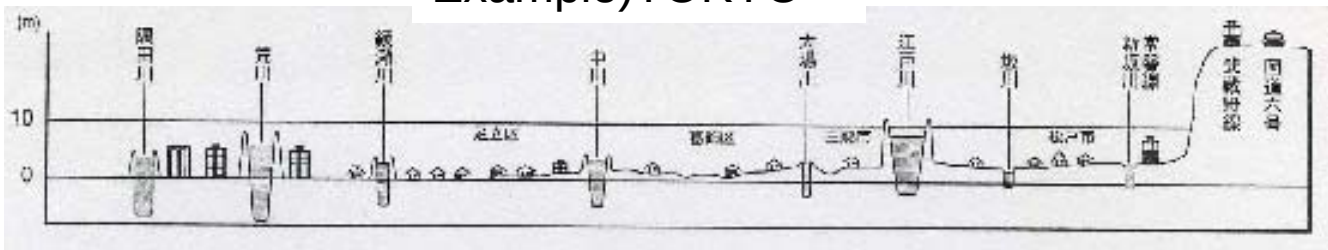
- The inundated district is about 7% of a nationwide soil in the United States, and the population of about 9% lives there.



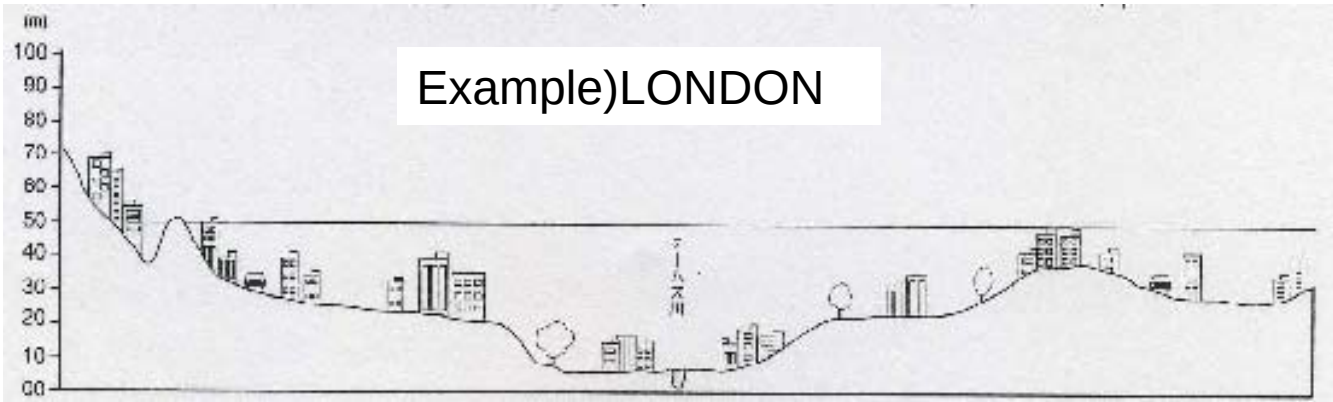
- Geographical features comparison between Tokyo and London

•The majority urban area of Japan is in the low ground part.

