Workshop of the Research Project on "Wisdom on Land and Water Management"
- "Designing Local Framework of Integrated Water Resources Management"

2011.11.14 at RHIN

Integrated Water Management in Echigawa Alluvial Fan

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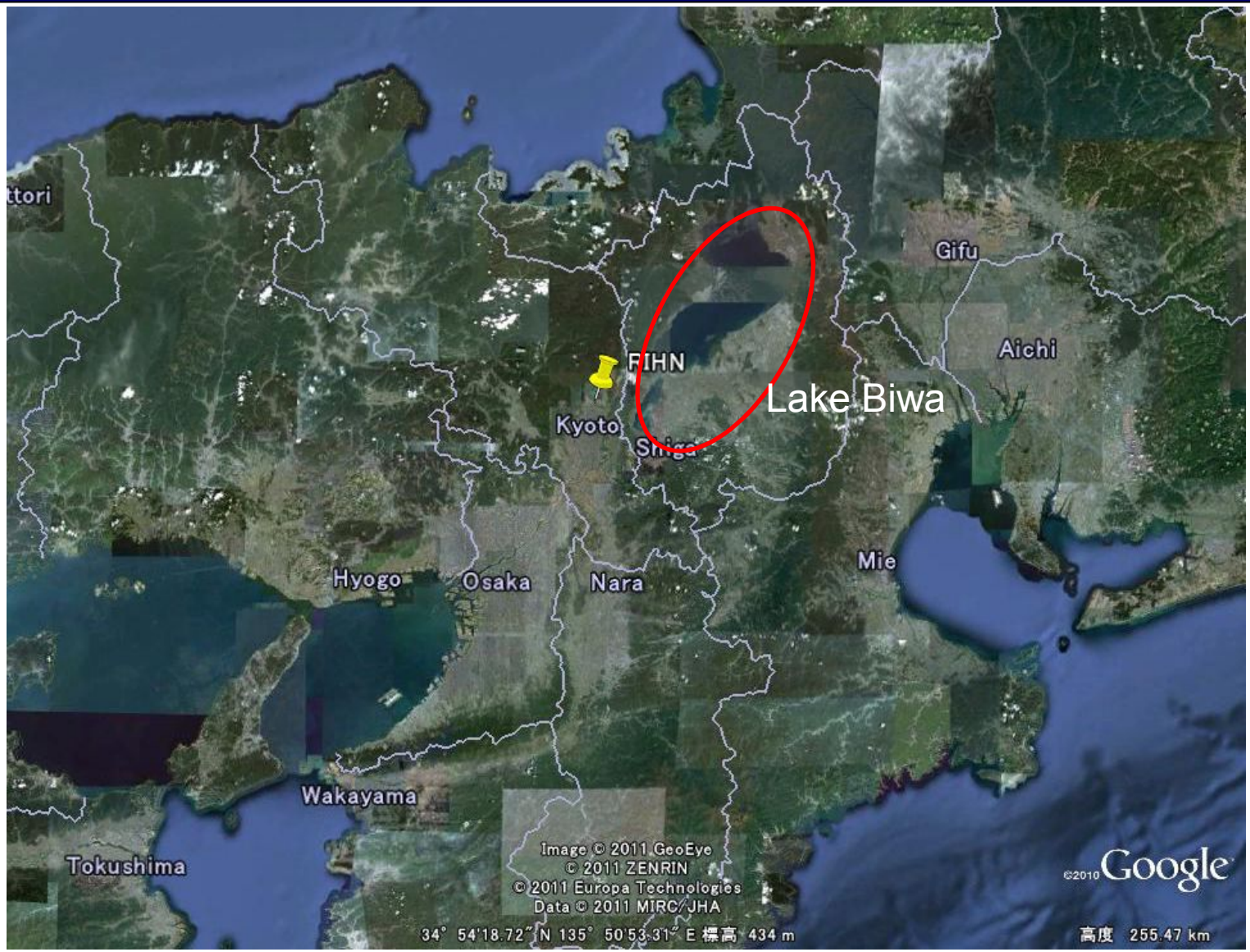
Lake Biwa


