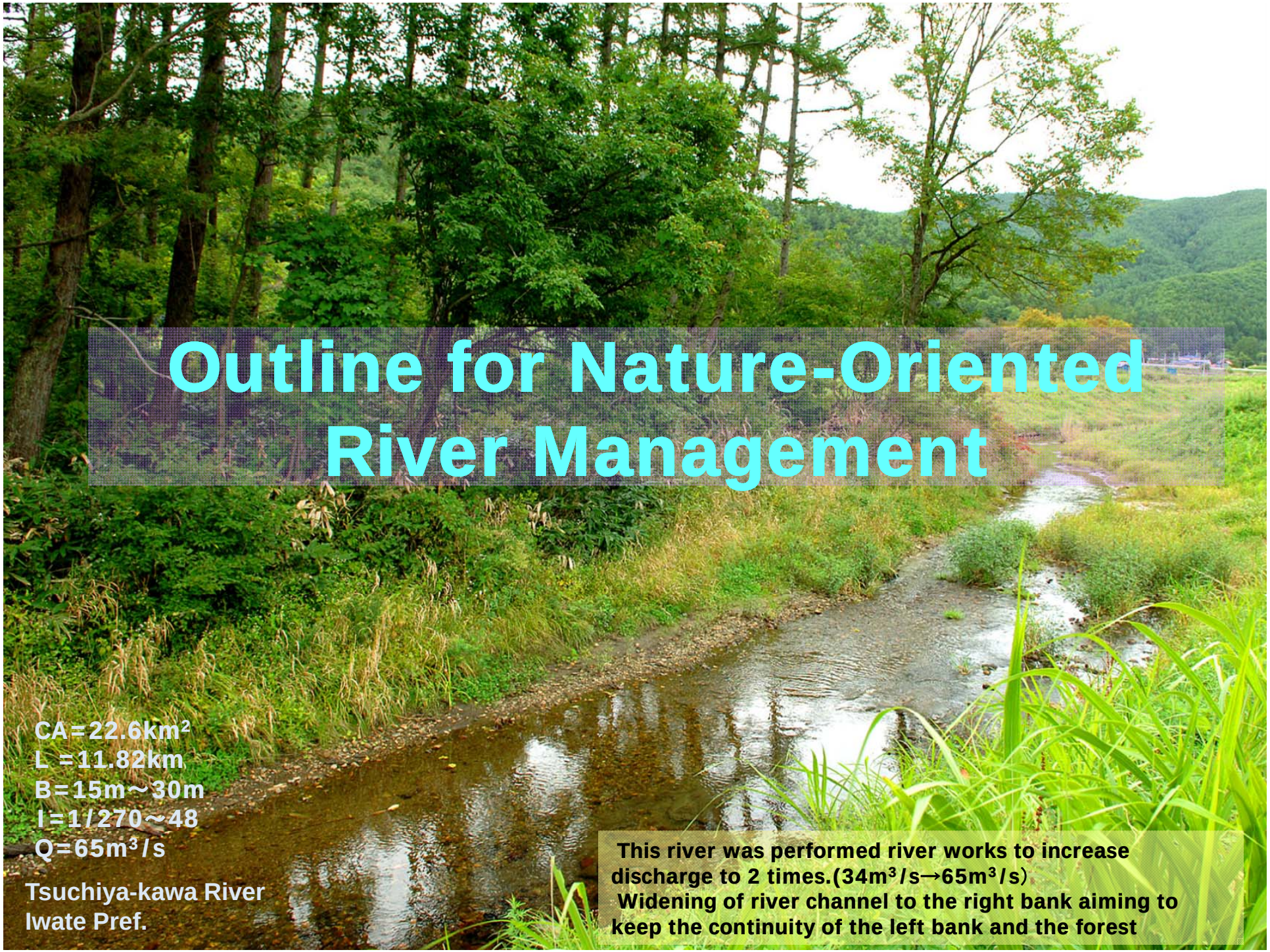


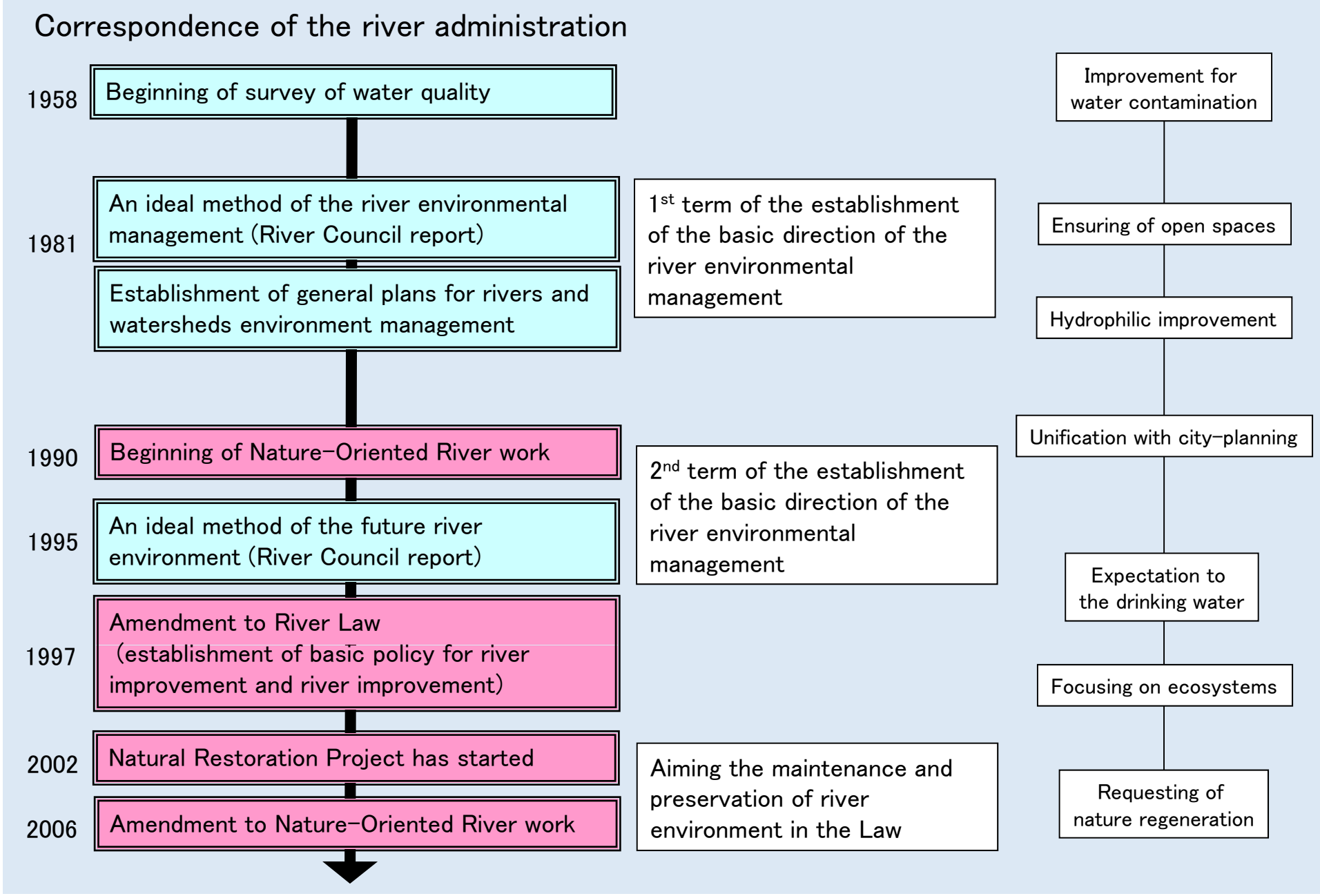
Outline for Nature-Oriented River Management

CA=22.6km^2
L =11.82km
B=15m～30m
I=1/270～48
Q=65m^3/s

Tsuchiya-kawa River
Iwate Pref.

This river was performed river works to increase discharge to 2 times.(34m^3/s→65m^3/s)
Widening of river channel to the right bank aiming to keep the continuity of the left bank and the forest

1. Transition of policy for river environment in Japan



2. Study case – River improvement cases of assignments –

Although greening of mild slope dike is adopted, a uniform ruler section is scarcely less for change of flow. In addition, the riverbed width is narrow.

Giving priority to mildness of the slope, riverbed width are been narrowed extremely.

The case of fixed water edge department
(a low waterway)

平成19年1月9日産経新聞

about 90% of construction section in river is executed in normal flat design.

Purpose for Nature-Oriented River Management