Example)TOKYO

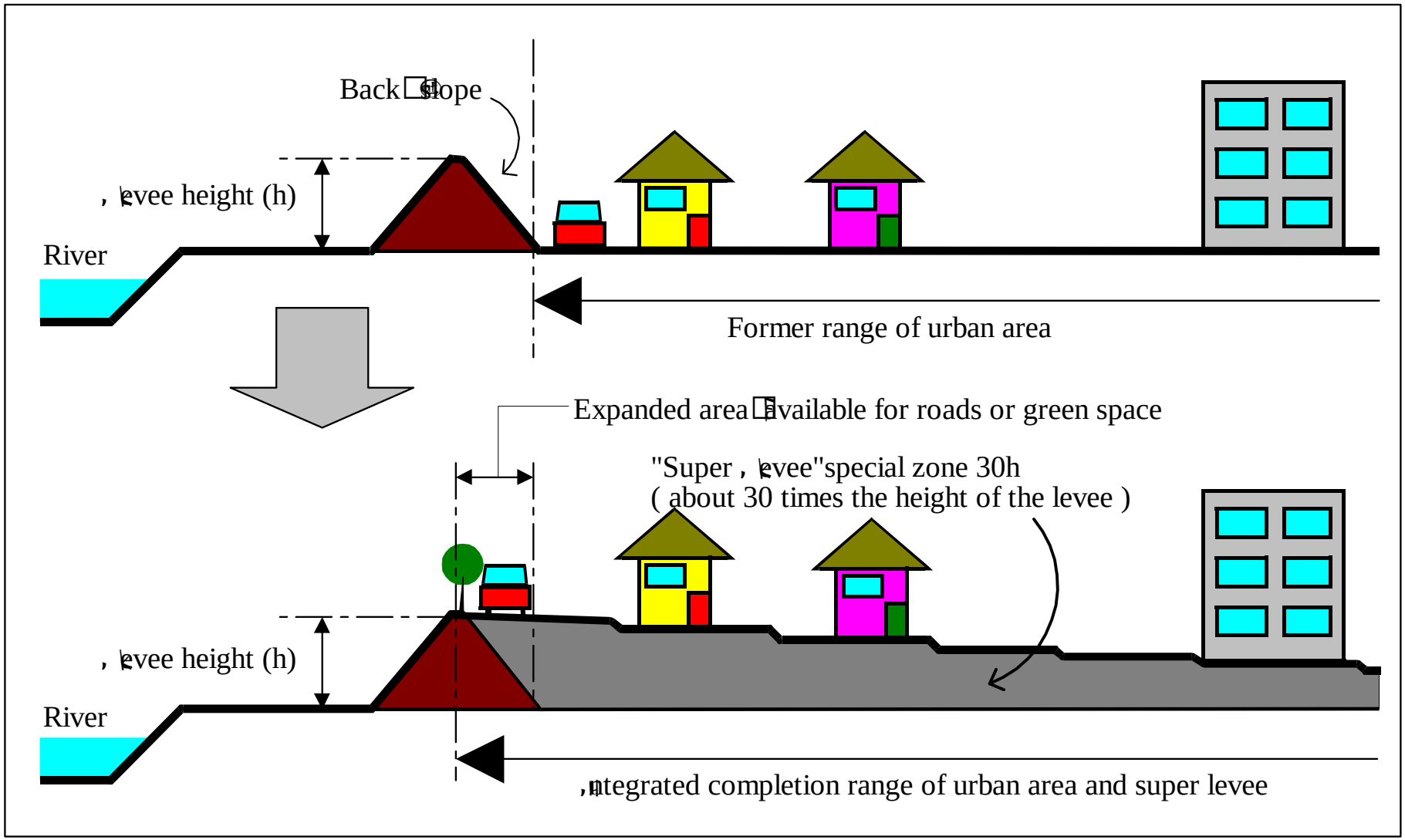


•The majority urban area of Western Europe is on the table land part.



Example)LONDON

What is a “Super-Levee”?



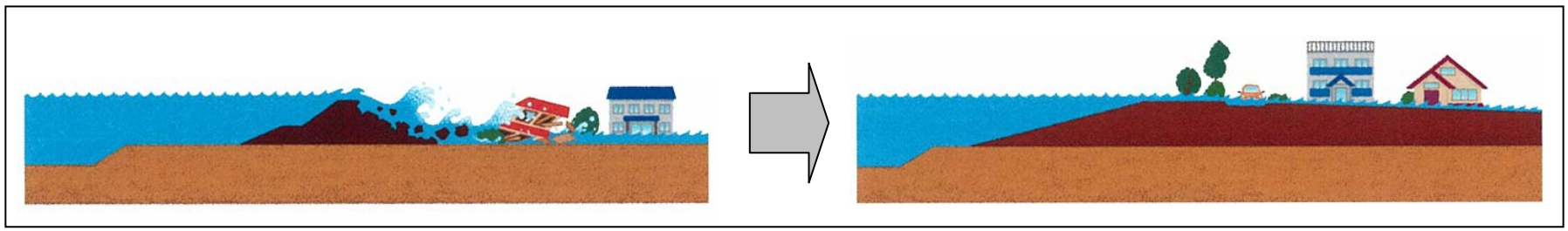
Features of a “Super-Levee”

- A “ Super-Levee” is expected to have a profound effect, both in terms of disaster prevention and community renovation, thanks to its structural characteristics.
- **Effectiveness in terms of disaster prevention**
- **Effectiveness for infrastructure improvements in urban areas.**

- Currently, developmental reviews of a “Super-Levee” for four rivers in the Tokyo area and two rivers in the Osaka area are respectively underway.

