

Tripod scheme in Japan

Flood fighting and
river management

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Training workshop on riverbank erosion control
at Danang, Vietnam

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Flood fighting



Flood fighting



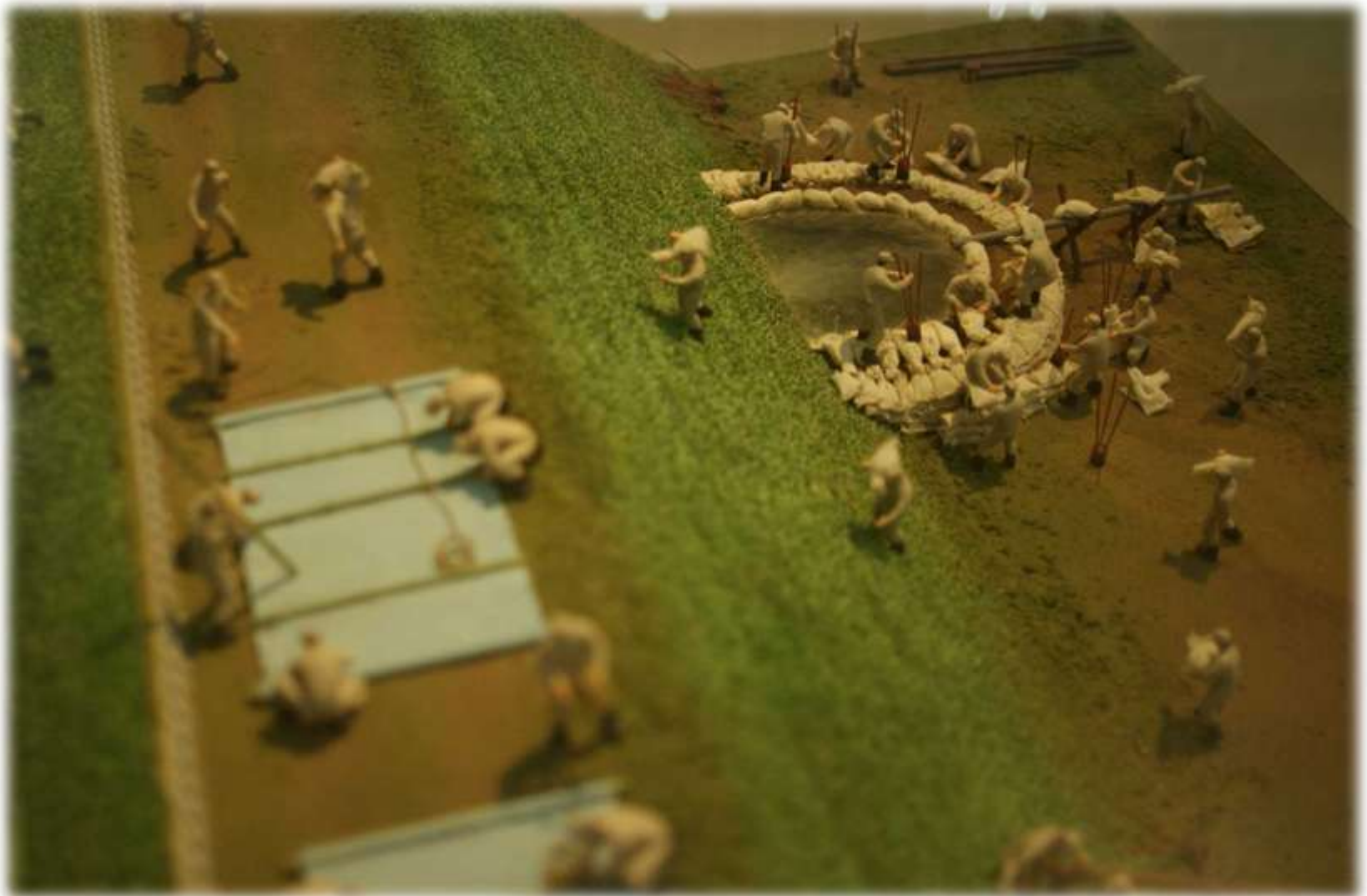
Flood fighting



Flood fighting



Flood fighting



Flood fighting activity



Flood fighting activity



River managing authority (a case of Otagawa river basin)

The image displays a map of the Otagawa River basin with several branch offices and suboffices marked. The main office is the Otagawa River Office, located at the delta. Branch offices include Kake Branch Office, Kabe Branch Office, Takase Suboffice, Oshiba Branch Office, and Koi Branch Office. Photos of each office are provided. A red circle on the map highlights the location of HIROSHIMA on the Otagawa River delta.