“Nature-Oriented River Management” is method of river restoration from the view of natural dynamism.

Point1 From a site-by-site nature-oriented approach to an integrated approach taking into consideration the workings of nature in the entire river

Point2 Nature-oriented river management that take river management in general into consideration

Point3 River management closely connected to local life, history and culture

Point1 Native dynamisms of River
(Tsuchiya-kawa R. in Iwate Pref.)

Point2 Riverscape diversity
(Kesennuma city)

Point3 River closely connected to local life
(Hirai-gawa R. in Tokyo)

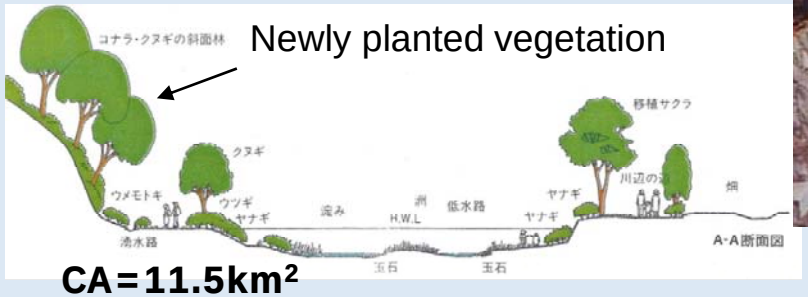
2. Study case – superior case –

Izumi-gawa River
Sakai-gawa River basin
(Yokohama city)

Waterfront Restoration in View of Whole Valley Environment

Before

After



CA=11.5km²
L =9.5km
B=25～40m
I=1/250～1/300
Q=6-m³/s

Restore Superior Valley Environment

Improving harmonization of the river and slope forest for the whole spatial structure of valley.

