

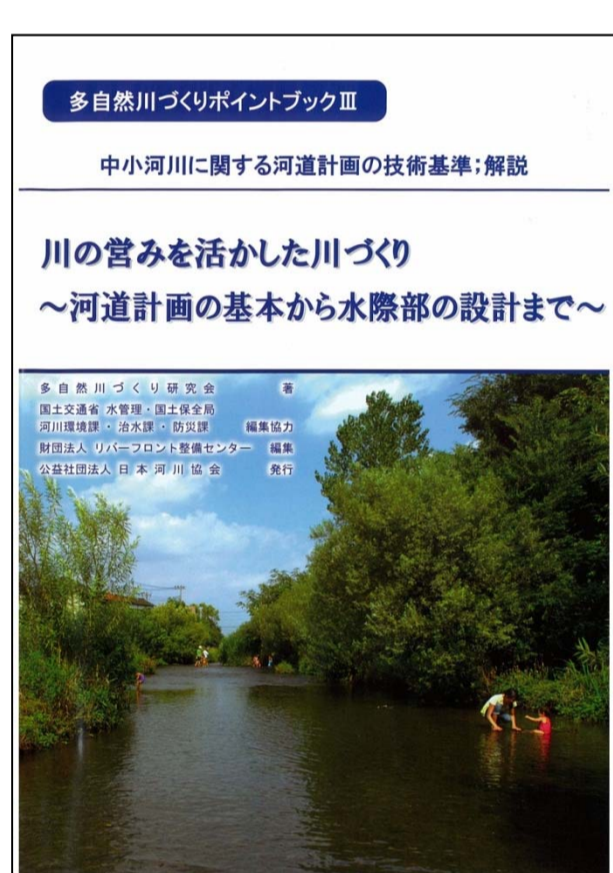
# River restoration advisor for post-disaster river works in Japan

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## Abstract

The concept of river restoration has been widely adopted and implemented in Japan since the 1990s. However, post-disaster river works often tends to be ecologically unfriendly because there is usually limited time to both plan and implement works. To mitigate against the impact of these reactionary river works, the Japanese Ministry of Land, Infrastructure, Transport and Tourism (MLIT) launched the "River restoration advisor" project to support urgent post-disaster river works in 2005. The idea is that advisors with specific restoration expertise are dispatched to the river work sites to review the plans. Using expert judgment, these advisors comment on the projects from both the river engineering and environmental viewpoints and make recommendations on how to achieve conservation benefits. These advisors, by working with local and national engineers, have helped with the implementation of visionary solutions that use the natural disaster events as an opportunity to provide benefits for landscape and ecology in river systems ranging from wild mountainous watercourses to space-limited urban rivers.

## Recent restoration trend in Japan



"Guideline III" as a manual for River Restoration



One-side widening for conservation and cost reduction

### History of River restoration in Japan

- 1990: Governmental Announcement of "Promotion of Nature-oriented River Works"
- 1997: Amendments of the River Law for river environment
- 2006: The Committee Proposal: "From Nature-oriented River Works to Nature-oriented River Management"
- 2008: Announcement of "Technical Standards for River Works of Small to Medium Scale Rivers"
- 2011: Publication of "Guideline III" as a manual for the revised version of technical standards