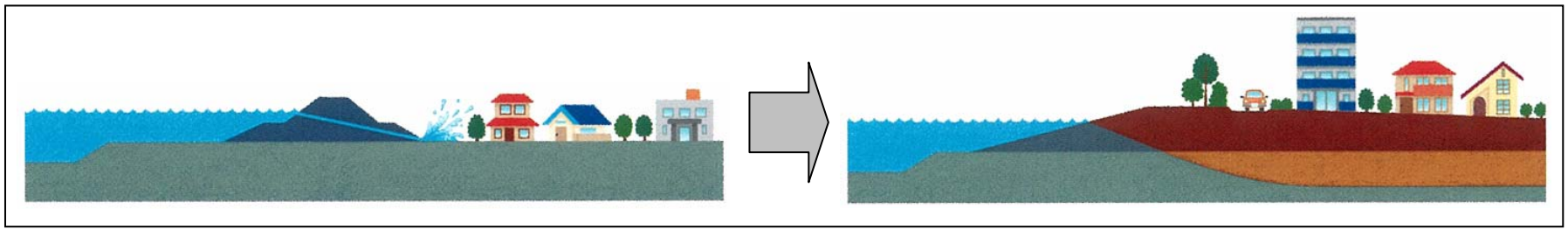
2. Effectiveness in terms of Disaster Prevention

- “Super-Levee” may seldom or never be prone to break.



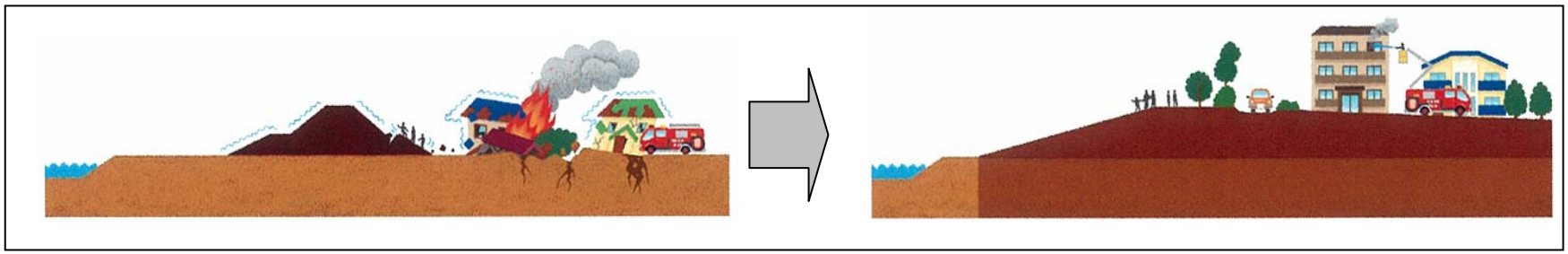
- Convention levees may be prone to break when water spills over the dike.
- However, this may seldom or never affect “Super-Levee”, because water flows slowly on the slope.

- “Super-Levee” may seldom or never be prone to due to water infiltration.



  - For Convention levees, when floods exceeding the dike persist for long periods, levees may be broken due to infiltration of water into the dike.
  - However, for “Super-Levee”, even if the flood continues for an extended period, they are seldom or never prone to break to due to water infiltration.

- The Urban area on a “Super-Levee” earthquake-resistant.



