INTERNATIONAL URBAN AND REGIONAL COOPERATION

A European Union Programme

Intercity Cooperation Team, Diplomacy & Trade Division, Busan Metropolitan City

INTERNATIONAL URBAN AND REGIONAL COOPERATION

Analysis on areas in Busan subject to flood risk and risk reduction measures

Date: October 5th, 2021

□ Causes

- Increase in maximum hourly precipitation and rise in sea levels due to climate change increased risk of urban flooding caused by an expansion into impermeable areas due to urbanization
- Insufficient drainage capacity due to aging pipelines and an increase in rainfalldue to climate change

□ Key Countermeasures

○ (Structural measures) ▷ Improving relevant infrastructure

- Securing water pipes: Expanding diameter of water pipes, building new pipelines, and enhancing discharge capacity
- Installing rainwater runoff reduction facilities, including drainage pumping stations and rainwater reservoirs

□ Key Countermeasures

○ (Non-structural measures) ▷ Improving disaster response system and measures

- Integrated management system for urban flooding
  - Integrated management of flooding information (Flood risk areas, shelters, etc.)
    Disaster prediction (A.I) → Providing information to citizens
- Providing disaster information maps containing information on urban flooding
  - Developing disaster information map leaflets and smart phone apps → offered to citizens

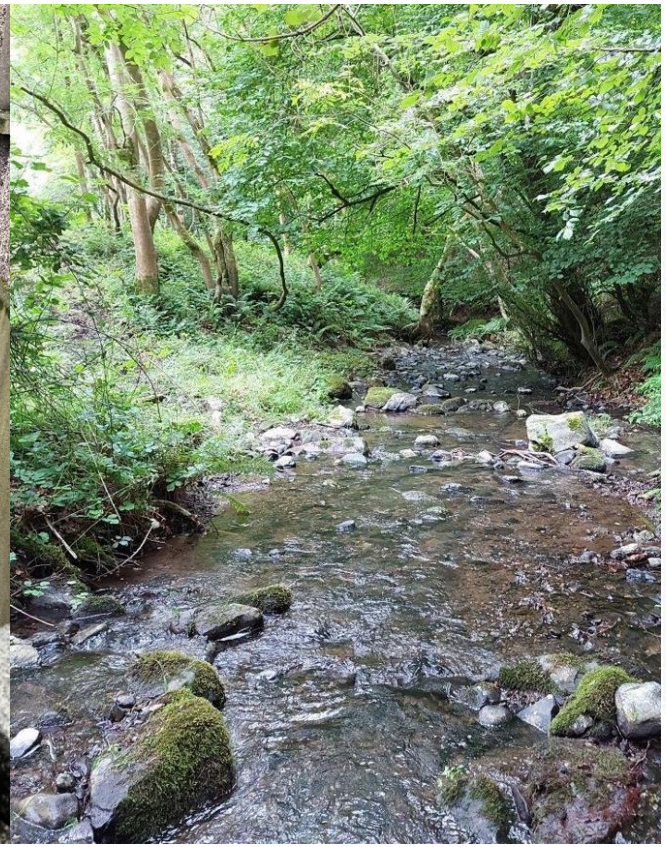
□ Key Countermeasures

○ Others

· Plan to introduce LID (Low Impact Development) system

※Beyond existing rainfall management measures, reducing impermeable areas in the city to facilitate water circulation by decreasing runoff on the surface, and increasing permeation into the ground.

