Building Smart and Resilient cities in the Context of Water Security and Prosperity

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Visiting Professor, The University of Tokyo

SELF-INTRDUCTION

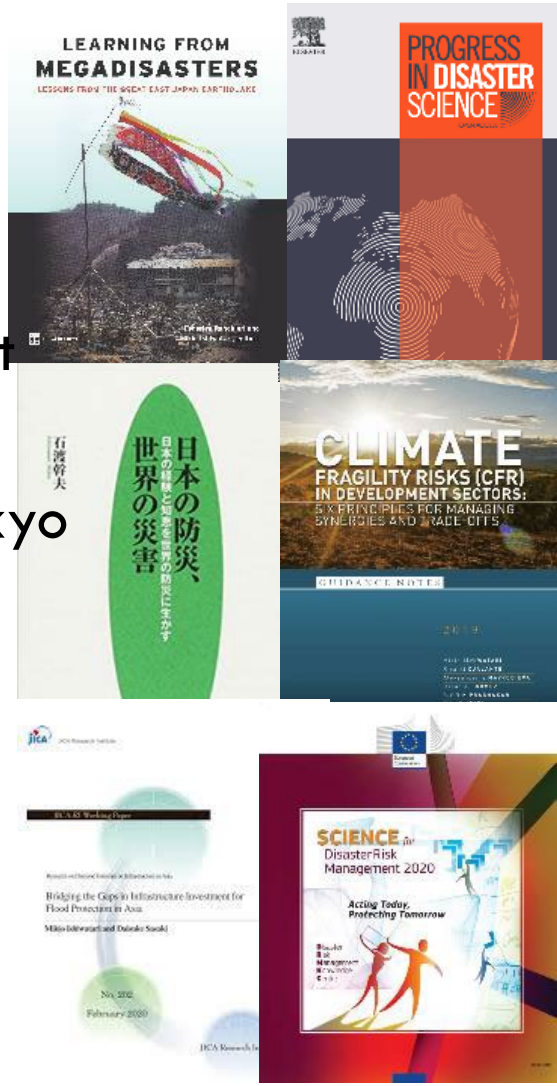
- Japan International Cooperation Agency,

Senior Advisor on Water Resources Management and Disaster Management

- 2018- Visiting Professor, The University of Tokyo
- Ministry of land, Infrastructure, Transport and Tourism as engineer for17yrs
- World Bank, Asian Development Bank

Learning from megadisaster: Lessons from the Great East Japan earthquake, The Word Bank