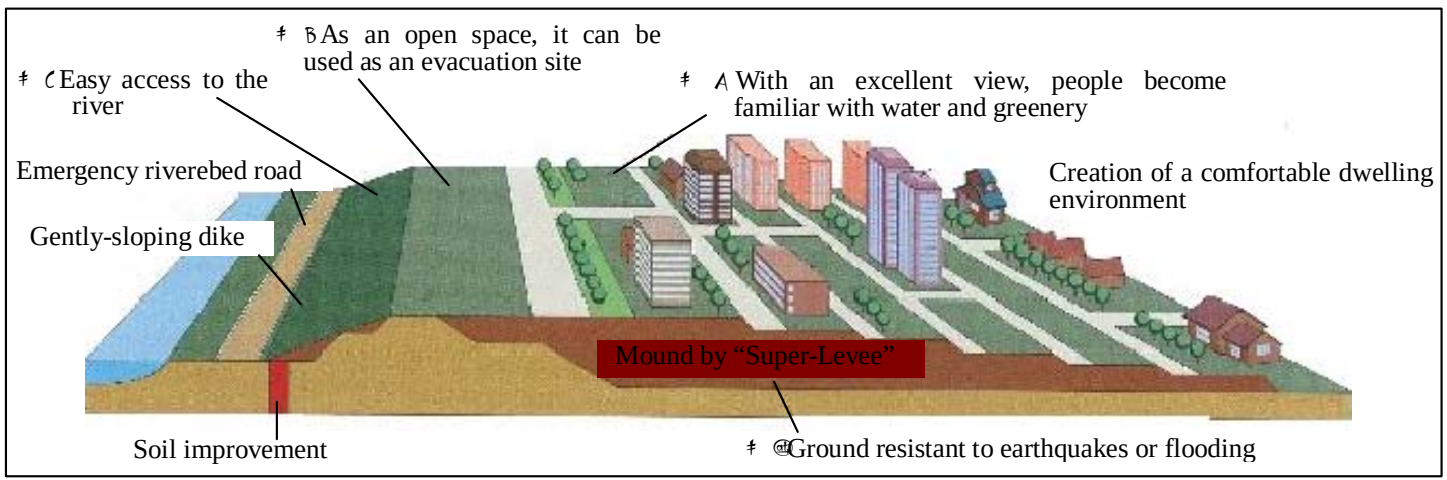
- Earthquakes frequently occur in Japan, so we must take this into account when planning infrastructure improvements.
- For conventional levees, the urban area on the soft ground behind the dike is expected to be subject to considerable damage.
- For “Super-Levee”, because soft grounds will stabilize to hard ground and form a gentle slope as necessary, the dike will be resistant to liquefaction or slippage during earthquakes; hence rendering the urban area on a “Super-Levee” earthquake-resistant.

“Super-Levee” is made of soil, and a sustainable levee.

- Since a “Super-Levee” is made of soil, you can build houses on top, set out plants, or proceed to ordinary land use, without triggering any deterioration in strength or destruction over time.
- In addition, a “Super-Levee” does not shut off groundwater by integrating with the foundation ground, thus helping avoid any upset to the ecosystem.
- Furthermore, the soil material is readily available, and you can make efficient use of soil generated during other public works.
- This is precisely the concept of a sustainable levee.