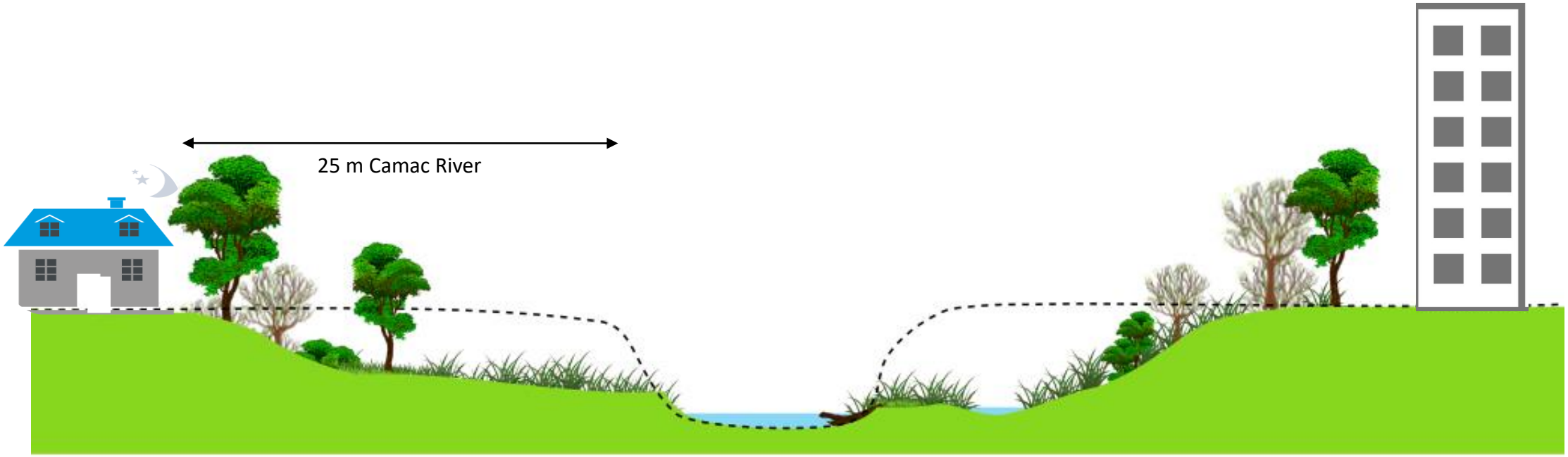
Thank you



Using Nature to Manage Flooding in Dublin: Challenges and Opportunities

Comhairle Cathrach Bhaile Átha Cliath
Dublin City Council

Mary-Liz Walshe and Neil Higgins, Dublin City Council