ttori
Gifu
Aichi
FIHN
Lake Biwa
Kyoto
Mie
Hyogo
Osaka
Nara
Wakayama
Tokushima
Image © 2011 GeoEye
© 2011 ZENRIN
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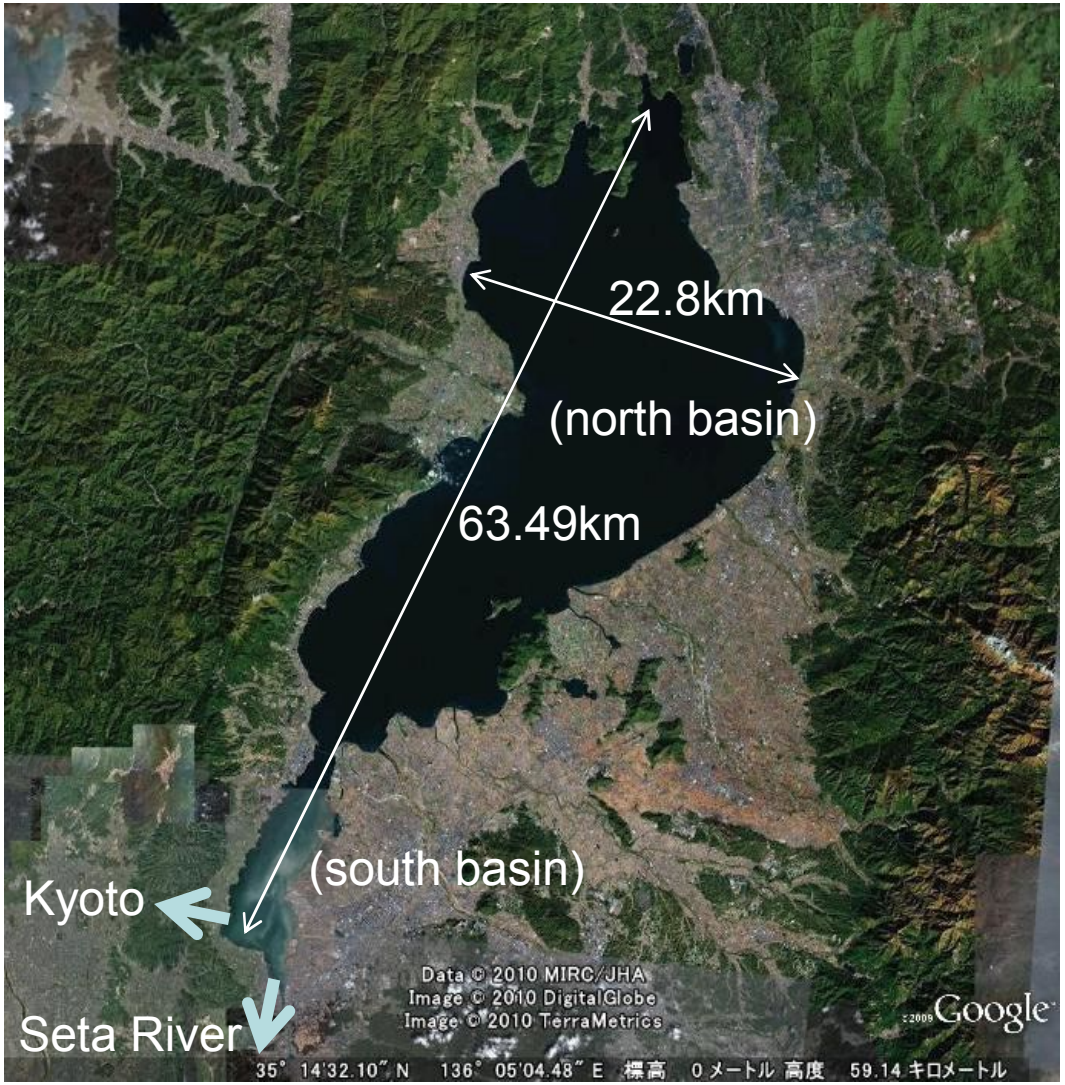
34° 54'18.72" N 135° 50'53.31" E 標高 434 m
高度 255.47 km