2. Study case – superior case –

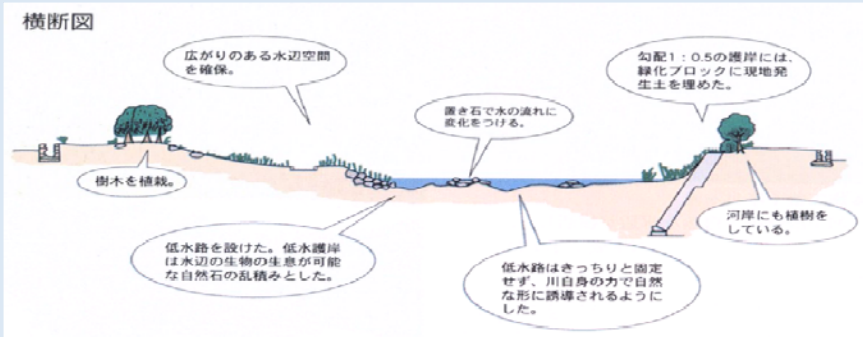
Nuki-gawa River
Nuki-gawa River basin
(Fukuoka Pref.)

Regeneration of Natural Waterfront and Flow

Before (1991)

After (1993)

Widen the channel as for regenerating ebb water route

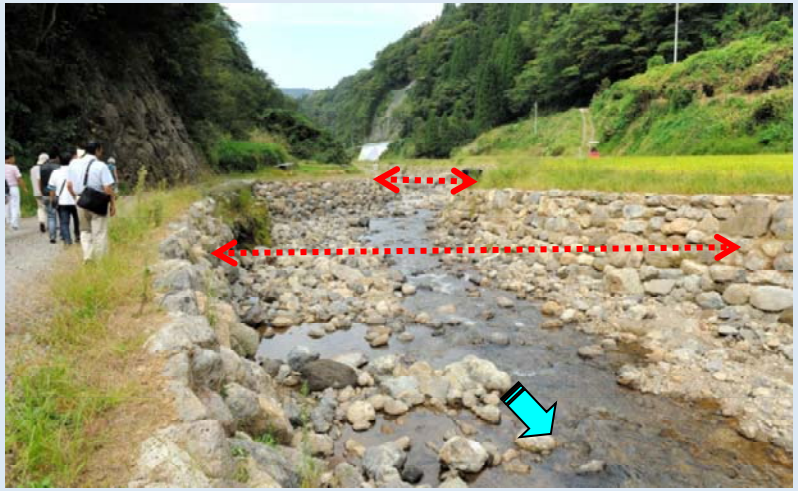


CA=10.3km²
L =5.59km
B=15～23m
I=1/170
Q=130m³/s

2. Study case – superior case –

Yamatsuki-gawa River
Gokase-gawa River basin
(Miyazaki Pref.)

The rapid flow channel, broadened width, and utilized “grabbles” effectively



◇Under the widening river channel, it is necessary to do river maintenance in its condition

As for disaster relief

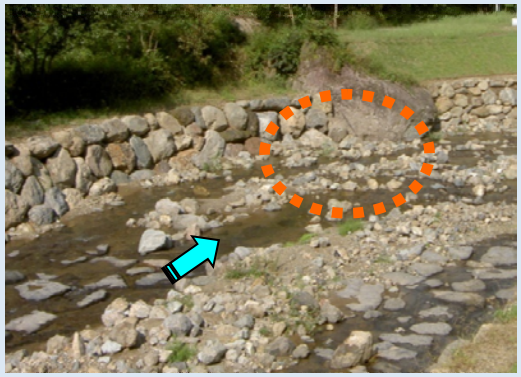
①Under the widening river channel, it is necessary to keep the width of a river wide

②To consider a natural landscape Without fixing the alignment

③The huge stone and landscape which public used to be seeing are left

CA=8.18km²
L =4.0km
B=10～20m
I=1/5～1/40

◇ Curvilinear execution of crown of revetment
◇ The change of slope gradient of revetments



◇The huge stone is used effectively as a part of revetment
◇ The huge stone is used effectively as a drop structure or ground sills