Comhairle Cathrach Bhaile Átha Cliath
Dublin City Council

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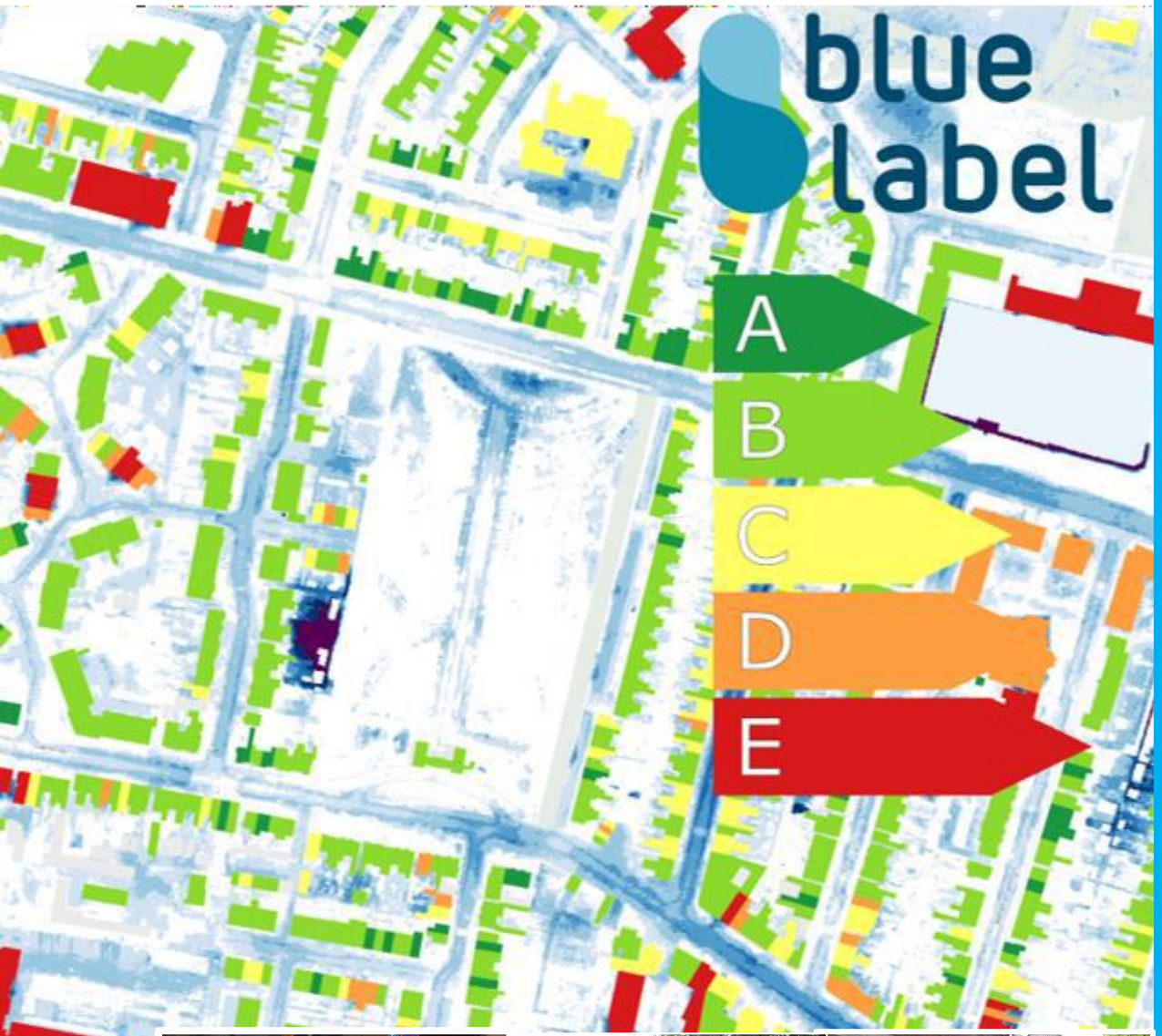
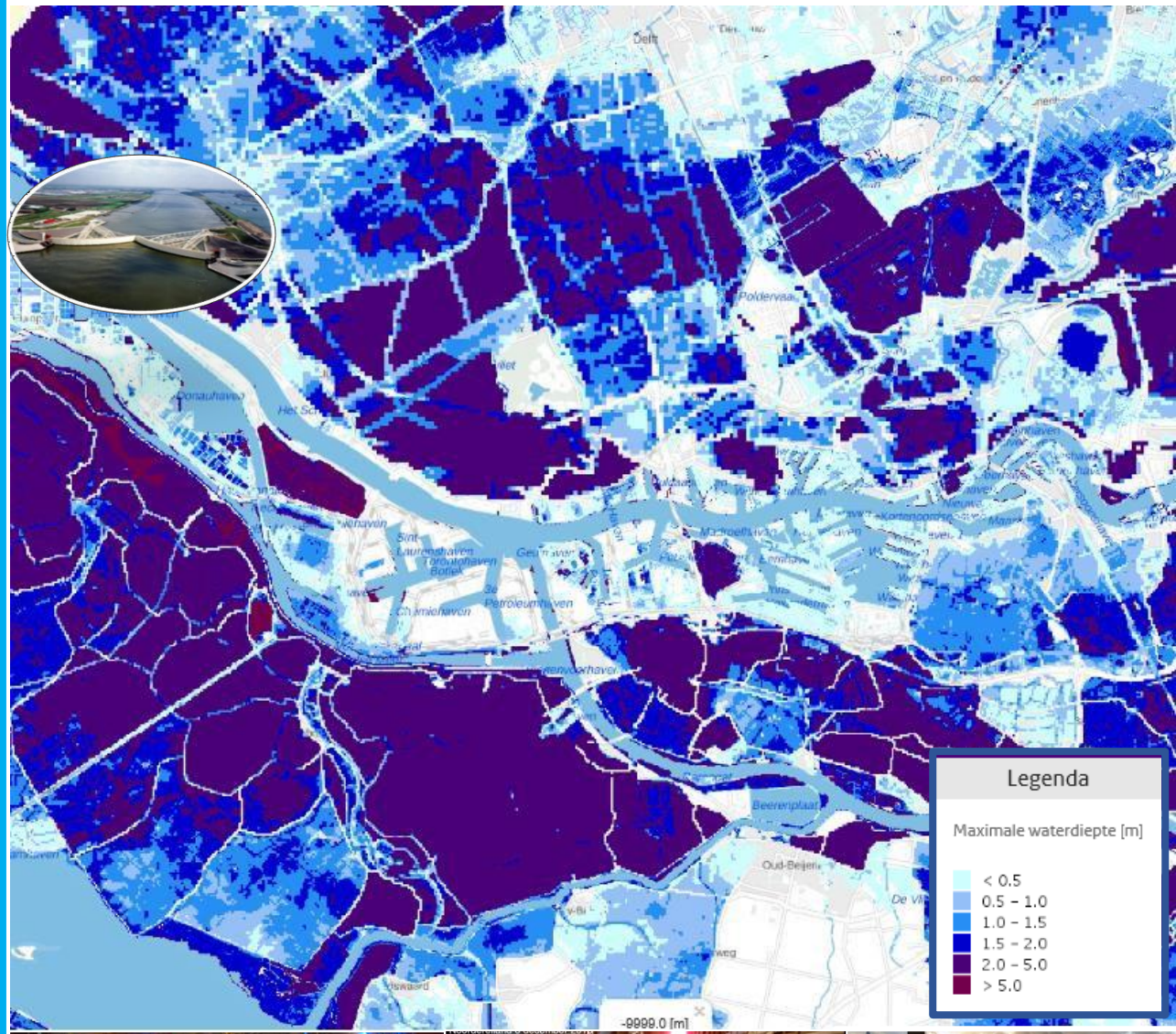
Dublin City Council