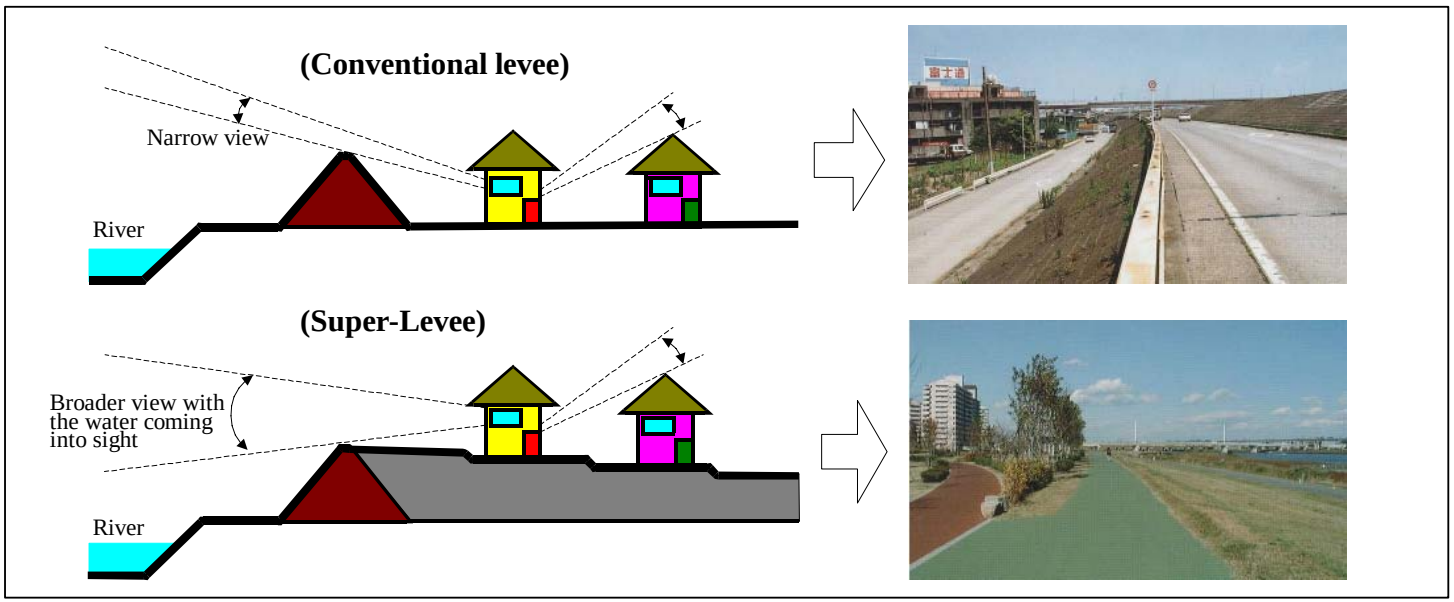
3. Effectiveness for infrastructure improvements in Urban Areas

- Comfortable and beautiful infrastructure improvement
- "Super-Levee" improvements will be implemented, capitalizing on the rebuilding opportunities in riverside areas or those subject to intensive land use.
- In particular, if it is conducted in full coordination with a land readjustment or urban area redevelopment project, this facilitates comfortable and beautiful infrastructure improvement in an urban area, taking advantage of the river spaces.



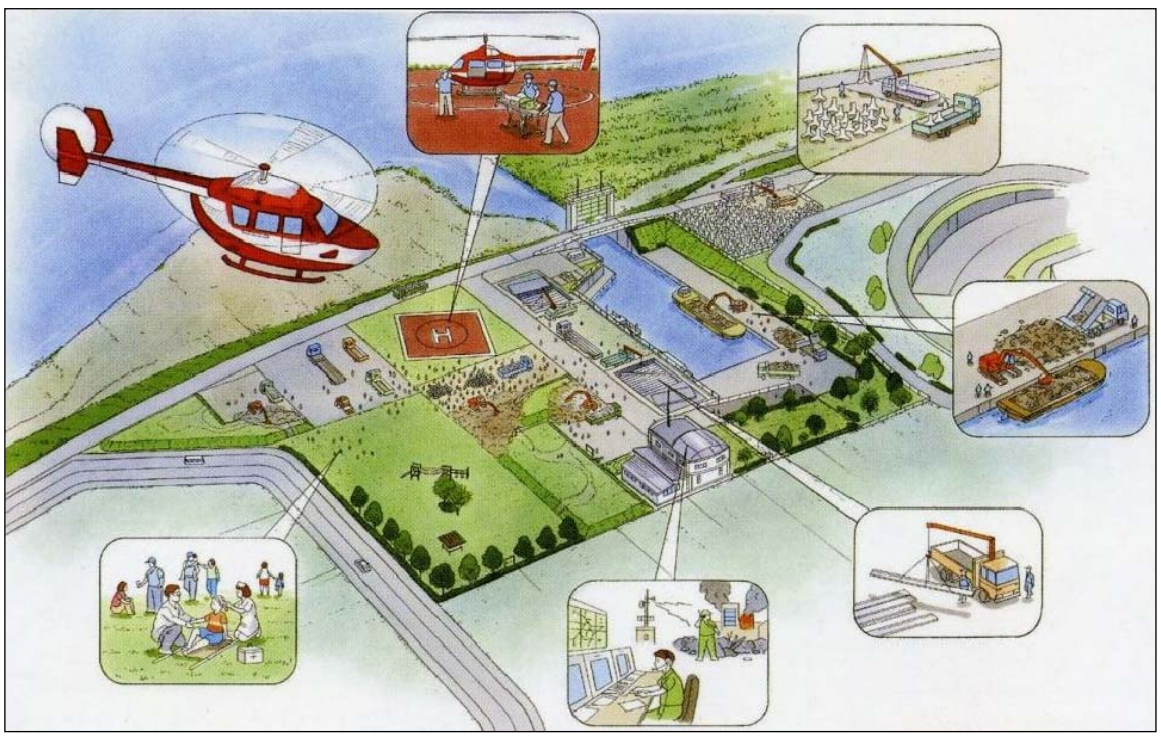
Easy access to the river, and broader view