Otagawa River Office

Kake Branch Office

Kabe Branch Office

Takase Suboffice

Oshiba Branch Office

Koi Branch Office

HIROSHIMA on Otagawa River delta

MLIT has a river office and some branch offices, in each major river.

Rice Production in Ancient Times in Japan.

		People's livelihood	Countermeasure against flood
Jomon Period	Over 2,000 years ago	Food collecting, hunting and fishing	Emigrate in no-flooding area, such as highland..
Yayoi /Kofun Period	Until 7th Century	Elementary irrigation and equipment innovation	Cultivate paddy on low-lying alluvial plains. Develop alluvial fans in upper river basin with iron equipment to avoid flood risk.
Asuka /Nara Period	7th-8th Century	Land development with earthwork engineering, such as diversion, embankment and reservoir	Spread paddy around low-risk area with advanced earthwork techniques

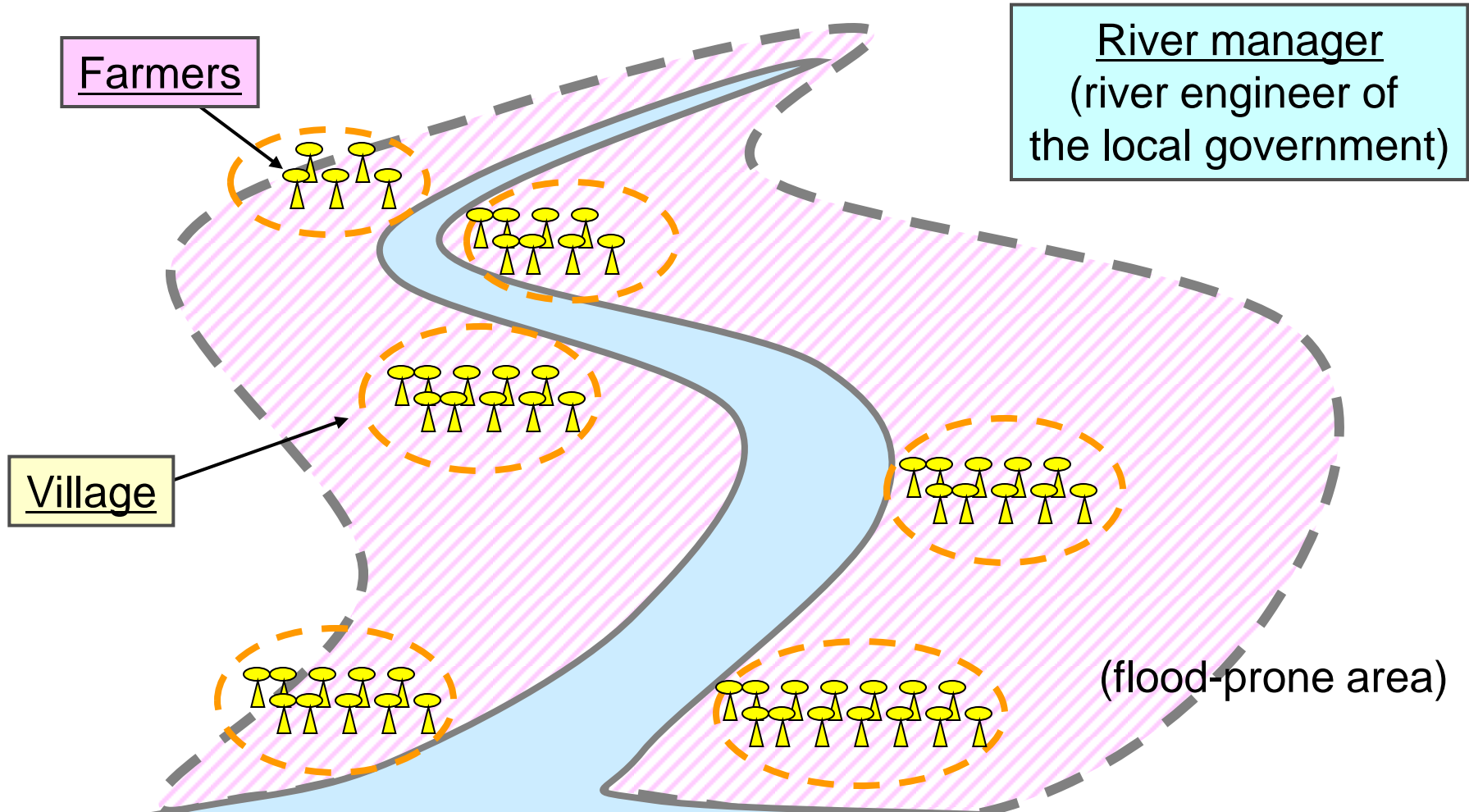
Rice Production in Medieval Times in Japan.