Lake Biwa and Land Use

- Surface area=670km^2
- Catchment area=3174km^2
- Forest area=2020km^2
- Farmland area=538km^2
- The rest is residential and other area

- Drinnking water for 14 million residents (Osaka, Kyoto, Kobe)
- Valuable endemic species in and around Lake Biwa



Traditional Food in Shiga Prefecture

“Funa-Sushi”

Nigoro crucian carp and rice

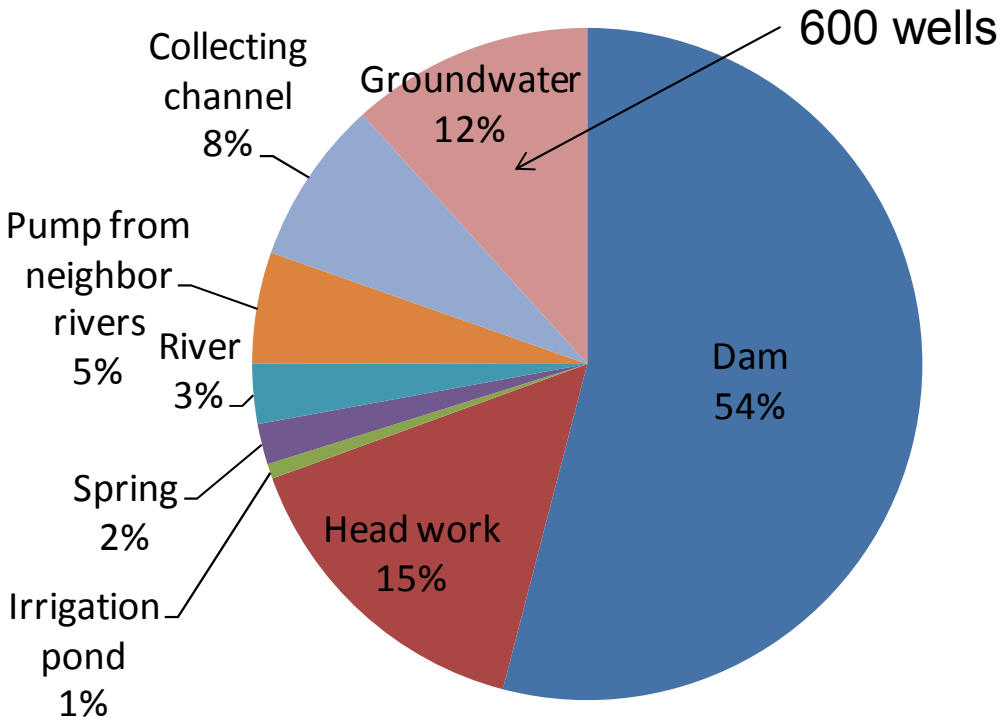
Echigawa River Basin & Hinogawa River Basin