City of
Rotterdam

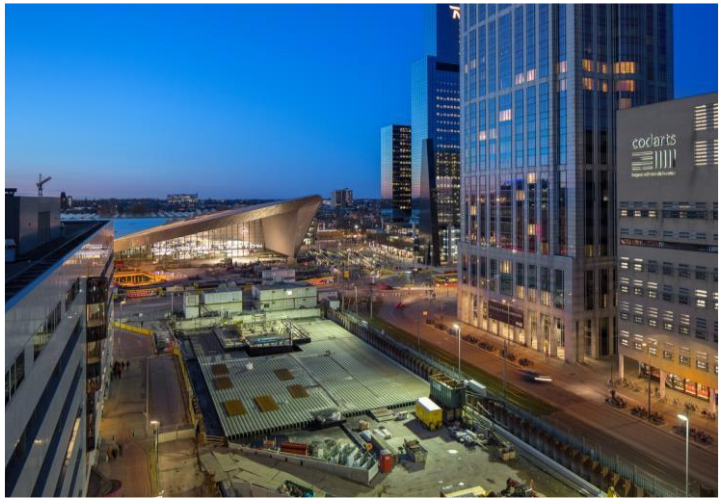
Flooding risk due to heavy rainfall



Flooding risk due to storm surge/high river discharge



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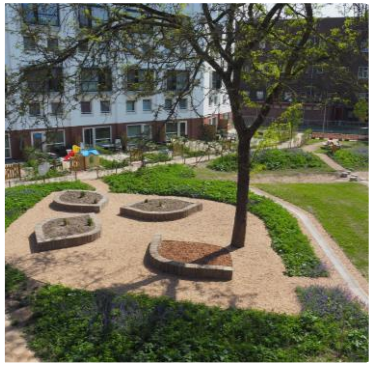
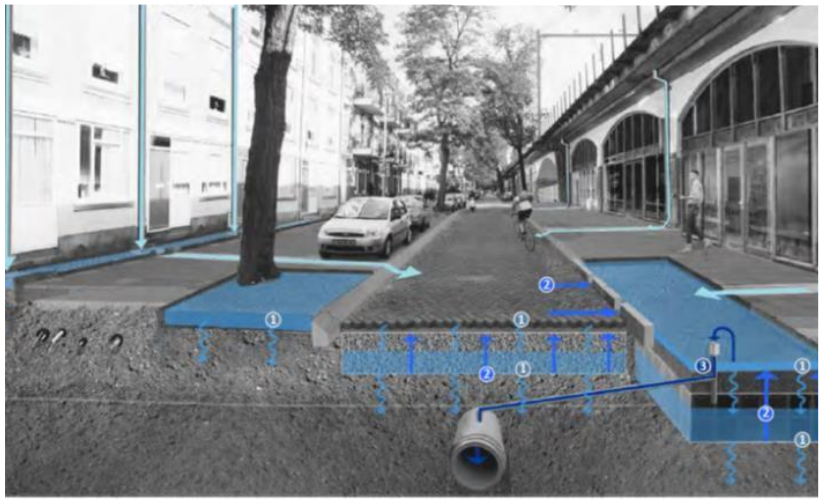
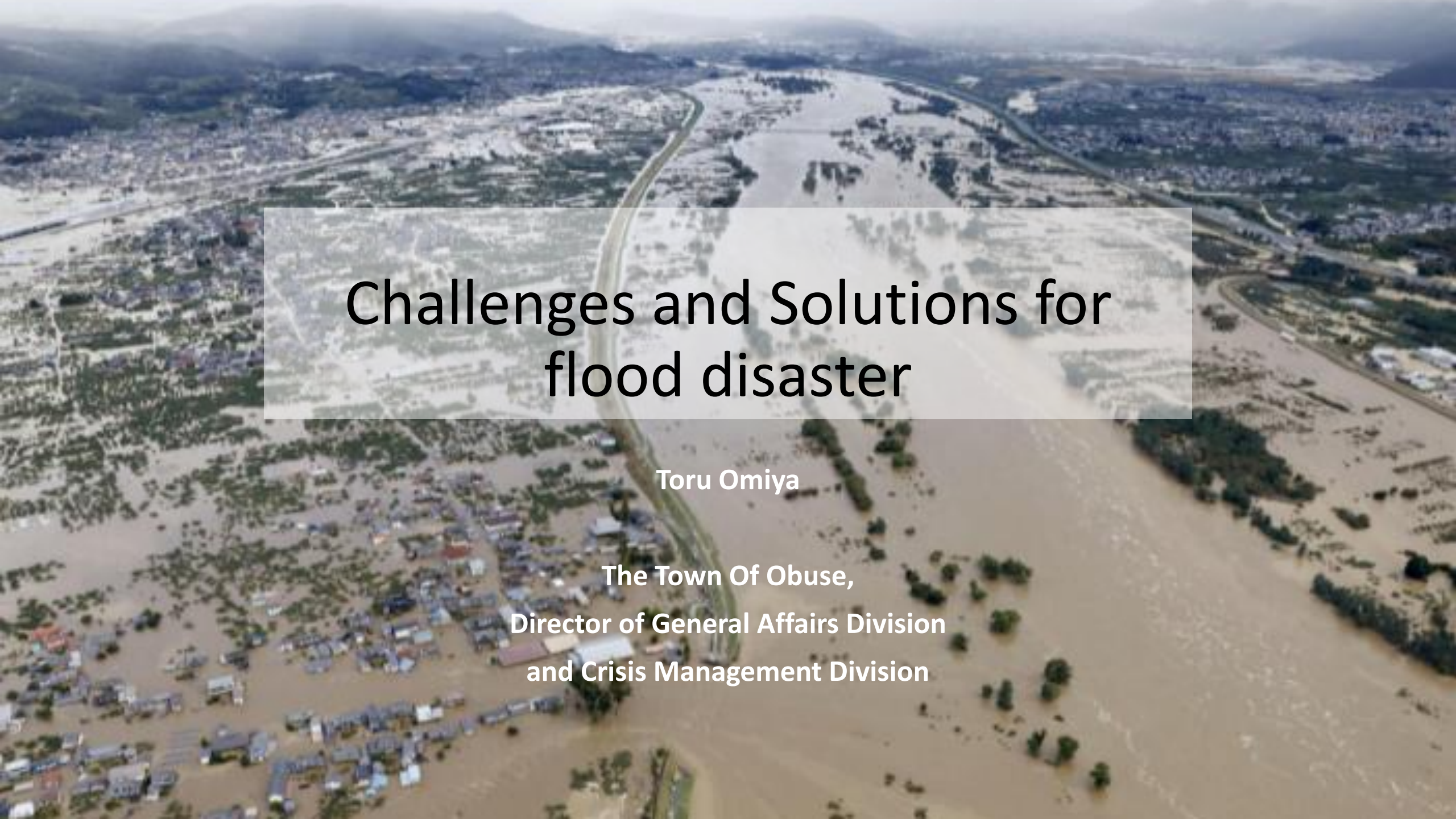


Challenges and Solutions for flood disaster

Toru Omiya

The Town Of Obuse,
Director of General Affairs Division
and Crisis Management Division

Challenges we are facing

What we experienced since 2019

- The largest typhoon in 2019 named “Hagibis” hit in our region
- Experienced flood waters over levees for the first time in our town’s history
- About 10 percent of all residents evacuated
- More than 100 houses and buildings were inundated by flood waters.
- Almost every year “the largest Typhoon in the history” appears in Japan
- Our town also have experienced “disaster-grade” rainfall every year since 2019.

Our challenges

- How we adapt and manage this situation occurred by climate change to reduce damages and save our residents?