		People's livelihood	Countermeasure against flood
Heian/Kamakura Period	9th-13th Century	Farmland development in flood-prone area by aristocrats	Cultivate and accepting suffer of flooding/draught = Beginning of self-help
Muromachi Period	14th-15th Century	Growth of independent village in flood-prone areas	Village level self-defense against outside enemies and natural disasters = Beginning of flood fighting
Sengoku Period	16th Century	Territory management by warring lords	Channel improvement with advanced river engineering = Beginning of river management

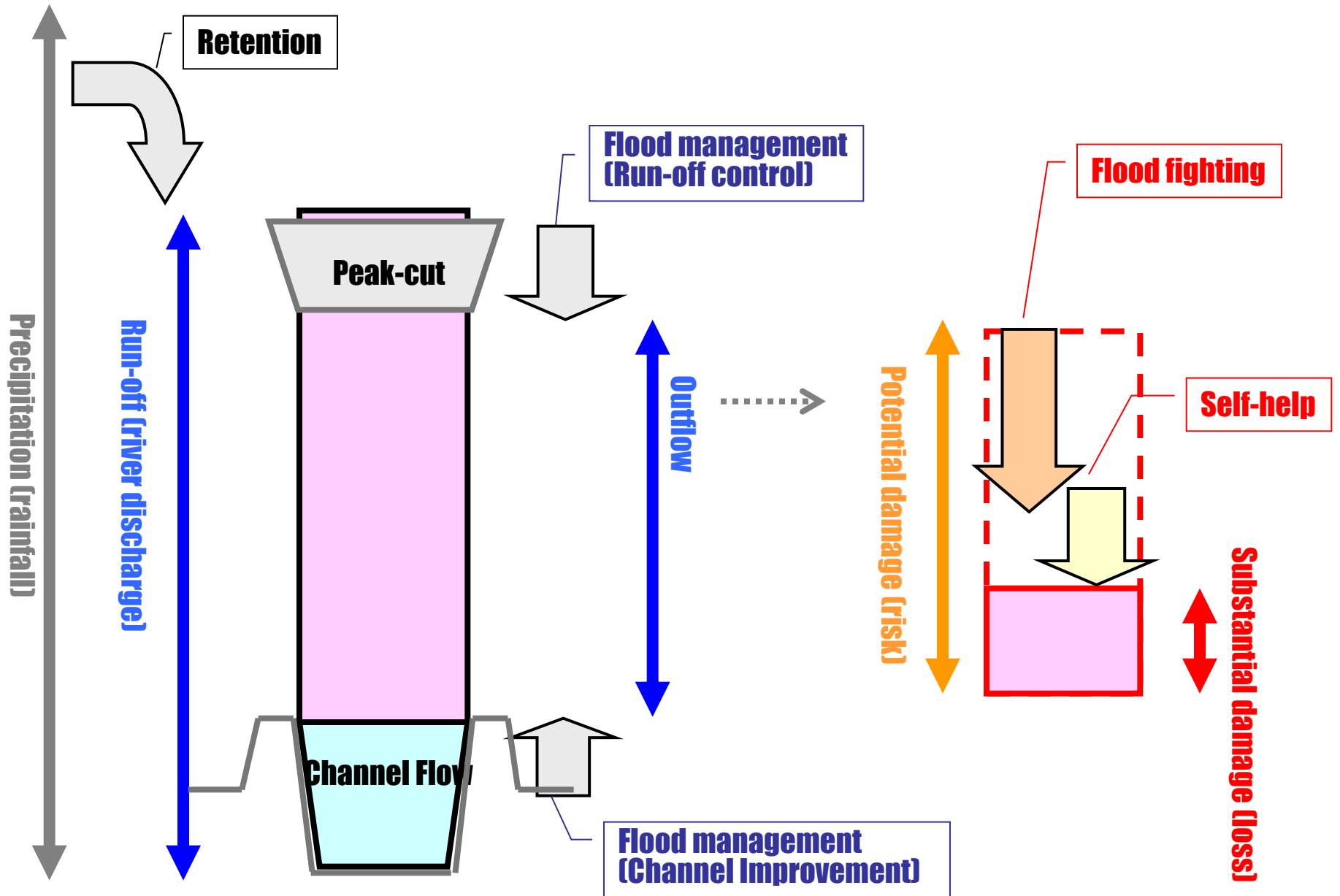
Rice Production in Edo Period in Japan.