- For conventional levees, because the urban area and rivers are interrupted by the dike, people have obstructed views and they become eyesores.
- However, for “Super-Levee”, people have easy access to rivers, a broader view and they can look over the rivers, facilitating a pleasant infrastructure improvement in urban areas.



- Open spaces on the dikes and it can be used as an evacuation center during disasters

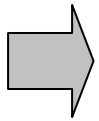
- Since a “Super-Levee” has a more earthquake-resistant structure than conventional levees, the provision of open spaces on the dikes can be ensured and it can be used as an evacuation center during disasters, including earthquakes or fires.



4. Case examples

- Komatsugawa District, Edogawa ward, Tokyo

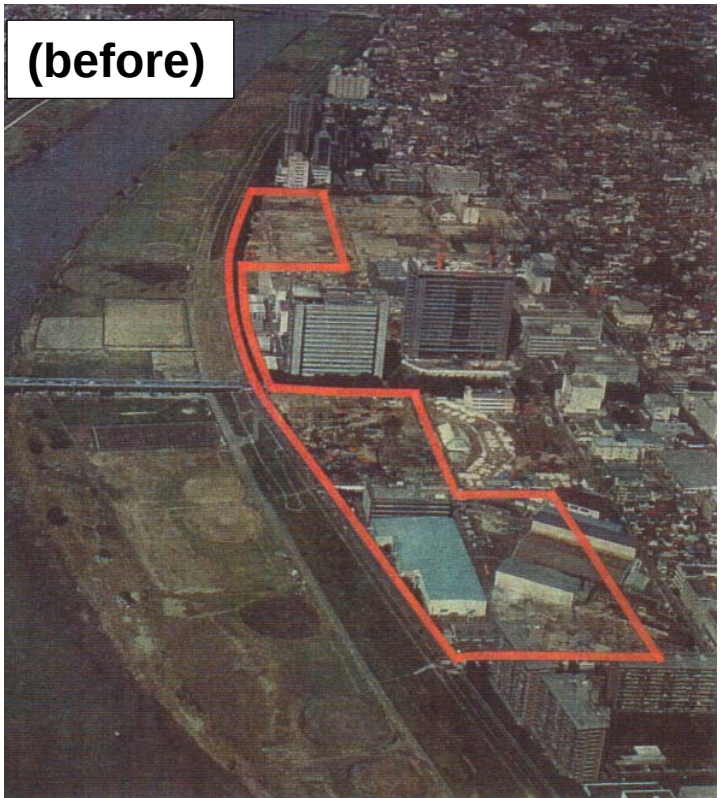
- In the Komatsugawa district, the development of a “Super-Levee” about 2.4 km long is underway, in full coordination with an urban area redevelopment project.
- Before the “Super-Levee” was developed, this district was densely-packed with factories and wooden houses and on ground below sea level. However, it has now been regenerated into a safe and comfortable urban area.