3. Policy

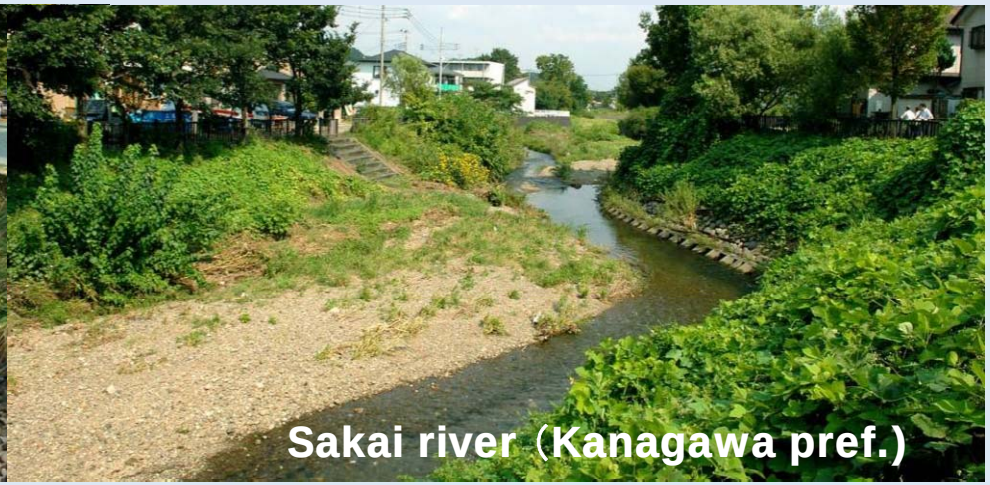
(2008. 3. 31 Notification)

【The working of the river is utilized keeping the width of river bed enough】

The width of river bed enough is important, when a section keep the capacity of flood management

・When there is limitation on a site, slope gradient of revetments is 1:0.5 to keep the width of river bed

※consideration of discharge capacity, recovery of the variety by the action of the river, keeping of riverfront, The stability of the riverbed



Sakai river（Kanagawa pref.）

・This river was repaired at slope gradient of 1.1.5, but the riverbed width has only 4m

・A river channel was made a straight line, and it was repaired in a prismatic channel

Under keeping the width of a river widely, the work of the river is promoted and the depth of the water and velocity change, and gut is formed, then Various river environment is formed

3. Policy

Case of channel improvement of Kitagawa River (Miyazaki Pref.)

Limiting place to protect from affiliation

Improving river environment in view to make use of dynamics, even though it is anti-disaster measures.

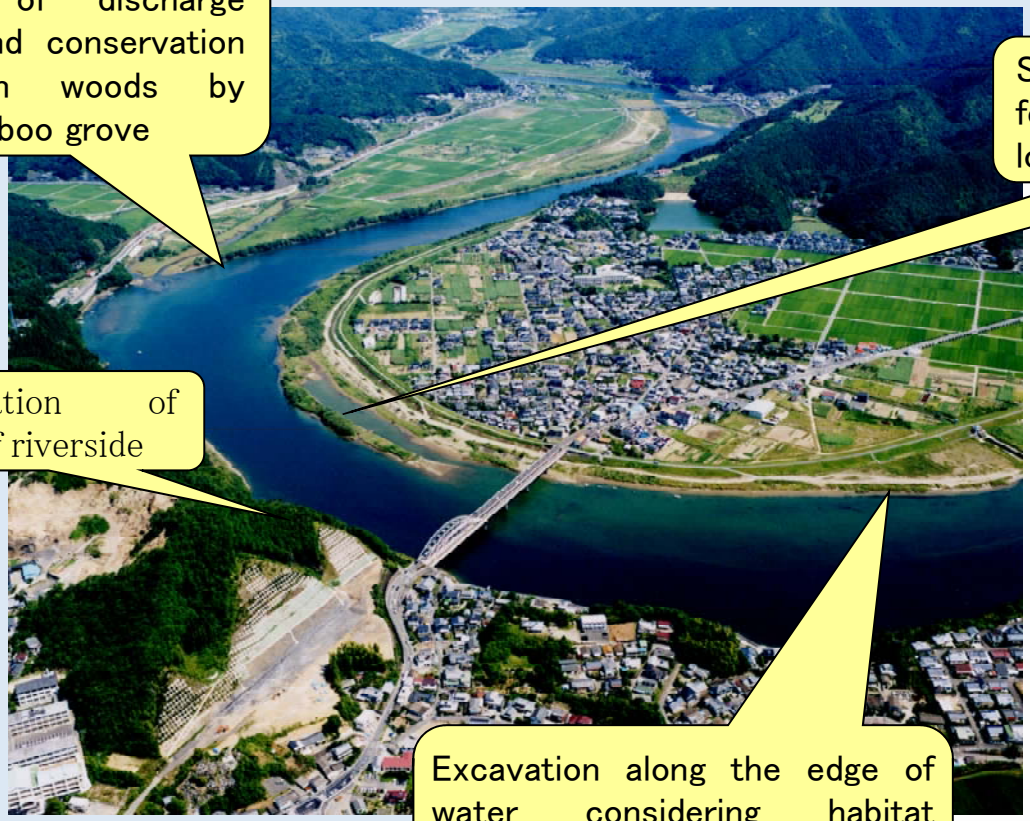
3. Policy

Case of channel improvement of Kitagawa River (Miyazaki Pref.)