		People's livelihood	Countermeasure against flooding
Edo Period	17th-19th Century	Self-management of rice farming villages under local governance (prefecture)	Village-based flood fighting and rice-tax payment and a river manager dispatched by the local governor

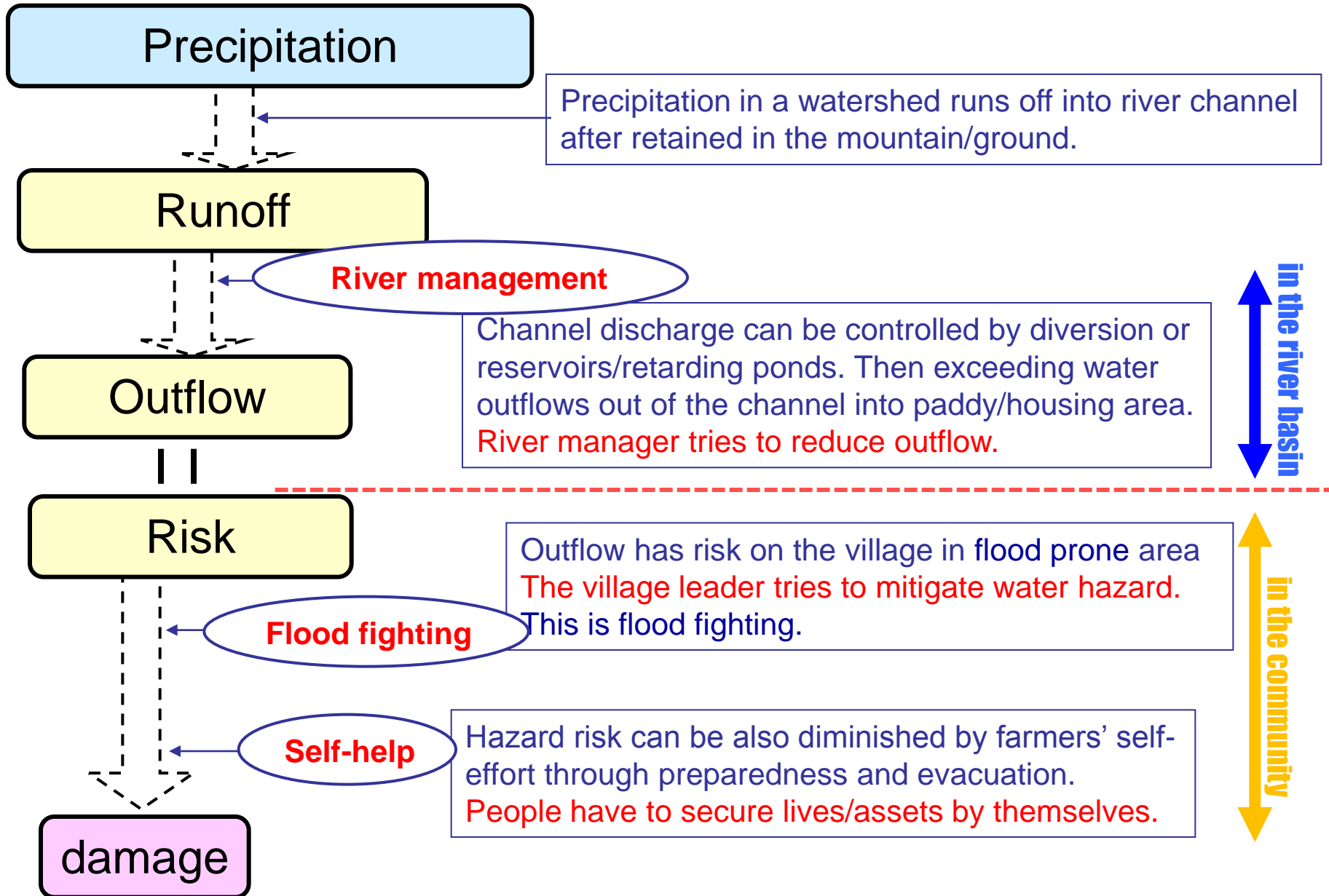
Residents and Communities in a River Basin. (Edo period)