Climate and Fragility Risks in Development Sectors, United Nations University



KEY MESSAGE

In urban area,

water cycle damaged by urbanization,

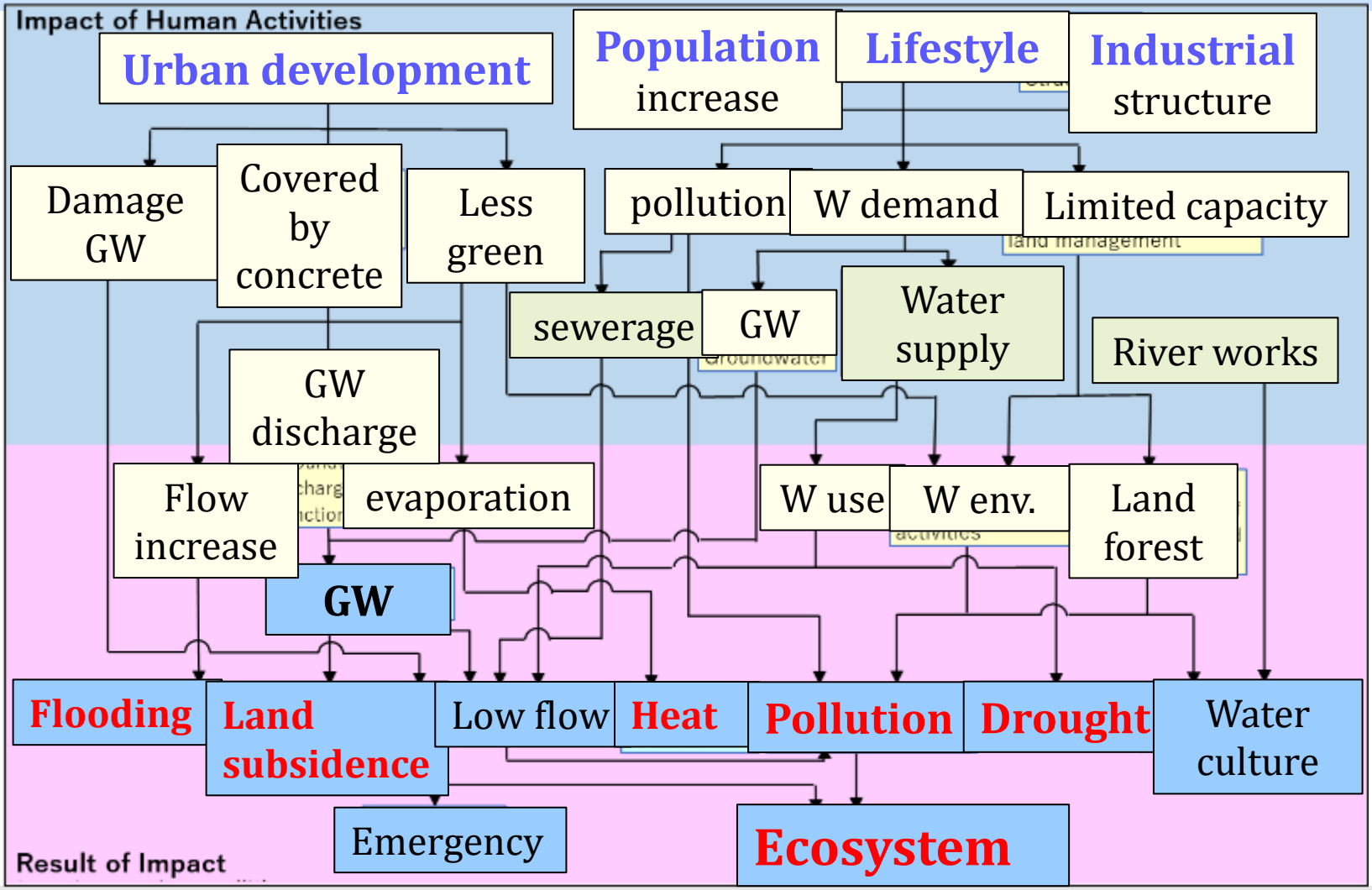
can be improved by

green infrastructure

I. DAMAGING WATER CYCLE IN URBAN AREA

Water Cycle in Urban Area

Impacts of Human Activities on Water Cycle



Source: "Toward the Creation of a Sound Water Cycle System", Liaison meeting of related ministries and agencies regarding the development of a healthy water environment, October 2003

