

Restoration of Rhine River - 1 (Germany)

From 1860s, there was a river development in upstream of Rhine (Basel – Bingen) aiming at flood prevention and inland river transportation. In 1930s, river improvements were done for hydraulic power generation and inland river transportation. Treaty of Versailles after the World War I gave France a right on Rhine River, and France established a new channel for river transportation, parallel to Rhine River. As a result of these changes, anti-flood fields were diminished and flood frequented in the upstream region. Given the situation, a comprehensive Rhine River flood control plan was proposed. By restoring and conserving anti-flood fields, Rhine River's flood control functionality (estimated 270 million m²) is expectedly recovered. Governmental agencies and NGOs operate focusing on water quality improvement, free fish inhabitation and relocation, and habitat variety improvement.

◆ Key to Restoration

- Water quality improvement
- Natural ecosystem restoration
- Hydrological characteristics recovery (anti-flood fields restoration)

◆ Overview of the River

Rhine River's basin dimension is 20000 km² (half of Japanese national land), and its total length is 1300 km (four times of Japanese longest Tone River). The basin population is 50 million. It flows through Netherlands, Germany, Belgium, and Luxembourg. Major cities and industrial areas are established along Rhine, constituting one of the most prosperous belt zone in Europe. However, after river improvement constructions, anti-flood field decreased and floods started to frequent in downstream areas.



◆ Project Efforts for Restoration

[Water quality improvement]

An international program started after a catastrophic accident occurred in a chemical factory in 1986. The water quality has improved dramatically. Though the quality still needs supervision, it is now good for aquatic life inhabitation and reproduction.

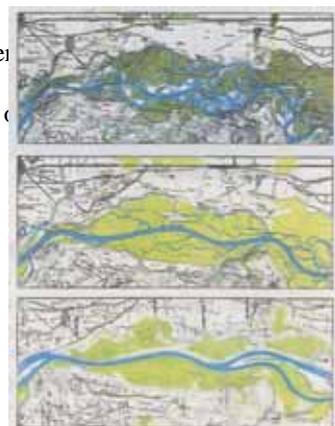
[Natural ecosystem restoration]

Baden Wurttemberg State decided on "Comprehensive Rhine River flood control plan" in which the measures for flood control and for conserving and restoring the basin area's ecosystem are proposed. Germany and France plan to restore and conserve anti-flood fields in order to recover Rhine River's flood control functionality (estimated 270 million m²).

[Hydrological characteristics recovery (anti-flood fields restoration)]

After Rhine River's natural environment was modified, driving water canal caused lack of water in the main stream and resulted in drastic decrease of anti-flood fields, and floods frequented. Today's policy of river development and control is based on such experience.

To recover the hydrological characteristics of the anti-flood field, ecological flood is caused deliberately, and the basin's underground water control is actively practiced.



Before improvement
(1828)

After improvement
(1872)

Today
(1963)

River improvement and transition of anti-flood fields

Source: National Land Technology Policy Research Institute document "Toward human-nature symbiotic basin for urban restoration -- people, water, land, and environment --" Katsuhide Yoshikawa "Riverfront 2000 vol. 37" p. 28 "Overseas report: Rhine River's comprehensive flood control plan and anti-flood fields restoration"