Reduction of Outflow and Damage.



Three Function of Flood-Risk Reduction.



Flood fighting in Edo period



Impact of Meiji Modernization in Japan.

	Edo Period	Present
Self-help	Farmers	Residents
Flood Fighting	Village leader	Community-based organization (flood fighting team)
River management	River manager	River managing authority

Rulemaking Process for Flood Disaster Management in Japan.

In the Meiji modernization since 1868

1880 Municipality Act to establish organization in charge of water-related affairs

1890 Water Association Act to establish irrigation/flood fighting association

1894 Fire Service Code to identify flood fighting by fire service office

1896 River Act to clarify responsibility of river administrator/municipalities for flood disaster management

After 1945 of the World War II closing

1948 Fire Service Act to clarify responsibility of municipality for disaster management

1949 Flood Fighting Act to definite roles of municipality and flood fighting team

1949 Land Development Act to establish irrigation association

1955 Flood Fighting Act revised to flood warning

1958 Flood Fighting Act revised to definite local/central govt's budgetary responsibility

1961 Disaster Countermeasures Basic Act to identify people's responsibility

1964 River act revised to arrange water use in the river basin

1997 River act revised to take resident's participation into river management

2001 Flood Fighting Act revised to inundation mapping

2005 Flood Fighting Act revised to flood hazard mapping

Acts for Flood Disaster Prevention in Japan.

Disaster Countermeasures Basic Act (Article 5 and 7-2)

People's role

Residents have to adopt measures to provide for disasters and prepare and to make efforts to participate to voluntary activities to prevent disasters.

A Municipality has the responsibility to formulate and implement a Municipal Disaster Management Plan.

Flood Fighting Act (Article 3 and 5)

Flood fighting team

Municipalities (Flood Fighting Administration Body in many cases) have the responsibility to sufficiently perform flood fighting in their areas. The Flood Fighting Administrative Body may maintain a Flood Fighting Team.