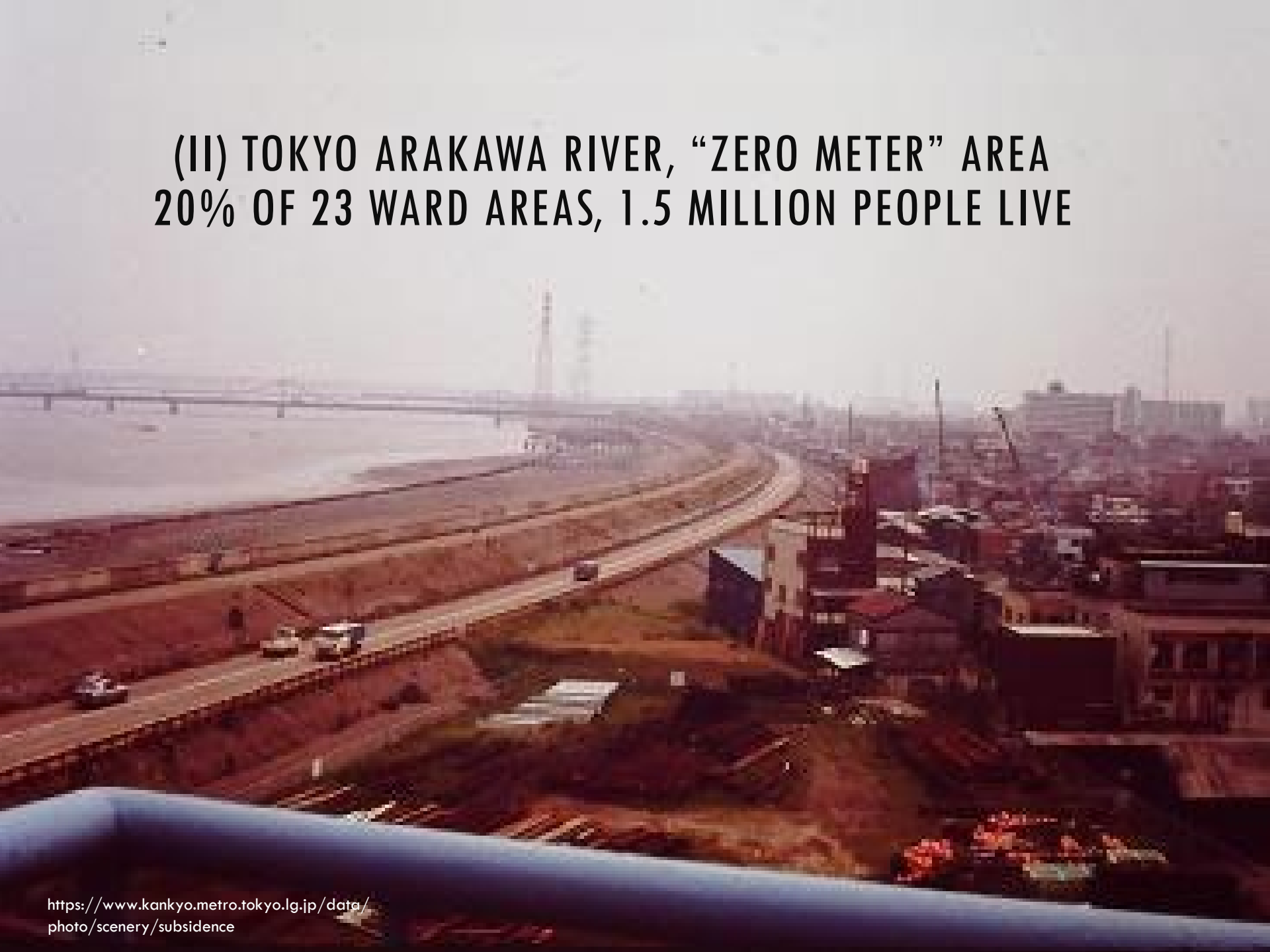
(I) LAND SUBSIDENCE, JAKARTA: FISHING PORT

MANGROVE PROTECTION

FLOOD PUMPING STATION

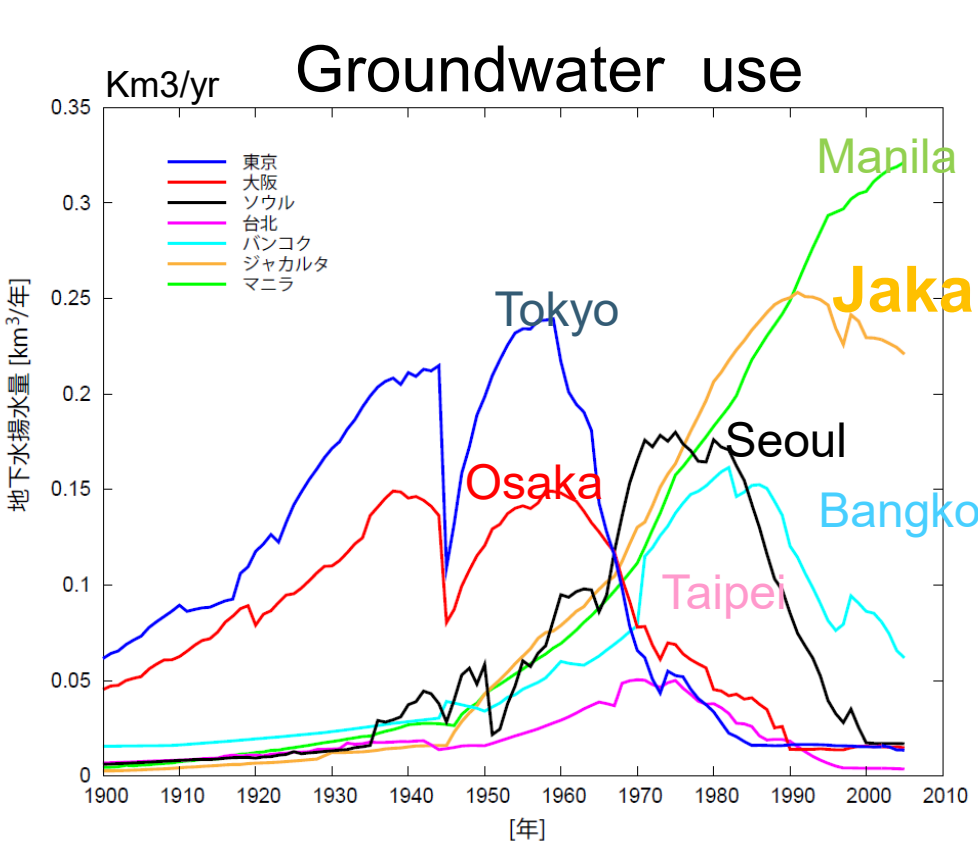