### Basic principles of River restoration guideline III

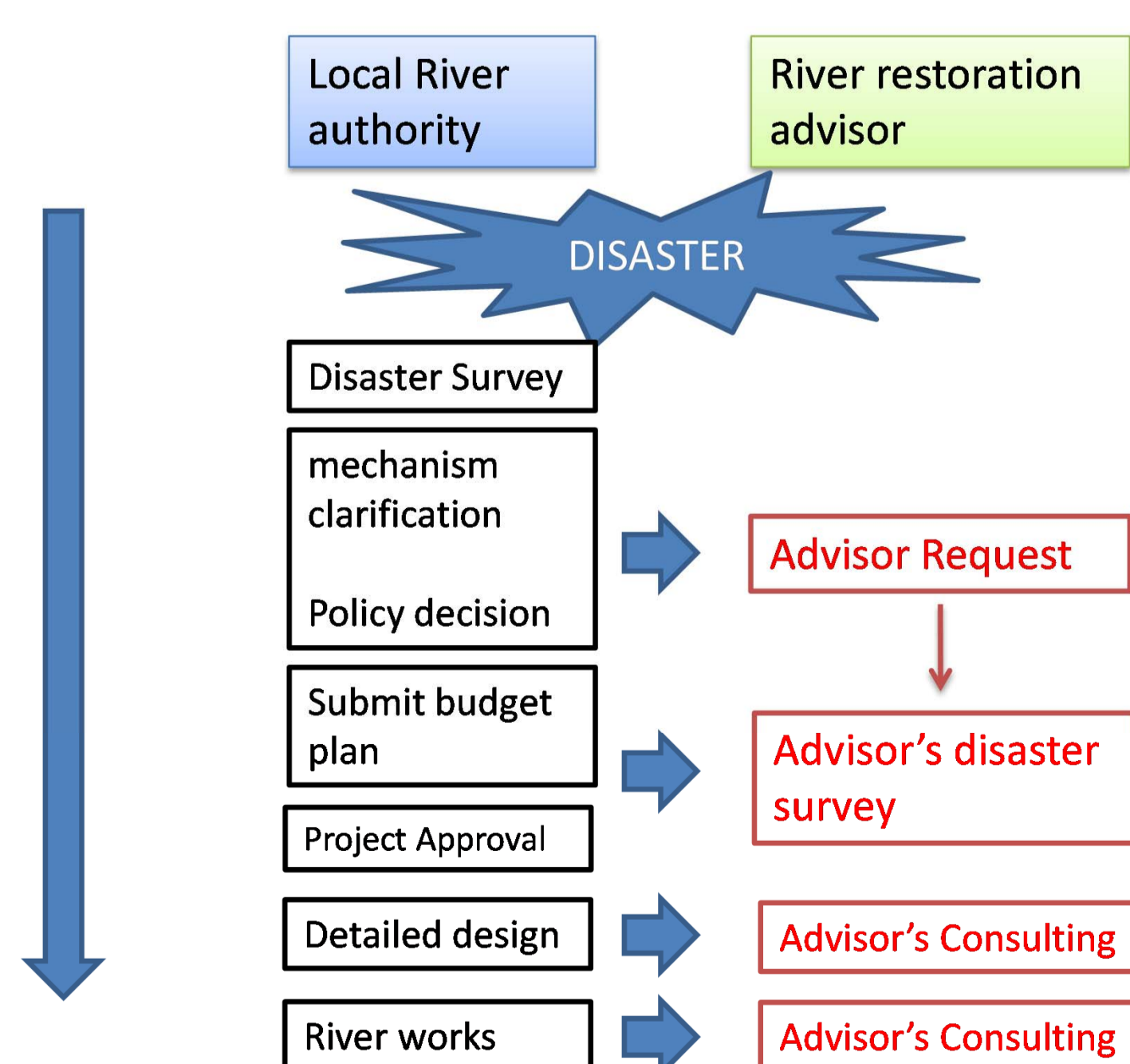
- River alignment is based on the existing channel flow
- Avoid increase in flow velocity by widening channel in principal
- In case of excavation it should not exceed 60cm and it is recommended to excavate the bed with respect to the original river bed profile
- One-side widening is recommended in principle
- Consider "water route" in widening
- Secure the river bed width.

## River Restoration Advisor for post-disaster



Post-disaster works tend to use concrete block (image)

Most of the river works for small to middle scale river in Japan have been conducted after severe flood. However, the urgent river planning has damaged river environment. To conserve rivers, the Japanese Ministry of Land, Infrastructure, Transport and Tourism (MLIT) launched the "River restoration advisor" project to support urgent post-disaster river works in 2005. Out of thousands of post-disaster river works in Japan, advisors support several severely damaged rivers.



Outline of "River restoration advisor"

Since 2005, more than 25 rivers had advices from mainly four advisors. Through these practices, the essential ideas and case studies for Guideline III have been accumulated.