Limiting place to protect from affiliation

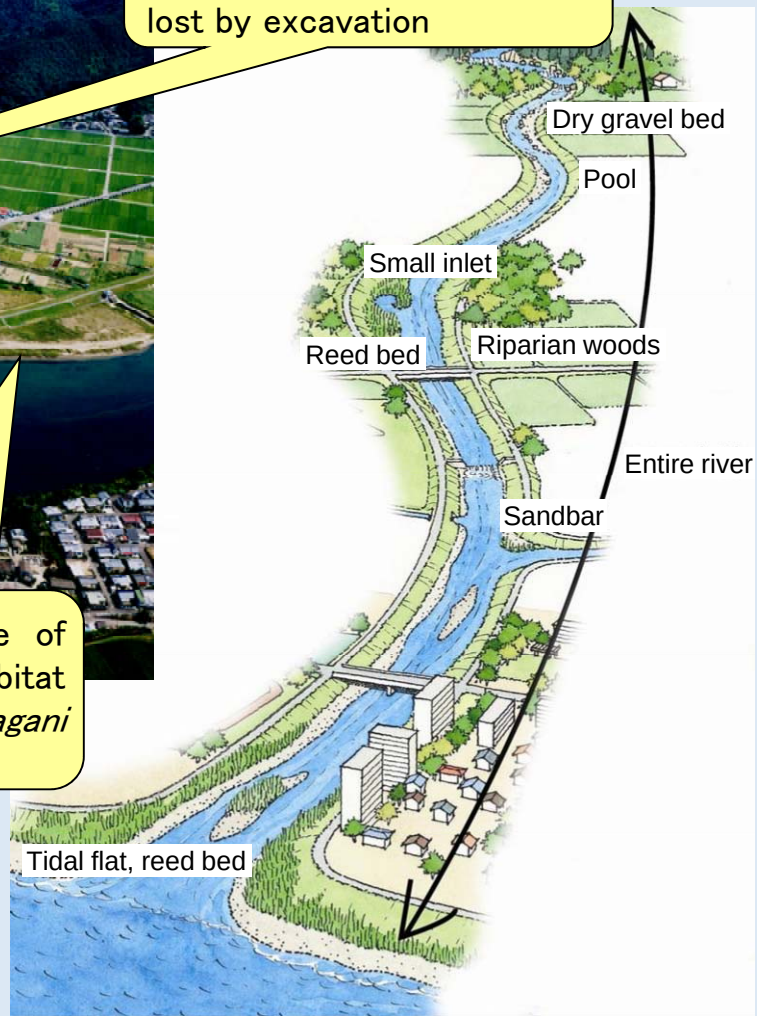
Retention of discharge capacity and conservation of riparian woods by cutting bamboo grove

Small inlet to compensate for a brackish water area lost by excavation



Conservation of forests of riverside

Excavation along the edge of water considering habitat requirements for *kawasunagani* (*Deiratonotus japonicus*)



3. Policy

National Census of River Environment

inhabitation research

Definition

The basics investigation that is done periodical, continuous and unified to catch a river from the viewpoint of environment

Designated rivers and Dams

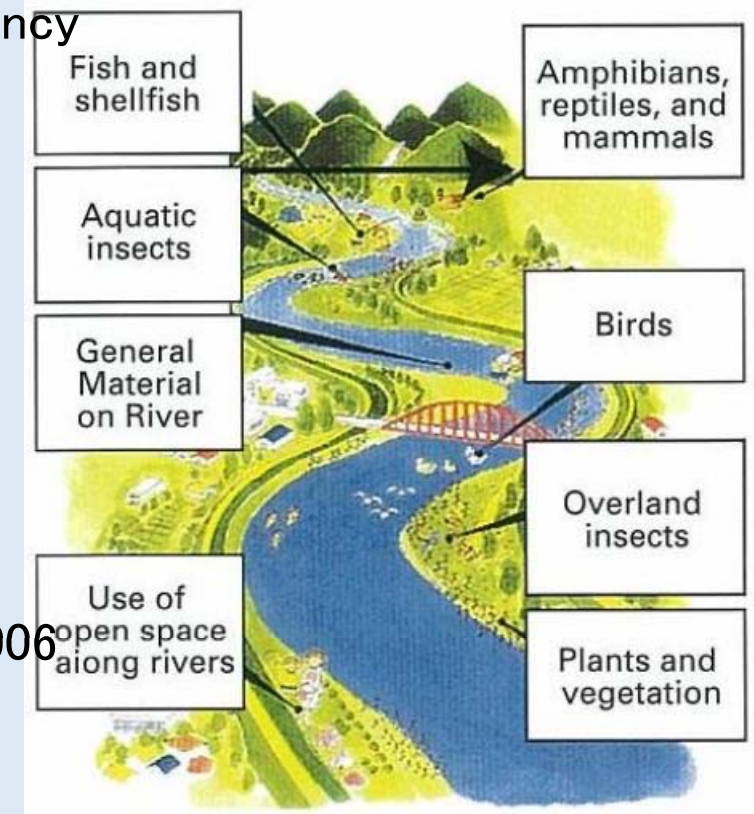
・109 rivers administrated by MLIT
・dams administrated by MLIT and Japan Water Agency

Biotic investigation Contents

Fishes and shellfishes, Benthos, Plants, Birds, Amphibians, Reptiles and Mammals, Land insects, etc.