DAMAGED BY LAND SUBSIDENCE

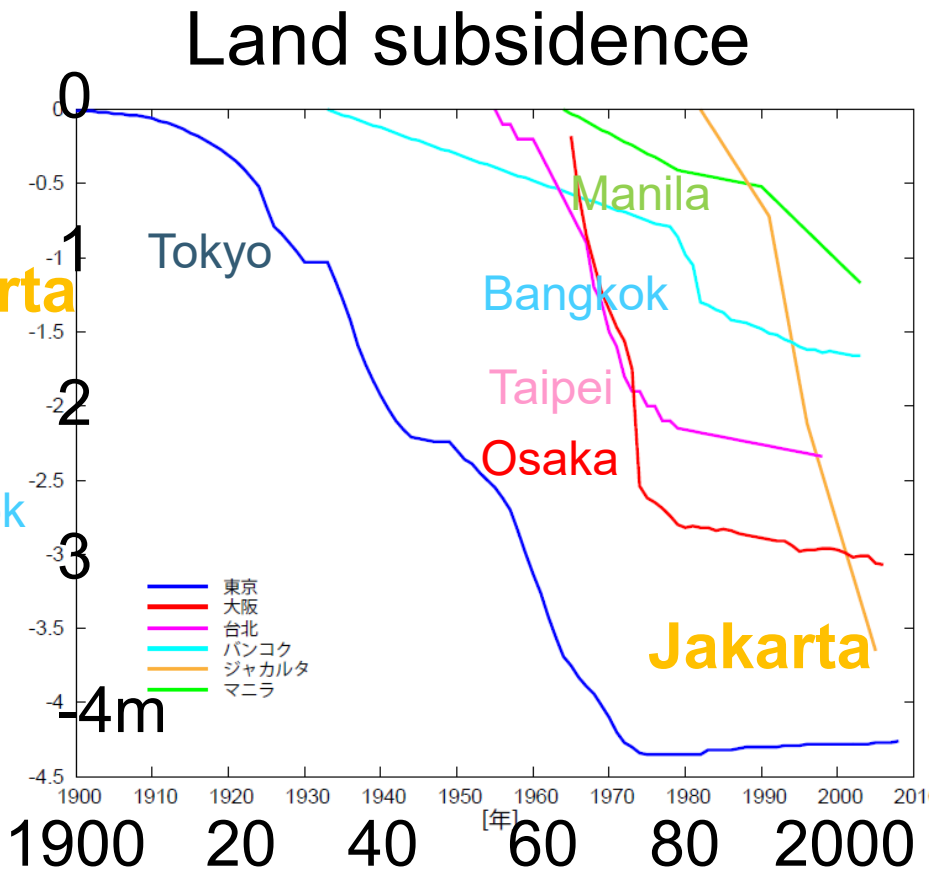
(II) TOKYO ARAKAWA RIVER, “ZERO METER” AREA 20% OF 23 WARD AREAS, 1.5 MILLION PEOPLE LIVE