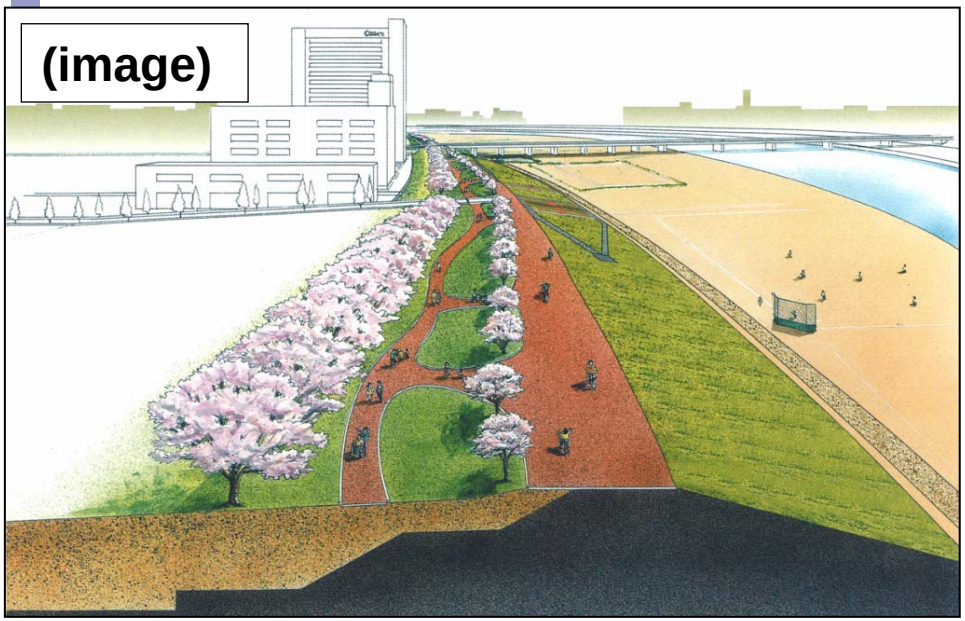


- On the “Super-Levee”, one thousand cherry blossom trees have been planted along the dike to become rows of cherry blossom trees.

Shimomaruko District, Ota ward, Tokyo

- In the Shimomaruko district, the construction of a residential complex was planned after the large-scale relocation or closure of factories.
- “Super-Levee” was developed in conjunction with this plan, with a structure also featuring a walking trail, in cooperation with the company located in the center of the district.