Solutions we are tackling

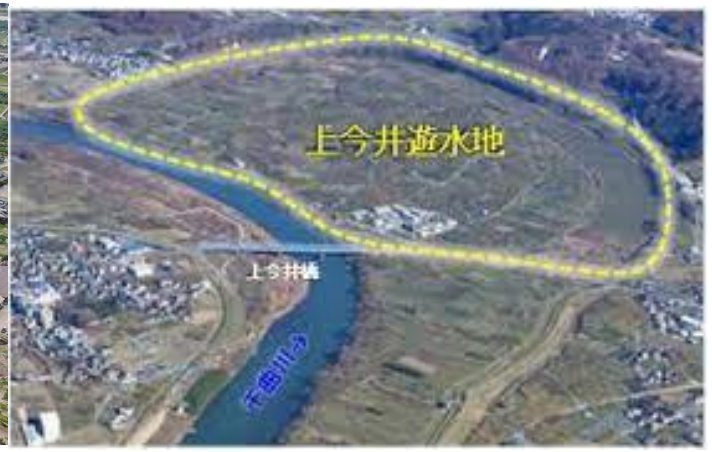
1. Development of water storage system

- Heighten and strengthen levees
- Build more natural levees and agricultural reservoirs
- Use Water Utilization Dams Effectively

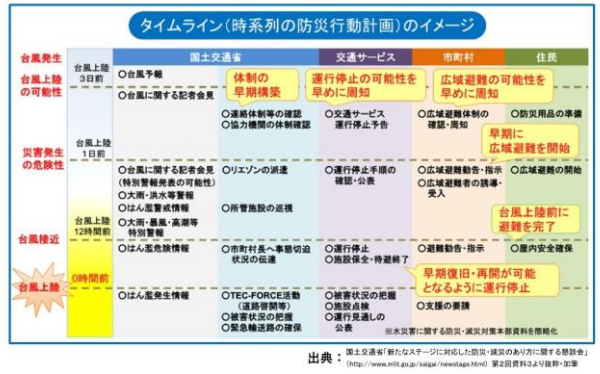
2. Strengthening relations and communications with stakeholders along the river

- Frequently set the webinars among stakeholders discussing the way of cooperation in the case of flood disaster
- Make “Timeline” or action plan of all stakeholders for disaster
- Open hotline among supervisor and mayors of all municipalities along the river

Reconstruction of levees with new technologies



Build new reservoirs

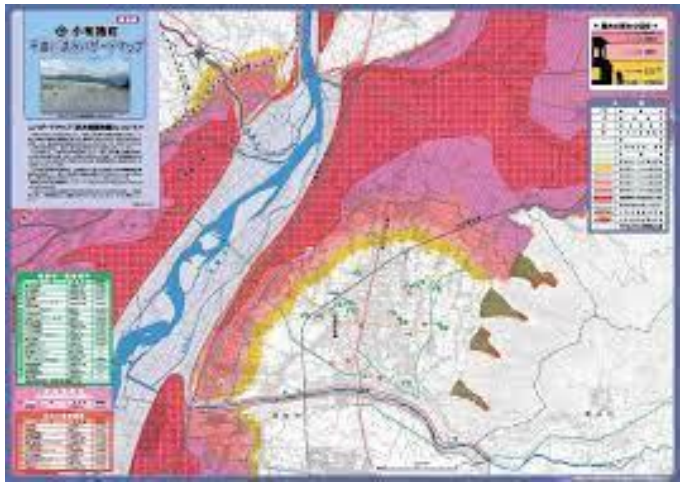


Action plans for each stakehoders

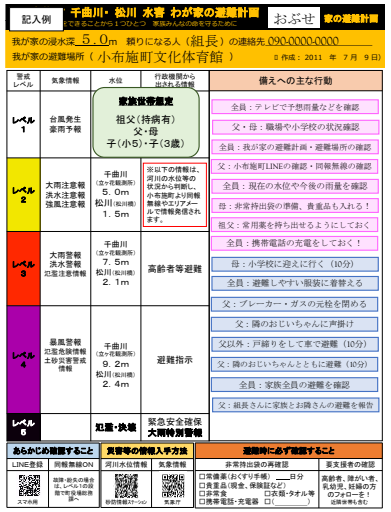
Solutions we are tackling

3. Reducing damages in the case of flood

- Protect essential facilities
- Make ”**Hazard Map**” and distribute to all houses, which shows inundation expected areas and place of public shelter for disaster
- Holding workshops to promote “**My timeline**”, action plans for each families in the case of flood
- Hold evacuation practice with citizens and neighborhood community associations every year



Hazard Map



My timeline

Sharing Information and cooperation with all stakeholders are key factors to minimize disaster damage