https://www.kankyo.metro.tokyo.lg.jp/data/photo/scenery/subsidence

LAND SUBSIDENCE IN ASIAN CITIES

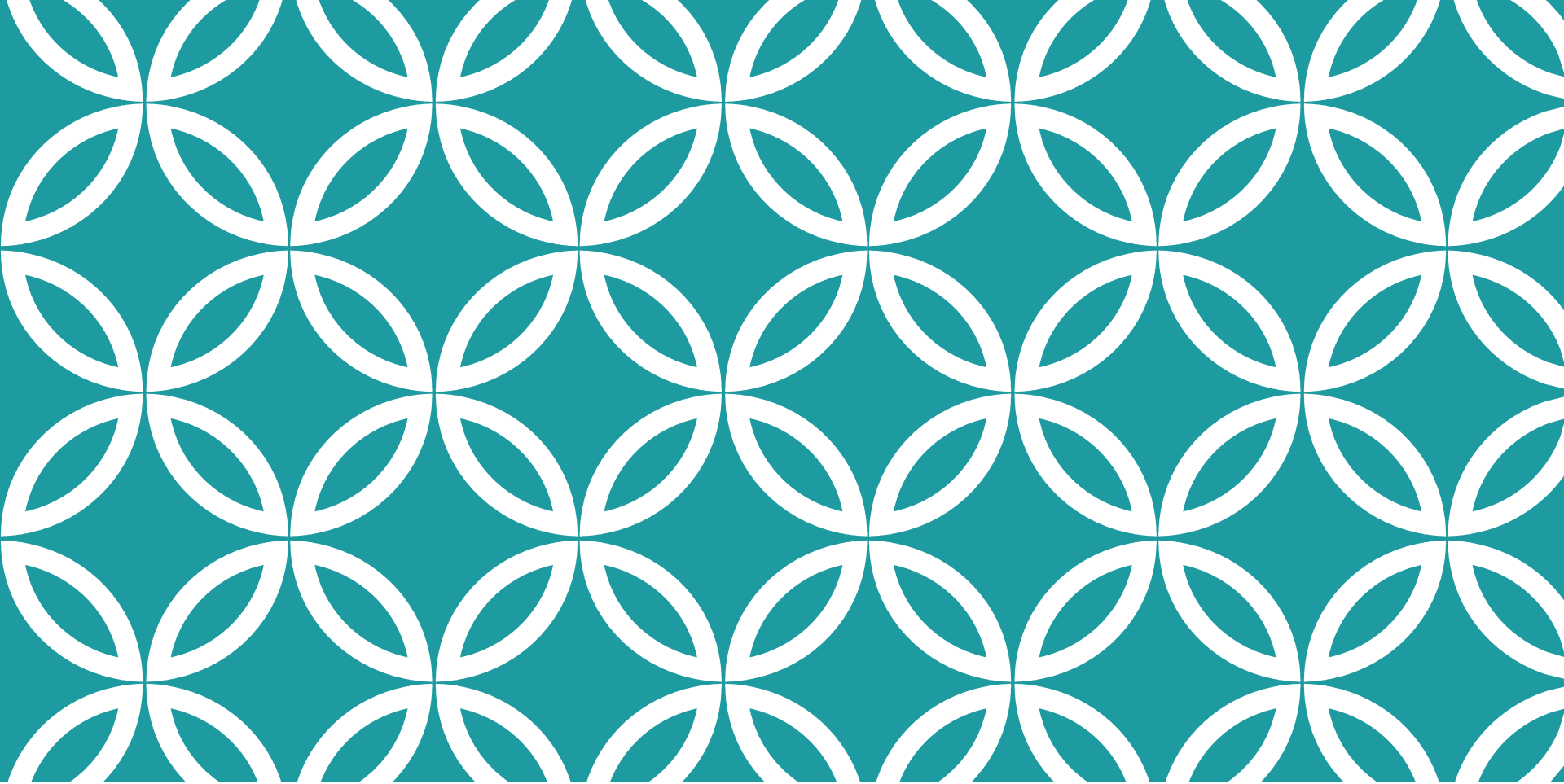




http://www.chikyu.ac.jp/USE/index.html

(II) POLLUTION TOKYO

FLOODING: TOKYO



GREEN INFRASTRUCTURE

CASE 1 FUTAKOTAMAGAWA RISE AND FUTAKOTAMAGAWA PARK

11.2 ha Urban Redevelopment Project.