Result

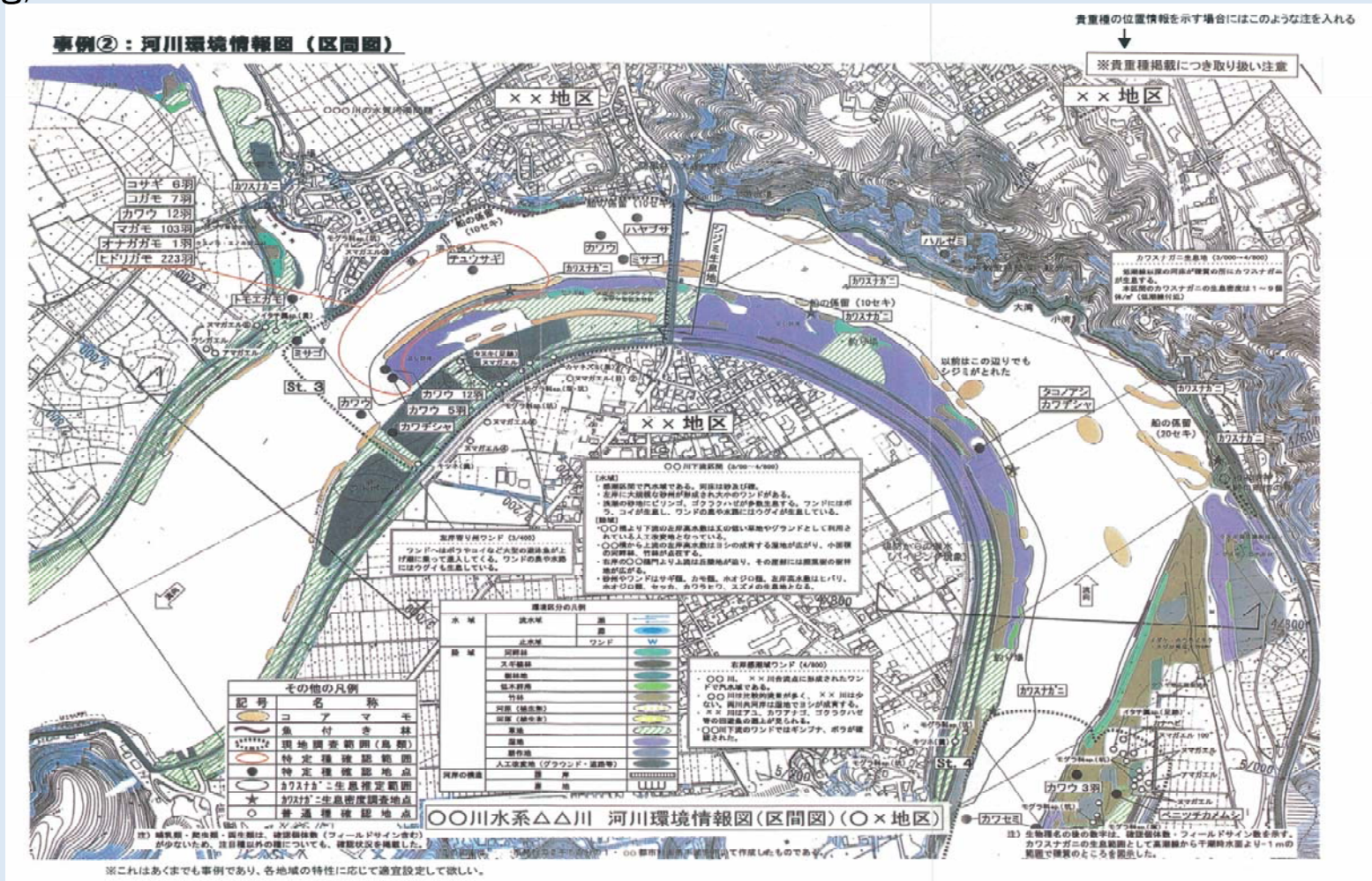
・every 5-year from 1990
・The third investigation was completed in 2005
・The fourth investigation has been started since 2006



