How to Cope with Public Conflicts

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Representative problem areas of public conflicts in water resources engineering

<table>
<thead>
<tr>
<th>flood control</th>
<th>traditional structural means</th>
<th>loss of environmental assets</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>large reservoirs, high dykes, large retarding basins</td>
<td>large affected areas, loss of continuity</td>
</tr>
<tr>
<td>water use</td>
<td>large reservoirs, large amount of water diversion</td>
<td>large affected areas, deteriorated habitat, heavy eutrophication</td>
</tr>
</tbody>
</table>
Traditional approach: Dualism and limitation

**DUALISM:**

YES or NO, WHITE or BLACK (no gray zone)

Conservation of Environment

Conflict

Priority

Flood Protection

Water Use

Setting priority is a solution to solve a conflict.

Limitation: Neglected minority does not agree with the decision.
First step to merge flood control with ecosystem conservation


Policy 1: Buy Out
Buy houses in floodplains and let people move to a safer areas.

Policy 2: Wetland
Wetlands for Flood Control and Restoration of Ecosystem
Case history study on the Saigawa River

1. Deficit in conveyance near the reference point encircled for the design discharge (100-year flood)

2. Insufficient minimum flow in summer season.
Ex. 1 Planned set back destroys riparian landscape of the city

1. Set back of levees
2. Storage facility

Ex. 1: Planned set back area in the right bank side for is shown by colored area.

Oonosho aqueduct in Nagamachi since 1590s
Ex.2  A cultural heritage goes under water

Conflict:
In the old plan a dam will be constructed downstream of the intake. Then a cultural heritage, the intake of Tatsumi Aqueduct since 1632 will be submerged in a reservoir.

Ishikawa Prefecture could not settle down disputes over twenty years.
# Conflict management: Causes and variables

<table>
<thead>
<tr>
<th>cause</th>
<th>major variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>economical cause</td>
<td>public gain and individual loss, fairness among affected people</td>
</tr>
<tr>
<td>social cause</td>
<td>democratic right for better life and environment</td>
</tr>
<tr>
<td>process of decision making</td>
<td>democratic or autocratic</td>
</tr>
<tr>
<td>equity for ecosystem</td>
<td>Who does represent ecosystem?</td>
</tr>
</tbody>
</table>
Key Factors in Technical Clarity to Manage Public Conflicts

1. Technical preparedness (clarity)
   1) sufficient alternative plans?
   2) sufficient environmental assessment?
   3) sufficient disclosure of information?
   4) reliable knowledge basis?
      [professional societies need to support]

2. Social preparedness (maturity)
   negotiation: dialogue among all stakeholders
A new coordinate introduced for consensus building

a basin-wide approach in the fundamental river management policy of the Saigawa River

It is emphasized that project-wise approaches are insufficient.

<table>
<thead>
<tr>
<th>New coordinate to unify three coordinates</th>
<th>Conservation of local history and tradition (upper hierarchy)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functions indicated in the River Law</td>
<td>Flood damage mitigation</td>
</tr>
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</table>
Correspondence of complete river planning with the philosophical approach

<table>
<thead>
<tr>
<th>Philosophy</th>
<th>Logics</th>
<th>Ethics</th>
<th>Aesthetics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete river planning</td>
<td>Hydraulics</td>
<td>Local history and tradition</td>
<td>Landscape</td>
</tr>
</tbody>
</table>

Traditional river planning

Theoretical background to guide decision making both in principle and design of facilities
The advisory committee accepted a reservoir plan finally but the shift of the location of the dam axis was recommended to keep the intake of Tatsumi Aqueduct in good condition. According to the recommendation the dam axis was moved to upstream by 150m as shown in this slide.

A new target in the action plan is how to reduce the capacity of the reservoir and consequently the construction cost and environmental impact of the new reservoir.
Thank you for your attention.
### Major alternatives analyzed in the committee for the fundamental policy of Saigawa

<table>
<thead>
<tr>
<th>No.</th>
<th>Channel improvements</th>
<th>Reservoir</th>
<th>Retarding basin</th>
<th>Diversion tunnel</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Set back of the main levee</td>
<td>Dredging &amp; cut down of floodplain</td>
<td>Capacity of 5 million m³</td>
<td>Capacity of 5 million m³</td>
</tr>
<tr>
<td>Cost *</td>
<td>55.3</td>
<td>22.1</td>
<td>15.3</td>
<td>80.6</td>
</tr>
<tr>
<td>Required period **</td>
<td>50</td>
<td>20</td>
<td>10</td>
<td>***</td>
</tr>
<tr>
<td>Crucial points</td>
<td>Large &amp; long inconvenience to citizens’ life, loss of recreational parks, more concrete, loss of landscape</td>
<td>Submergence of a historical facility</td>
<td>Land acquisition, disposal of excavated soil</td>
<td>Large &amp; long inconvenience to citizens’ life</td>
</tr>
</tbody>
</table>

* Cost is in billion yen. ** Period is in years. *** stands for unpredictable long time.
To preserve 50% of riverbed under natural conditions

Conservation of the intake of Tatsumi Aqueduct

For low flow conditions or normal conditions a small conduit

Change the location of energy dissipater to the left bank

Flood flow conduits

Image of landscape near the intake of Tatsumi aqueduct and a new dry dam for flood control
Estimation of construction cost of Tatsumi Dam

The construction cost remains the same as that of the old plan.
There is already two multipurpose reservoirs in Saigawa River basin, but there is it in a still low level about flood control and water utilization of Saigawa River under the present conditions.

Therefore Public Works Department, Ishikawa Prefecture planned Tatsumi Reservoir, but the project has already been on a dead rock with opposition movements in citizens, at that time.

Therefore, from a point of view to review the Saigawa River basin whole, We examined three reservoirs in a gross.