Futakotamagawa East District

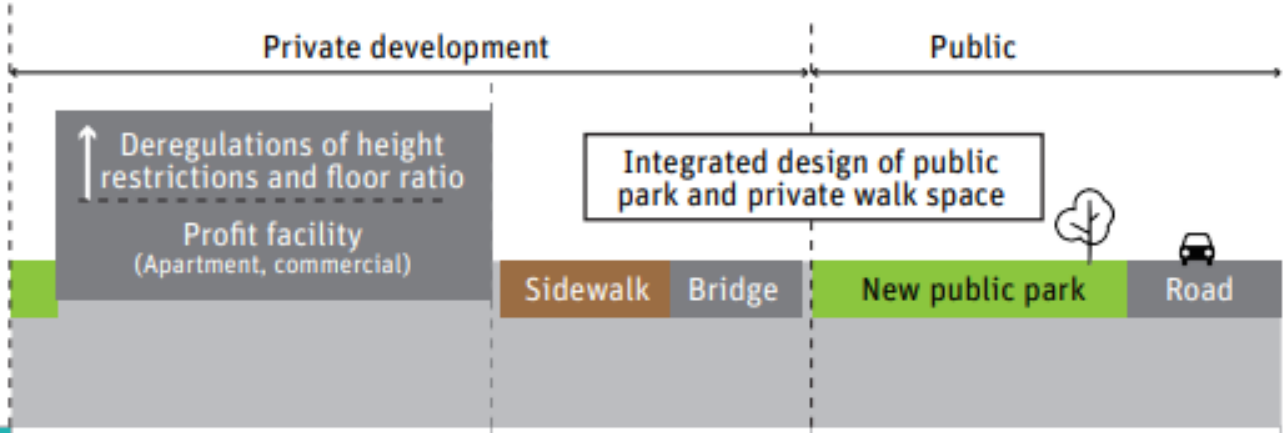
Rakuten HQ

6.3 ha area

Futakotamagawa Park

high-standard embankment

against river flooding



Government: MLIT, TMG, and Setagaya Ward	Deregulation	Partially subsidizing O&M activities	Lead construction and O&M
Private developers and landowners: the members of the redevelopment association	Lead construction and O&M		Coordination
Tenants and community members	—	Participation in O&M activities	—

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Futakotamagawa Rise
"Water, Greenery, & Light,"
environmentally friendly methods
✓ green roofs,
✓ solar panels,
✓ geothermal heat exchangers,
✓ recycled materials
World Bank

ROOF GARDEN

rainwater harvesting

recycling systems

Stormwater detention facilities,

main building,

with Eco-ponds & planting beds

World Bank

FUTAKOTAMAGAWA PARK AND TAMA RIVER AND LANDSCAPE

- ✓ public park by Setagaya Ward
- ✓ raised high-standard river flood embankment developed by MLIT
- ✓ underground rainwater detention pond,
- ✓ permeable pavers,
- ✓ infiltration trench,
- ✓ green space to manage stormwater overflow
- ✓ Disaster management base