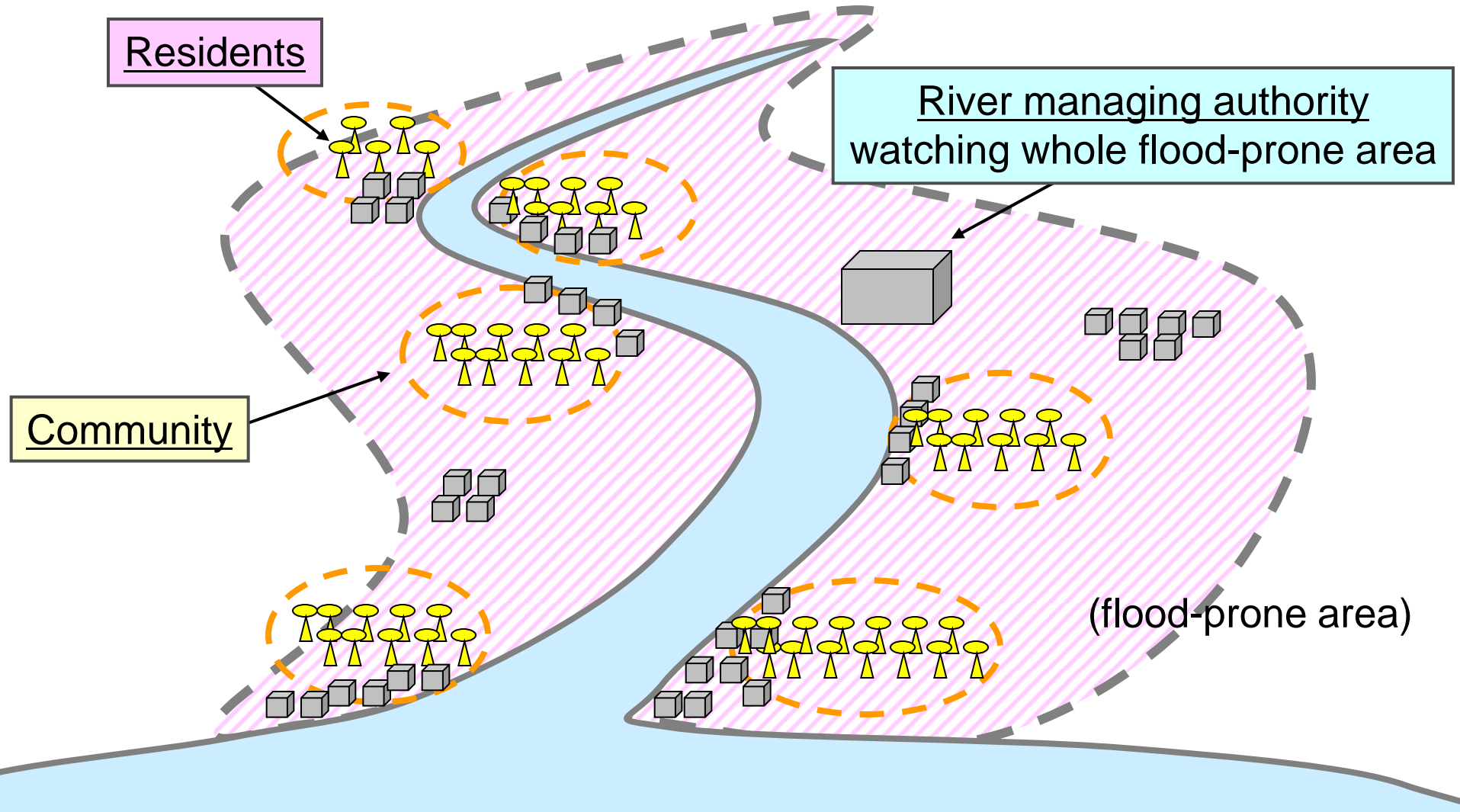
River Act (Article 8, 9 and 10)

River managing authority

A river managing authority executes river works in order to increase public benefits or eliminates or diminishes public losses caused by the river water.

The management of major rivers are performed by the Minister of Land, Infrastructure, Transportation and Tourism. The other rivers are performed by the Prefectural Governor.