National Census of River Environment Analysis

Inflection of Investigation

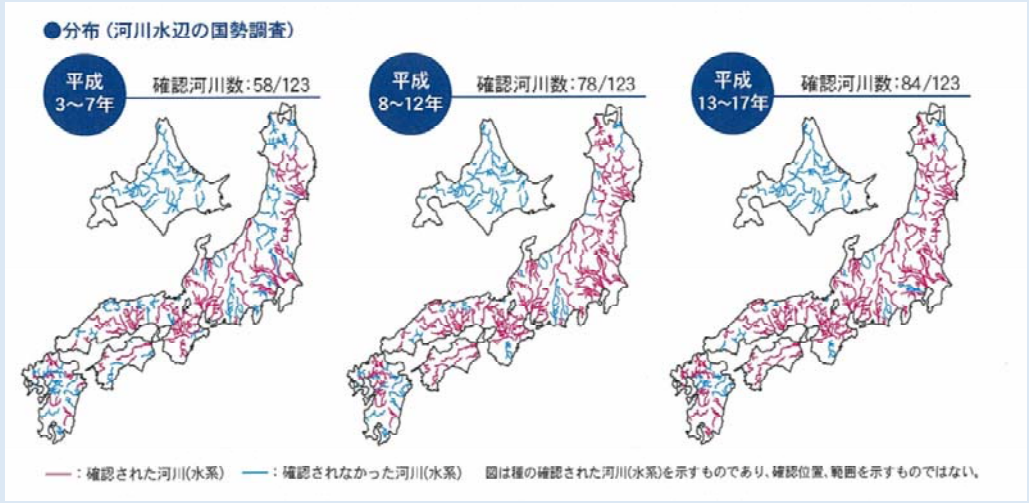
“Environmental Information map”, based on the result of National Census of River Environment, utilized for each stage of the river management, such for planning, execution and more.



Alien species

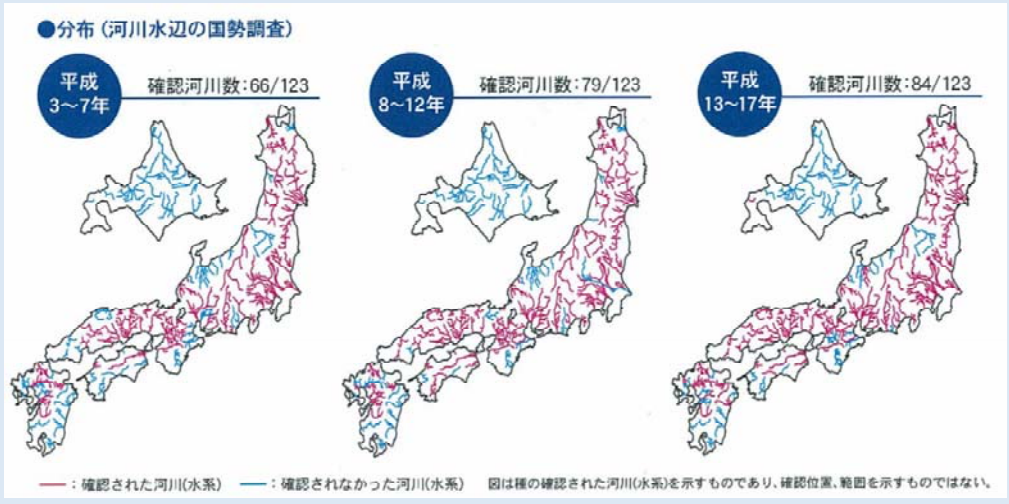
Magnification of alien specie's habitation level, affecting native ecosystem.

Black bass (Sunfish, Scientific name: *Micropterus salmoides*)



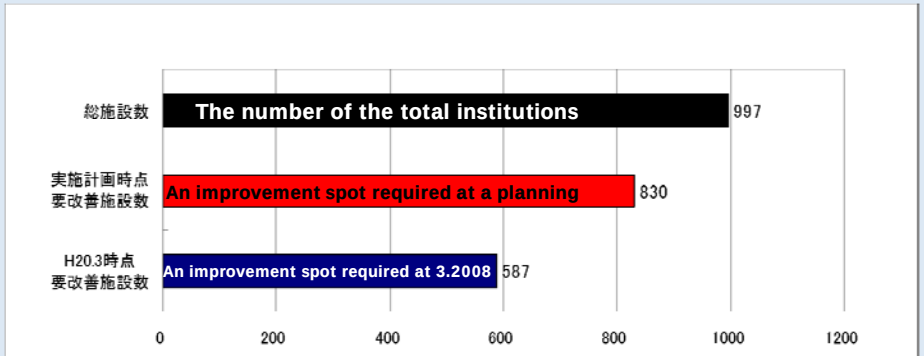
Sicyos angulatus burr cucumber

(Cucurbitaceae, Scientific name: *Sicyos angulatus*)