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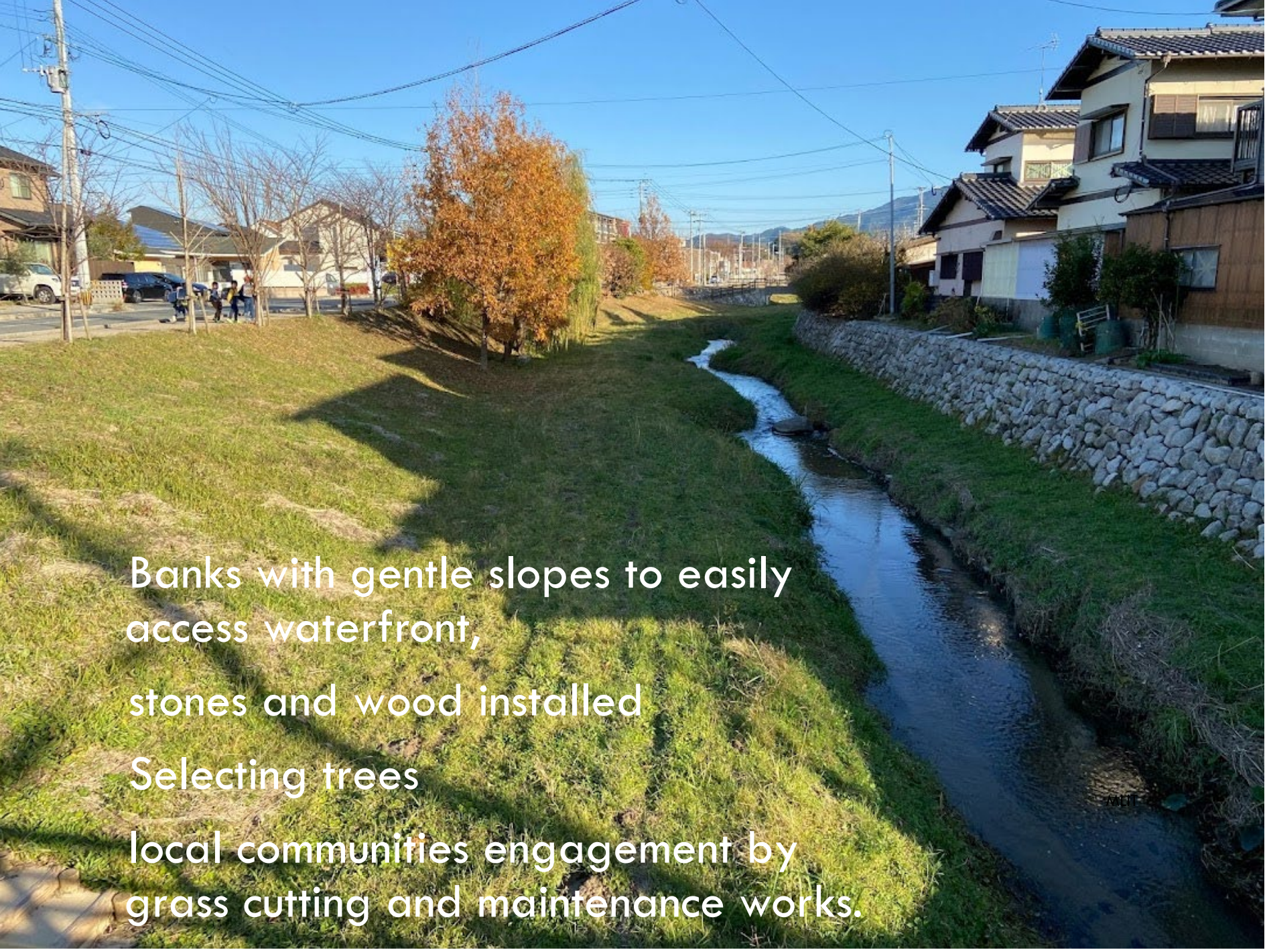
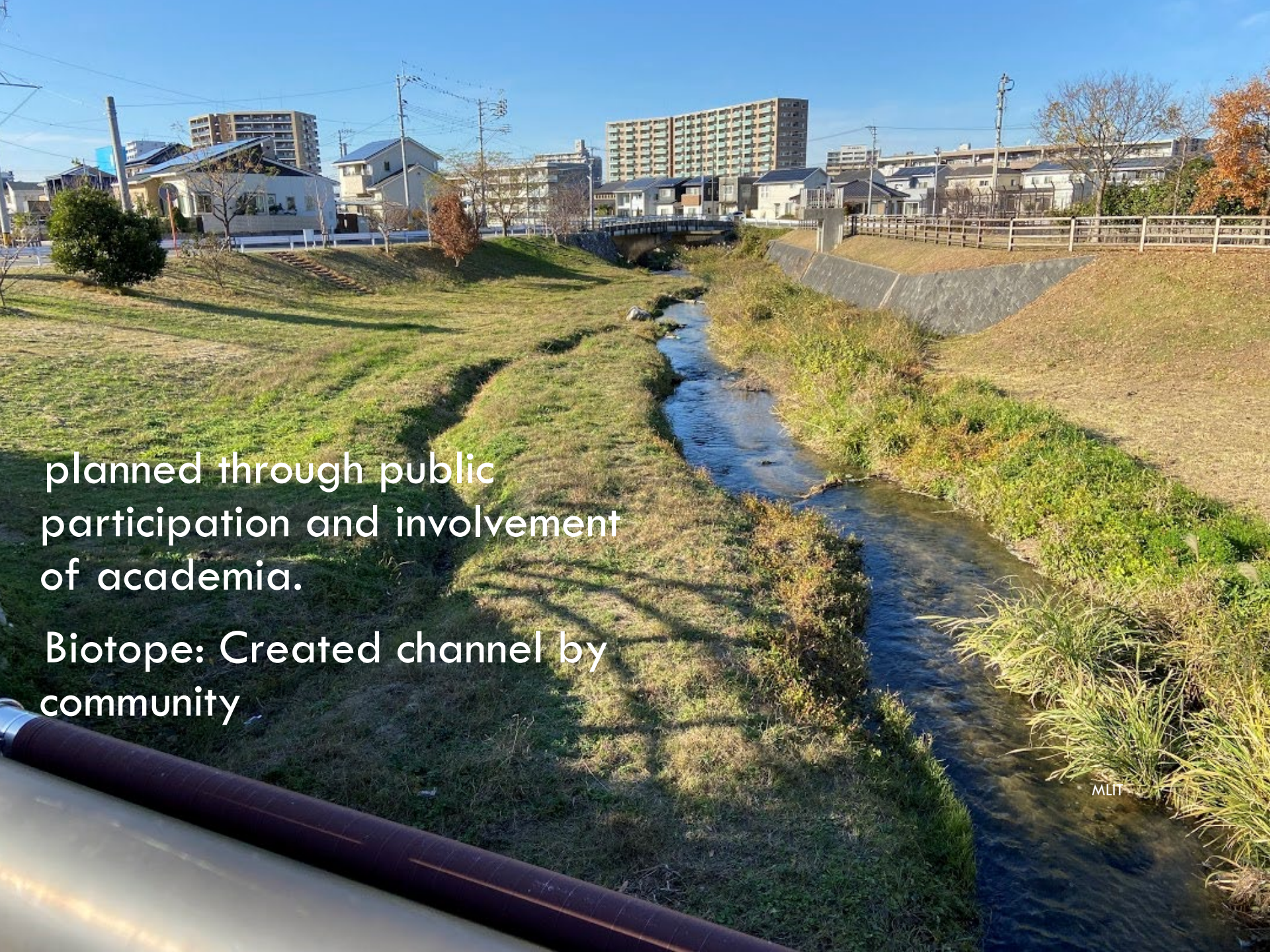
災害用マンホールトイレ系統　模式図