Echigawa Alluvial Fan

Echigawa Alluvial Fan

- Paddy field : 7,500ha

Post-Irrigation Project



Past water resources

Groundwater

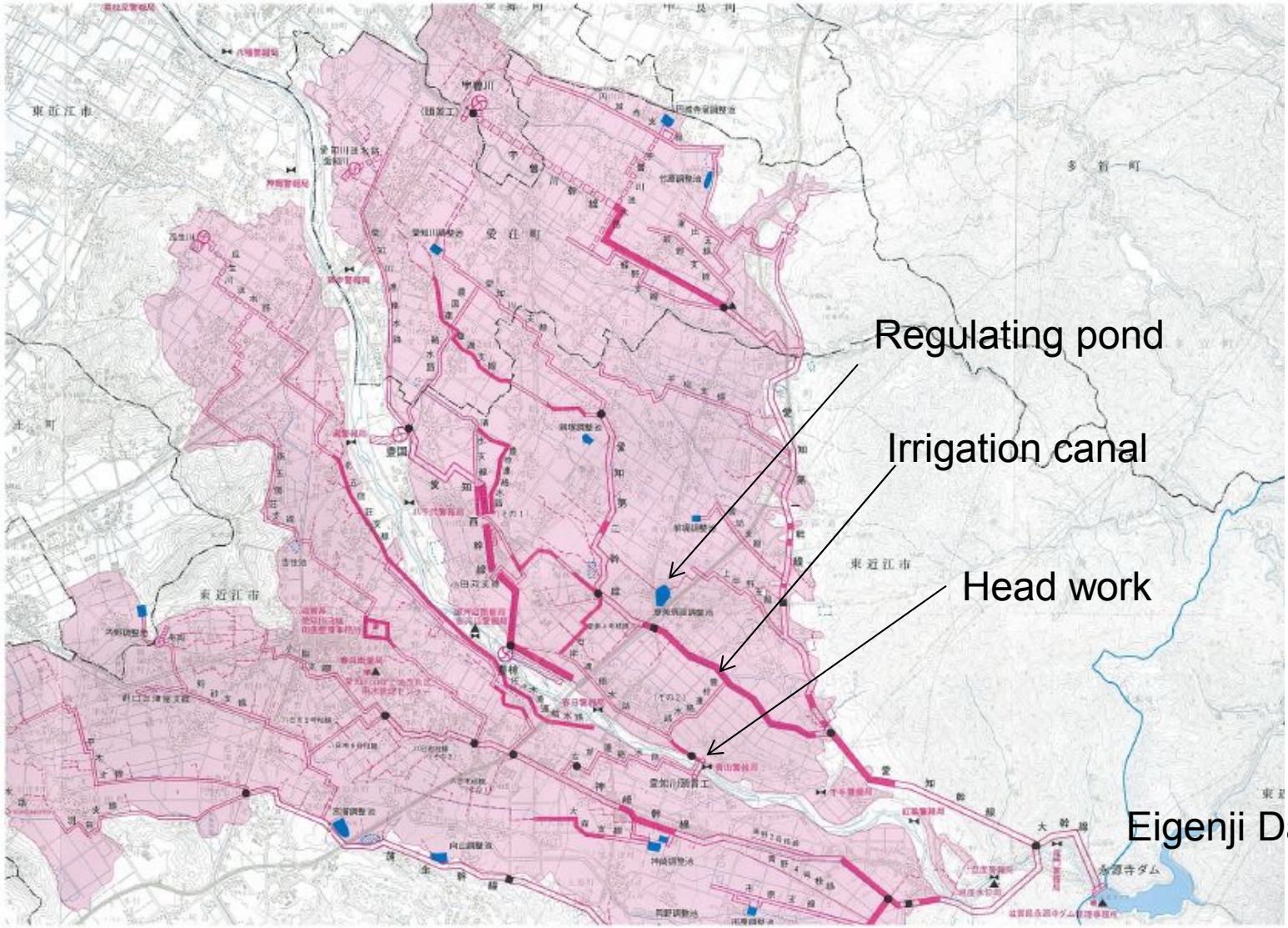
Irrigation pond

River

2,600 wells

(Underground flow during the drought)

Irrigation Project in Echigawa Alluvial Fan



Actual Problems

- Water shortage and unstable water supply at downstream basin (Still 600 wells are used)
- New dam construction plan was forbidden by the court decision due to ecosystem conservation.