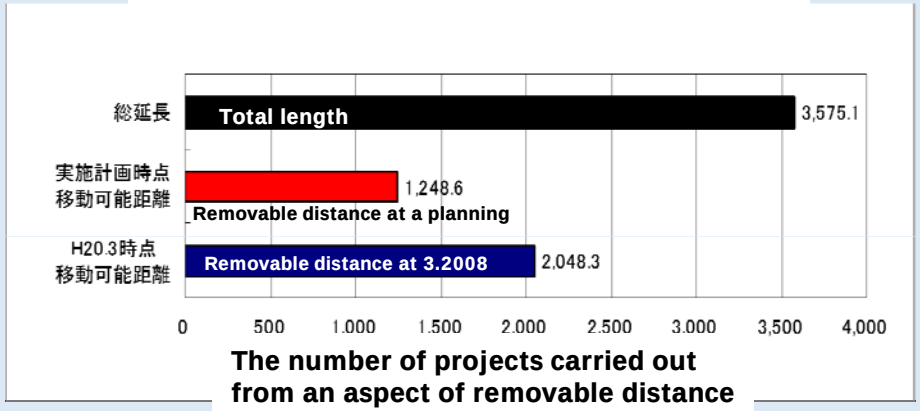


Creating Rivers That Fish Can Easily Ascend

To promote creation of rich area of the river environment more positively, in a river becoming the local symbol, improvement of the structure such as weir or ground sill or dam or debris control dam and setting and the improvement of the fishway and the keeping of the fishway discharge are performed premeditatedly. And these improvements are performed so that fish can easily ascend positively as a model projects. (From 1991)



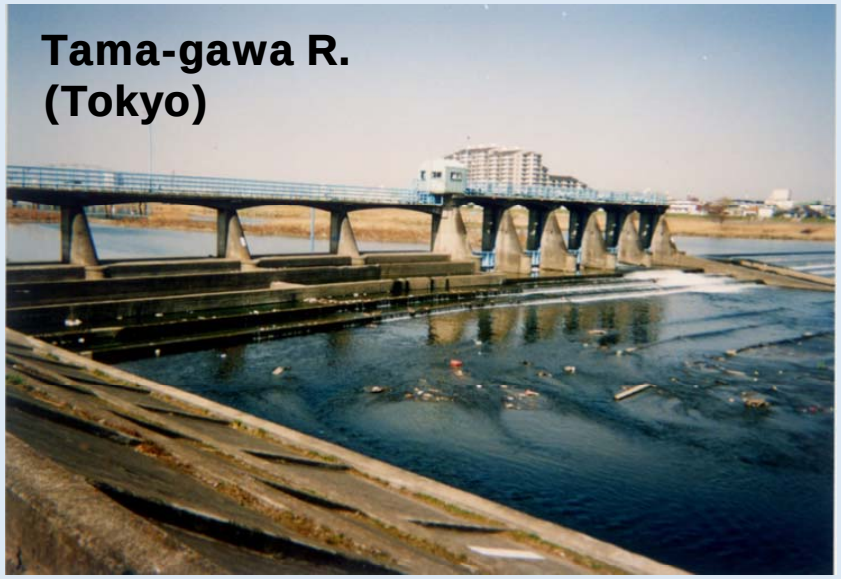
The number of projects carried out from an aspect of the number of the institutions

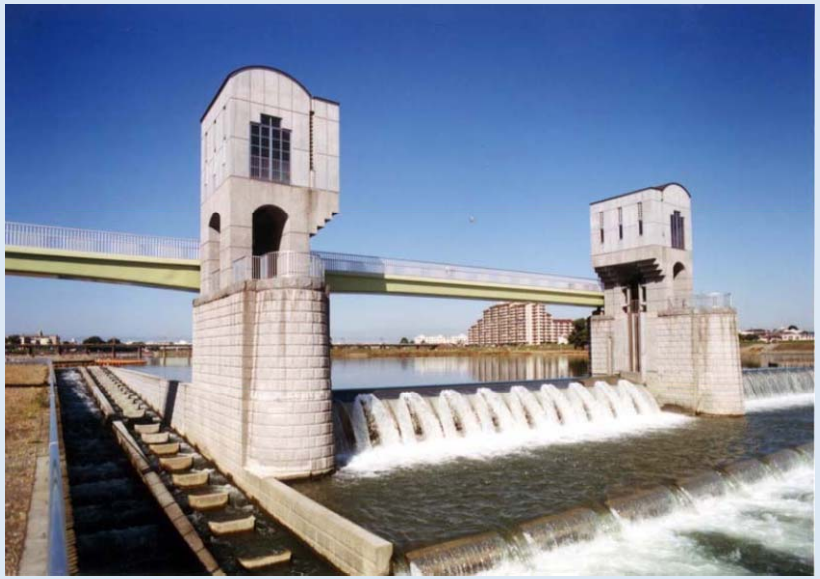


The number of projects carried out from an aspect of removable distance

Designated river for "Model Project for Creating Rivers That Fish Can Easily Ascend"

Creating Rivers That Fish Can Easily Ascend





In around Shin-machi groundsill, at the same time with improvement of ascent condition, diverse habitats creating suitable circumstance for fishes.

The gentle fish way creates a flow such as a natural brook