## Case studies

### Motomachi River

- Location: Iwate Pref.
- Riv. Character: Mountain
- Gradient: 1/30-1/40
- Disaster Date: Oct. 6-8, 2006
- Riv. Works: Widening, Sill
- Works completed: 2008



Partially covering the revetment for better landscape and ecotone with vegetation



Covering the revetment for better landscape and allowing ecotone dynamics



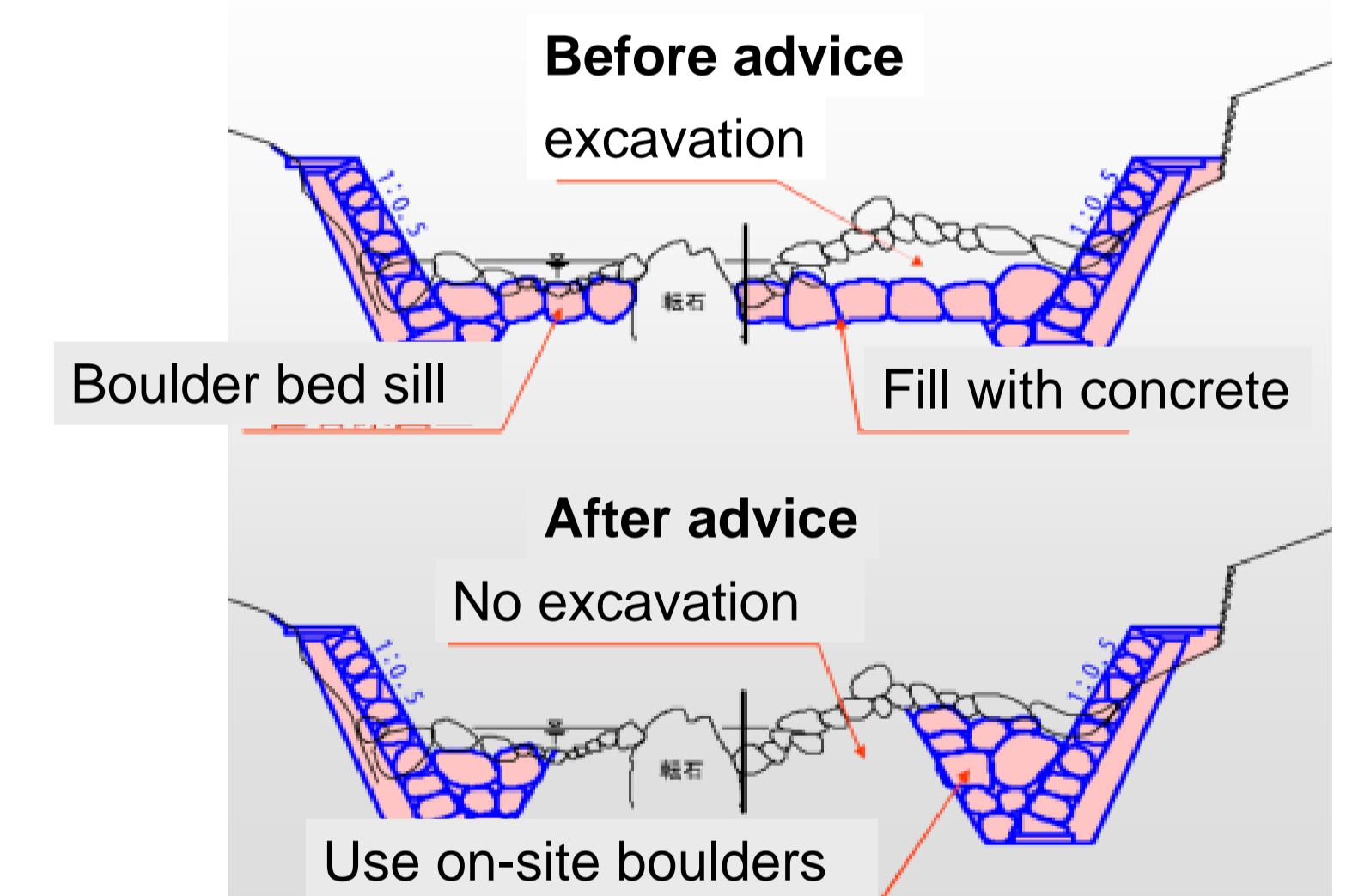
Covering the top of revetment by soil for landscape improvement