- Need to reduce the effluent load from agricultural land

- Shortage of younger generation farmers

- Dispersed paddy plots which constrict the intensive paddy farming
  - Incorporation Farming
  - Community Farming

Hinogawa River Basin

- Paddy field : 4,986ha
- Upland field : 225ha

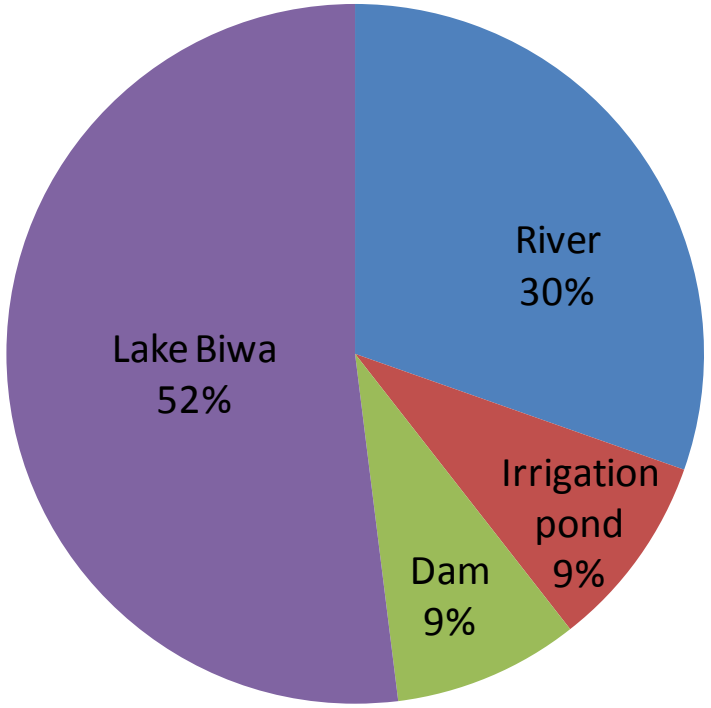
Past water resources

Groundwater

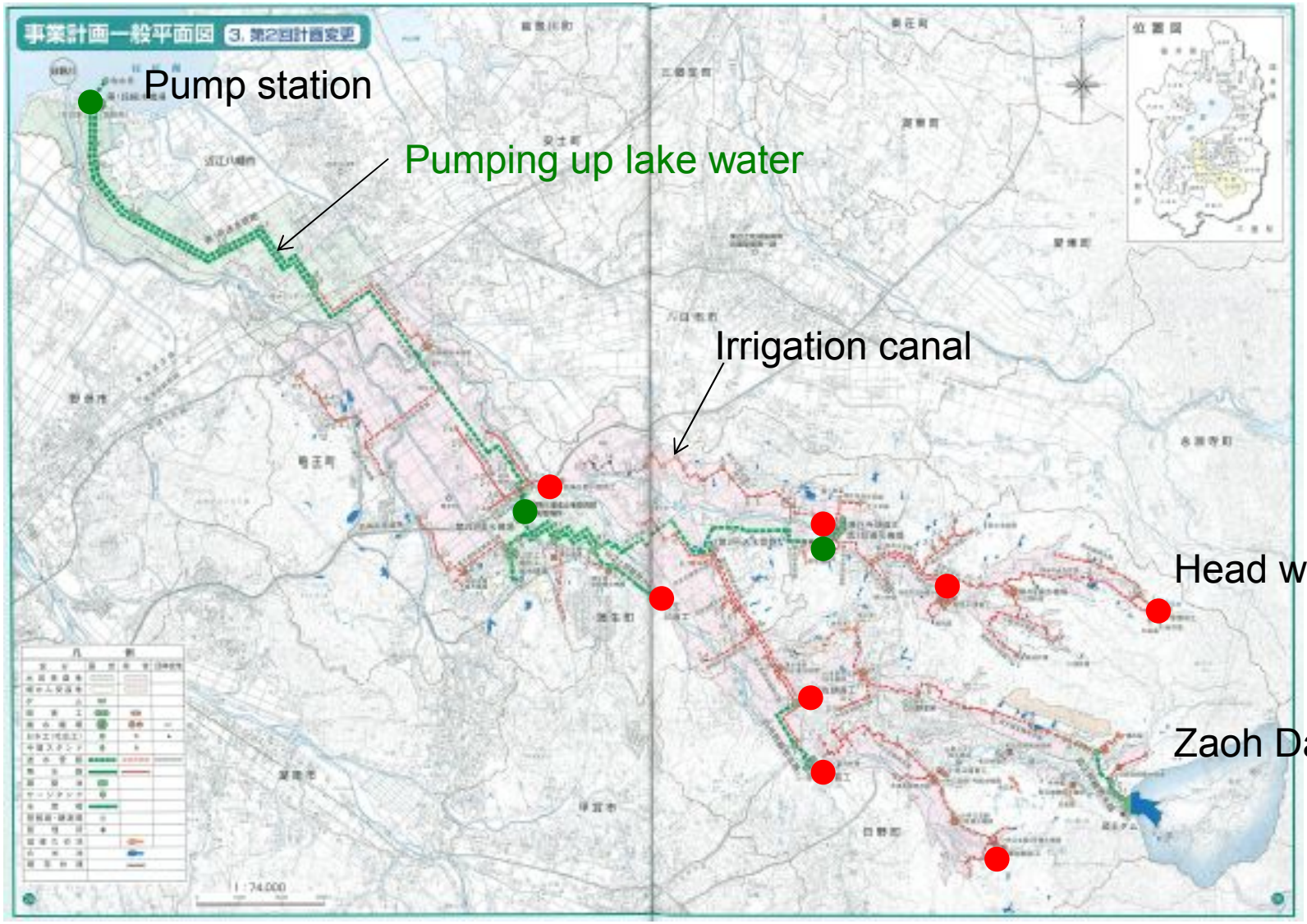
Irrigation pond

River

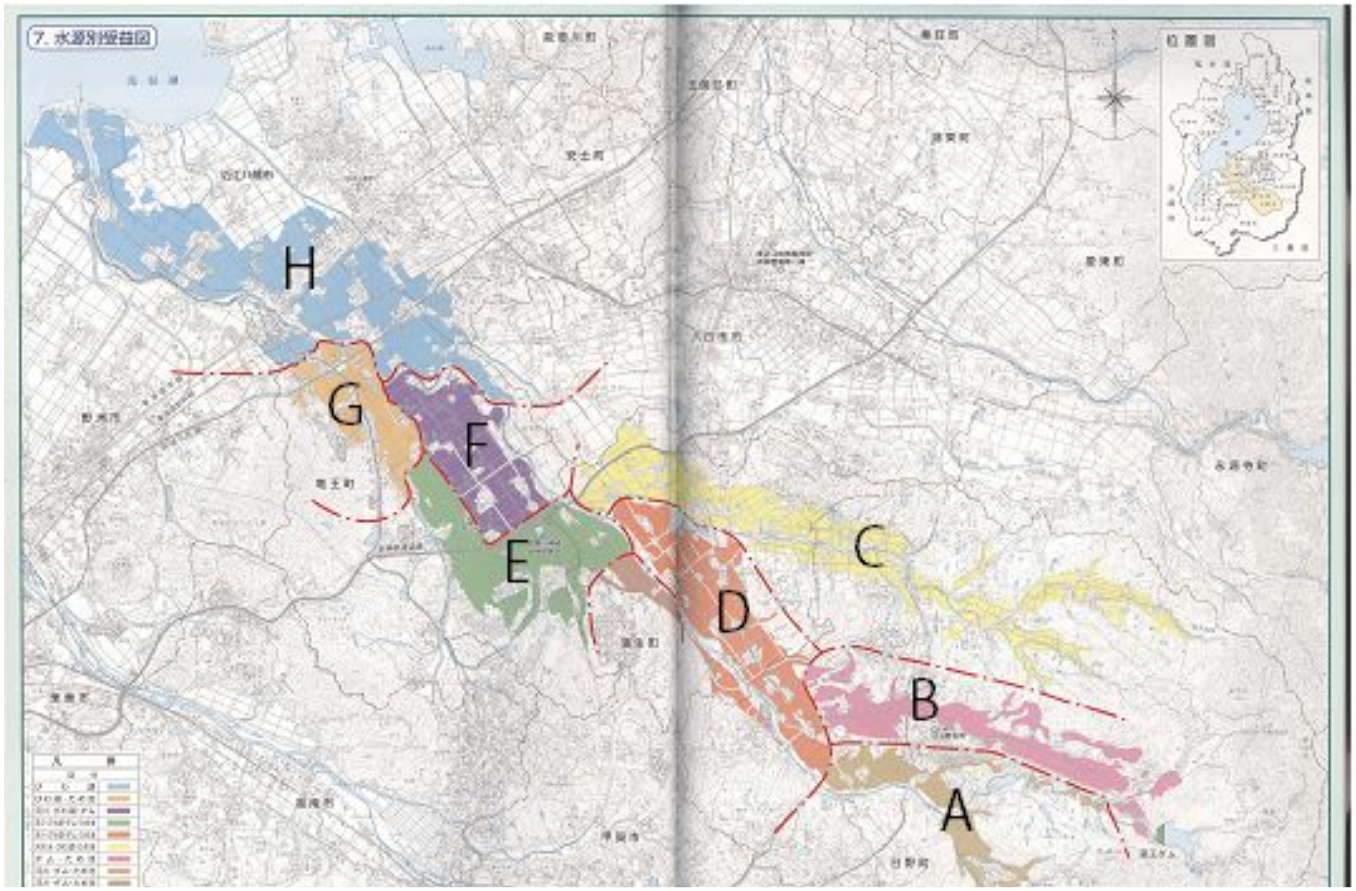
Post-Irrigation Project



Irrigation Project



Water Resources in Hinogawa River Basin



A：River, Dam, Irrigation pond
B：Dam, Irrigation pond
C：River, Lake Biwa, Irrigation pond
D：River, Lake Biwa, Dam, Irrigation pond
E：River, Lake Biwa, Dam, Irrigation pond
F：River, Lake Biwa, Dam
G：Lake Biwa, Irrigation pond
H：Lake Biwa