自転車は乗って入れません
No Bicycle Riding

CASE 2 KAMISAIGOGAWA RIVER, FUKUTSU CITY, FUKUOKA


Banks with gentle slopes to easily access waterfront,
stones and wood installed
Selecting trees
local communities engagement by grass cutting and maintenance works.


planned through public participation and involvement of academia.
Biotope: Created channel by community
MLIT

natural environment improved by increasing the number of species.

Used for environmental class at elementary school


Fukutsu city

Academic researchers support

Kyushu University and local citizens discussed the river plan, tree-planting, and management system

IV. ISSUES

LIMITATION

greenbelts could reduce damage from tsunamis to some extent in 2011

but unable to protect fully from Tsunami

reduced energy of tsunami, captured floating debris, and became structures for survivors to cling to.

tsunami damaged 3,660 hectares of the green belt in total, with 75% of the greenbelt in the hardest-hit areas.

EVIDENCE
ANALYZING BENEFITS AND COSTS

- estimating construction costs, judging requirements for O&M
- quantifying benefits
- ✓ limited comparative analysis of benefits and costs of conventional infrastructure.
- ✓ Without cost-benefit information, policymakers cannot secure GI budgets

GOVERNANCE

- ✓partnerships between disaster management authorities, farmers, landowners, environmental groups and communities
- ✓solutions involve making space for water away from vulnerable development
- ✓local communities participate in these processes in response to their needs

TECHNICAL SUPPORT

manuals and guidelines

in technical and economic areas for planning, constructing, operating, and maintaining conventional infrastructure.

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THANK YOU, ARIGATO
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