### Yamatsuki River

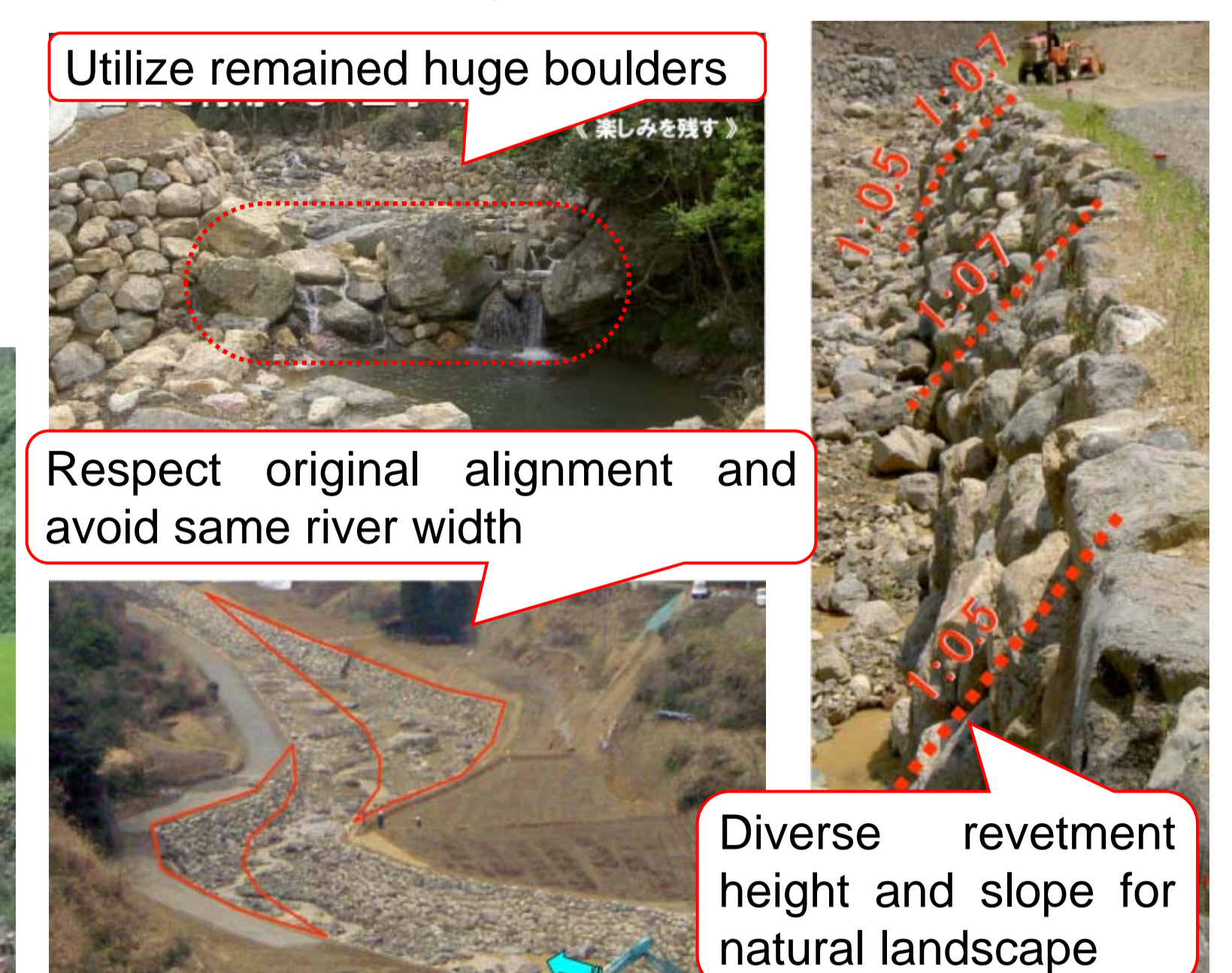
- Location: Miyazaki Pref.
- Riv. Character: Mountain
- Gradient: 1/5-1/50
- Disaster Date: Sep. 4-6, 2005
- Riv. Works: Bank protection
- Works completed: 2008



The Yamatsuki River in 2011



Design before and after advice



Points of advices

## Challenges for the future

- River restoration designing at the mountainous river
- Riverine tidal wetland restoration
- River restoration in urban river where land limited
- Human resource development of river restoration practitioner
- River restoration designing in a large river

## References

Nakamura K., Tockner K. & Amano K. (2006) River and wetland restoration: lessons from Japan. *BioScience*, 56, 419–429.