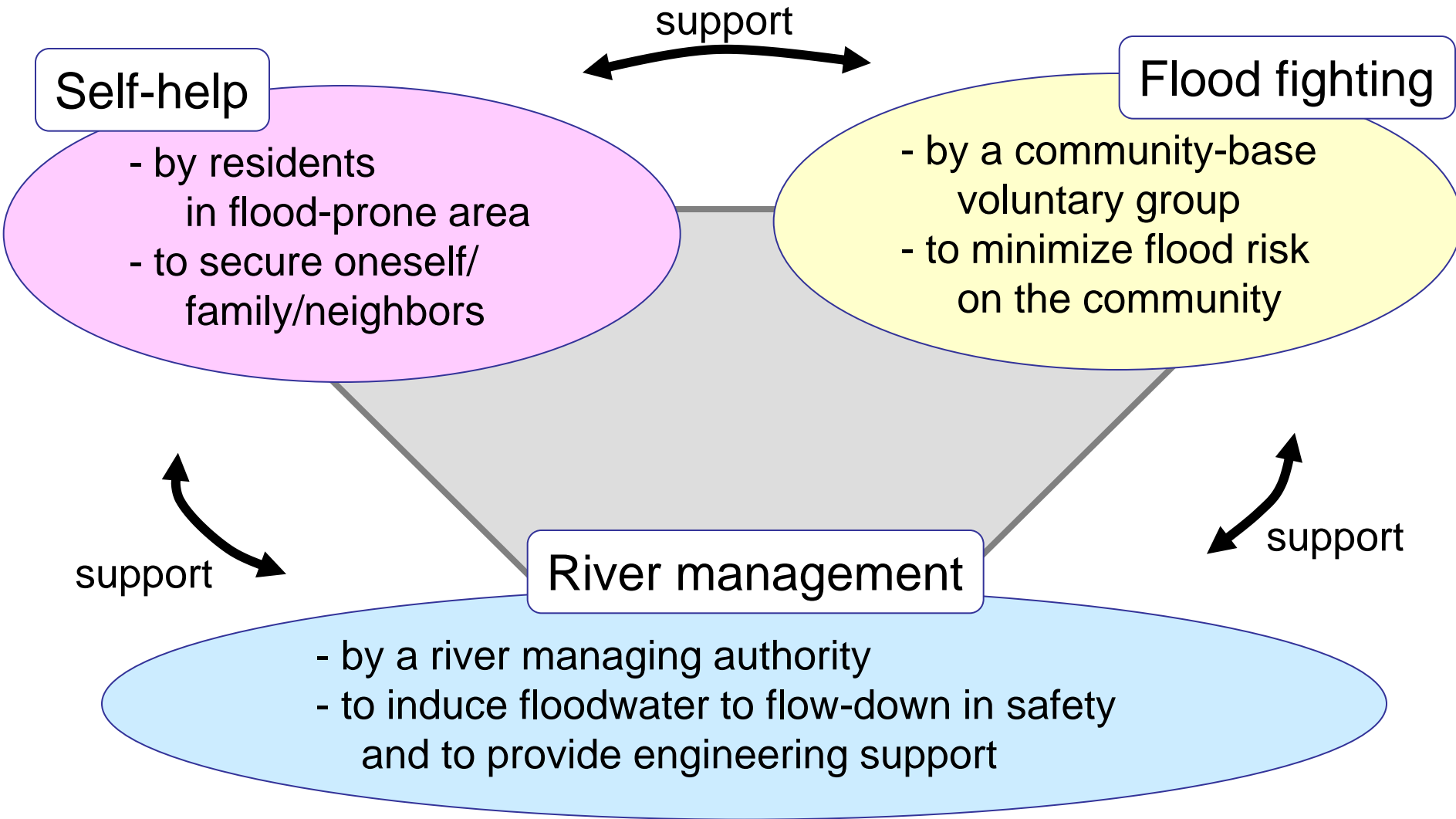
Residents and Communities in a River Basin. (today)



Technical Transfer in 3 Each Section.

	By whom	To whom	What
Self-help	Parents/elders/ neighbors	Children and newcomers	<ul style="list-style-type: none"> - awareness rising - alert watching/hearing - food/equipment preparedness - asset removal and evacuation
Flood fighting	Veterans in the community- based group	Less- experienced members	<ul style="list-style-type: none"> - flood record keeping in the community - flood fighting works (sandbag embanking, leakage treatment, etc.) - flood patrol and attention call
River manag ement	Professional river engineers	Young engineers	<ul style="list-style-type: none"> - maintenance of river facilities - flood forecasting and early warning - emergent action planning - communication with other disaster prevention authorities and people in flood-prone area

Tripod Scheme for Flood Damage Prevention/Minimization.



Flood fighting drill



Flood fight drill at Onga river in 2007



Flood fight drill at Onga river in 2007



Conclusion

Interrelation among resident-community-river management authority is important for water-related disaster management.

A river managing authority should provide professional engineering services for people/communities before/during/after flooding.

This tripod scheme is the key to build up resiliency in Asian monsoon region.

Thank you very much.