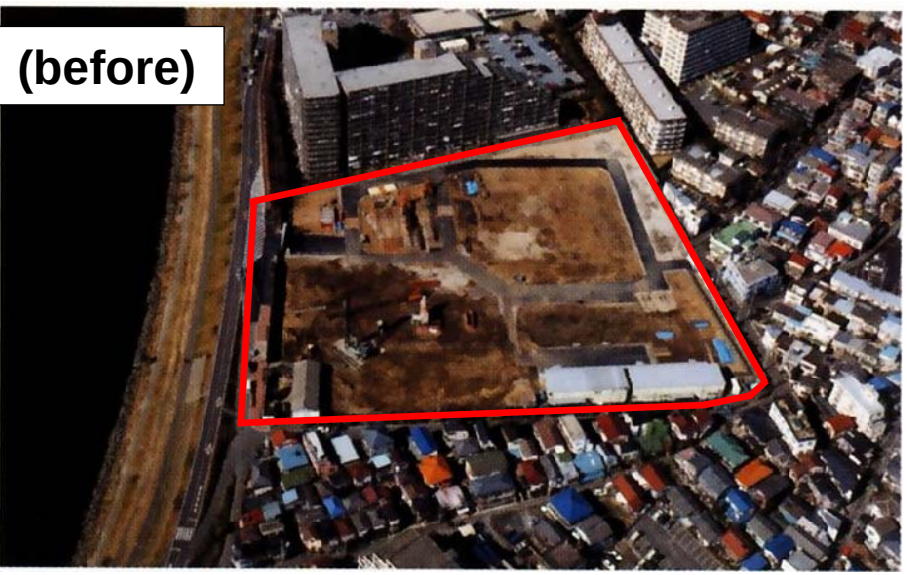


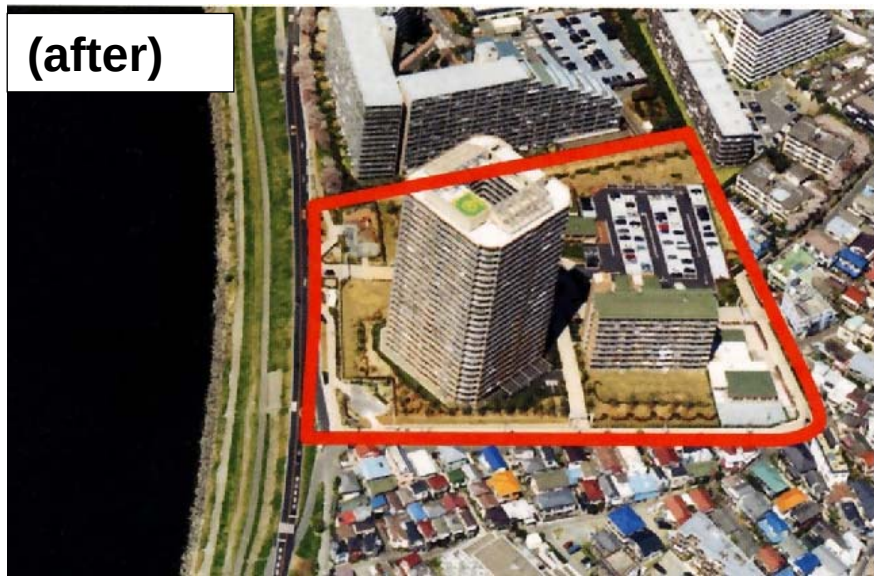

(image)


(after)
A walking trail
with cherry blossom trees

Tamagawa 2-Choume District, Ota ward, Tokyo

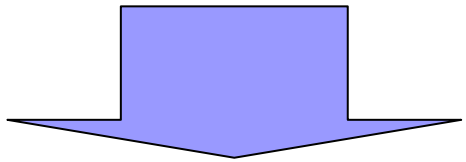
- In Tamagawa 2-Chome district, as private laboratory premises become vacant due to relocation, Tokyo Metropolitan Housing Supply Corporation had planned to construct a new housing complex.
- In conjunction with this construction plan, a “Super-Levee” was developed with open space for the surrounding residents.





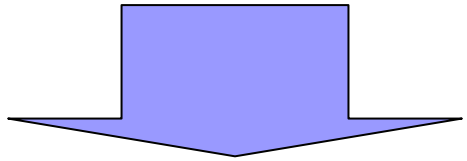
5. Sustainable Infrastructure Improvement in Urban Areas and Enhanced Access to the Rivers

- Assignments
  - Since the development of a “Super-Levee” involves many interested parties, including local residents and companies, vast amounts of time and funds are required for construction.
  - Consequently, the actual execution rate for “Super-Levees” accounts for less than ten percent of targeted districts.



- Recent years, concentrated short-term downpours have emerged in Japan.
- Due to such weather changes, major metropolitan areas, including Tokyo and Osaka, have been exposed to the risk of flooding.
- Flooding occurs, local residents lose their homes, and urban areas may lose their socioeconomic functions.
- The improvement of a “Super-levee”, can protect urban areas from flooding, is potentially able to contribute significantly to the sustainable improvement and development of infrastructure.

- Unlike conventional levees, a “Super-Levee” does not separate rivers and urban areas.
- Improvements implemented in the shape of a “Super-Levee” will facilitate human access to river spaces.
- Questionnaire surveys in areas of a “Super-Levee”, many respondents stating that they were ‘familiar with the rivers’ and went there more frequently than ever.
- The improvements of a “Super-Levee” seems to enhance peoples familiarity with rivers and the enhanced access to the same.



- The improvement of a “Super-Levee” contributes considerably to the improvement of sustainable infrastructure and the enhancement of access to the rivers.
- Further improvement and development must be steadily implemented of a “Super-Levee” .

Announcement end

【Reference】

The Great Hanshin awaji Earthquake

January, 17,1995

Tokai downpour

September, 11-12, 2000

Tokai downpour September, 11-12, 2000

Niigata downpour

July,12-14, 2004