Advanced Water Management System

Automated water intake gate and water level monitoring

Monitoring water velocity and water level at water intake point from river

Telemeter system

Advanced Water Management at LID Office

Monitor of water flow situation in a command area

Operation panel of telemeter system

Actual Problems

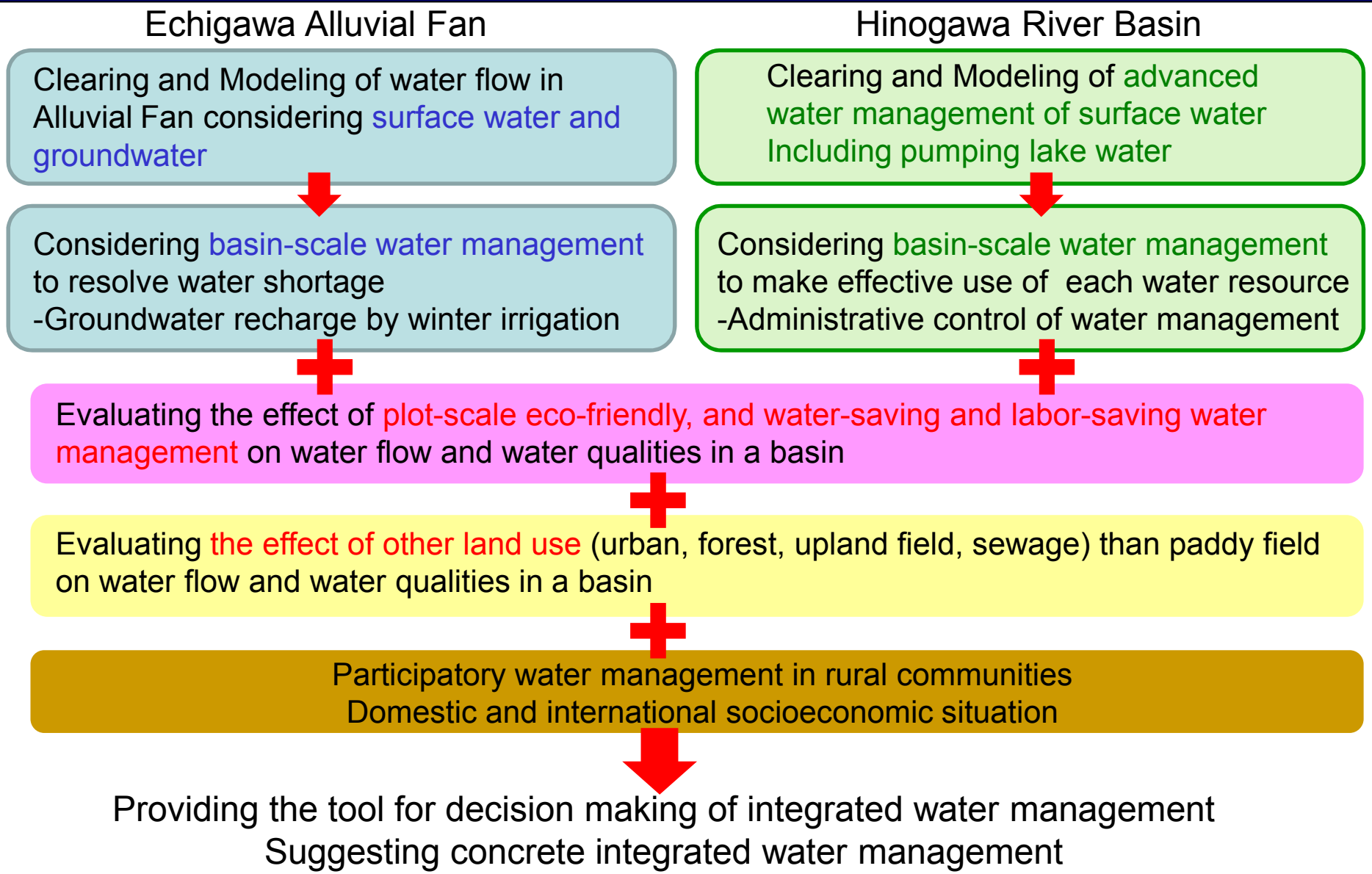
- Too much usage of Lake Biwa water
- Too much electricity expense
- Need to reduce the effluent load from agricultural land
- Shortage of younger generation farmers
- Dispersed paddy plots which constrict the intensive paddy farming
  - Incorporation Farming
  - Community Farming

Integrated Water Management in Lake Biwa Basin

- Stable water supply
- Water-saving water management
- Labor-saving water management
- Energy-saving water management
- Water quality conservation
- Ecosystem conservation

- Producing successors
- Participatory water management in rural communities
- Domestic and international socioeconomic situation

Research Method



Materials

- Water flow rate at dam, head work, water intake points, water division points, rivers etc. which can be get from Land Improvement Districts and Ministry of Land, Infrastructure, Transport and Tourism, etc.
- Groundwater level at observation wells in an alluvial fan
- Pumping discharge rate (agriculture, industry, etc.) in an alluvial fan
- Water qualities including stable isotope of surface water and subsurface water
- Water flow and water qualities in urban and forest areas, and sewage treatment facility

Thank you for your attention.