Restoration of Environment after the High Economic Growth in Japan

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1. Introduction

• After the loss of the War in 1945, Japan renounced war and constructed a peace-loving country.

• The High Economic Growth after the war was successful.

• However, It was achieved without sustainability and at the sacrifice of environment.

• In 21st century, we, Japanese civil engineers are taking actions for the sustainable infrastructures and for the restoration of the environment.

• All Civil Engineers must collaborate in stopping the Climate Change
Post-War Reconstruction, Recovery from Disasters

- **Dams**
  - Water supply — Ogochi Dam
  - Irrigation — Ishibuchi Dam
  - Power Generation — Sakuma Dam
  - Flood Control — Ikari Dam

- **Road Network**
  - Five-Year Plan for Road Construction
2. High Economic Growth brought Prosperity and Destruction

- The National Comprehensive Development Plans
- Express Highway Network,
- Shinkansen Railway,
- Large Dams for flood control and water resources,
- Reclamation of seaboard industrial zones
- Development of urban areas

- Tokyo Olympics in 1964 was the start gun
- The economic growth realized the unprecedented Prosperity
High Economic Growth Period

- Basic Plan for Water Resources Development
- Expressway Network Plan
- Shinkansen Bullet Train
- Energy change from Water to Oil
- Seaboard Reclamation for Industrial Areas
Environmental Degradation and Pollution

• In the course of the growth, environmental degradation became serious
  • water and air pollution
  • traffic congestion and noise
  • damaged landscape and scenery
  • Pollution related diseases

• Examples of Environmental Degradation as below
Mt. Fuji, the Spiritual Symbol of Japanese People is surrounded by Chemical Plants

Courtesy: Utsukushii Keikannwo Tsukurukai
A beach along the Japan Sea protected by concrete blocks used to be covered with white sand and green pines

Courtesy: Utsukushii Keikannwo Tsukurukai
Tokyo Metropolitan Highway once a shopping mall

Courtesy: utsukushii Keikannwo Tsukurukai
Urban sprawl near Tokyo for residential area

Courtesy: Utsukushii Keikannwo Tsukurukai
Kanda-gawa river, downtown Tokyo is merely a ditch, not a river.

Courtesy: CTI Engineering
Nihonbashi Bridge by ANDO Hiroshige

Courtesy: Tokaido Hiroshige Museum
Nihonbashi Bridge, Central Tokyo, in ’30s, was constructed in 1911 as the Starting Milestone of National Road Network

Courtesy  Nihonbashi Souran
Nihonbashi Bridge and River covered by Highway constructed in 1964 for Tokyo lympics

Courtesy: Utsukushii Keikannwo Tsukuru Kai
Cars, not water, flow in the Tsukiji River, downstream of Nihonbashi
3. Reasons of Destruction of Environment

- The reasons why Japan destroyed their environment

- The nature of Japan was ‘generous’ enough to cover the human activity up to a certain extent.

- Japan placed first priority to economic growth due to the limitation of finance and time.

- Japanese civil engineering was construction-oriented but not environment-oriented.
4. Successful Preservation of the Landscape and Scenery

- Some infrastructure projects were implemented in consideration of preservation of the natural and man-made sceneries through the modernization and high economic growth
- Some are valuable and operative heritages today
- Some are fully operative
Operative Inherited Assets since the pre-WWⅢ

- Transportation
  - Railways, Roads, Ports
- Energy
  - Water Power Stations
- Water (River)
  - Flood Control Works,
  - Water Supply, Sewage
Biwako Water Supply Canal in Kyoto, 1890. A tourist spot and operative structure.

Courtesy: Utsukushii Keikannwo Tsukuru Kai
A National Heritage
Kiyosubashi Bridge in downtown Tokyo constructed in 1926, withstood air raids in War II

Courtesy: Utsukushii Keikannwo Tsujuru kai
A Symbol of Peace, Heiwa-Oohashi Bridge in Hiroshima after the war
Designed by Isamu Noguchi, a Japanese-American artist
In 1963, Tomei Expressway was so designed as to reserve the scenery of Mt. Fuji.

Courtesy: Utsukushii Keikannwo tsukuru kai
5. End of High Economic Growth, Change to Moderate Growth

People recognized

• Pollution-related Diseases
• Environmental Degradation
• Oil Shocks in 1970’s
• Limit of Growth

• Infrastructure Investment increased till 1998
6. Fore-runners of Environment Restoration

- While Japan was in the midst of high economic growth, some civil engineers recognized the importance of environment and pioneered in restoration projects.

- **Furukawa “Shinsui: Water Amenity “ River Restoration**

- **Revival of Yanagawa River Cruise**

- **Resuming Sumidagawa Regatta**
The Furukawa river, eastern Tokyo, in ’60s before restoration

Courtesy: CTI Engineering
A Restoration Plan of urban river in ’70s

Courtesy: CTI Engineering
The Furukawa Shinsui River restores the river and the surrounding areas

Courtesy: CTI Engineering
Revival of Yanagawa River Cruise

Courtesy: CTI Engineering
The Sumidagawa Regatta resumed after a long suspension

Courtesy: Executive Committee for Water Fair
7. Restoration of Degraded Environment
- Scenery as a symbol -

In 1990’s, importance of the environment was socially recognized

Concept “Infrastructure shall include environment” obtained the national consensus.

Purposes of infrastructure are Safety, Convenience and Environment

Landscape and scenery became the symbol of environment and infrastructure.

River Law was so amended in 1997 as environment preservation clause were provisioned.

Landscape Preservation Law was enacted in 2005

Restoration of Nihonbashi has become the symbol of environment preservation

• Since 1990s, number of new restoration projects have been delivered
Restoration Project of the Nihonbashi Bridge and Area, 2005
Relocation of 2.2km Trunk Highway with 100,000 cars/day
Courtesy: Nihonbashigawani Sorawo Torimodosu Kai
Nihonbashi Restoration Project
Proposal of Nihonbashi Renaissance Committee
Proposal of Nihonbashi Renaissance Committee
Nihonbashi Restoration Project

Courtesy: Nihonbashi Renaissance Committee
Restored Meganebashi Bridge in Nagasaki attracts many tourists all over the country
The Diversion Tunnel: Meganebashi Restoration Project, Nagasaki
Restoration of Momochi-hama Beach, Fukuoka
by beach nourishing
8. Nature-Oriented River Management

• “Nature-Oriented River Works" the implementation of river projects for good habitats provided by a natural river and preserves and creates a scenic natural environment.

• “Nature-Oriented River Management” the new concept of river management involves the harmony with the history and culture of community
【Expanded field of view in river management】
River system restoration taking the entire river basin into consideration

Example: Kushiro Wetland nature restoration project

Legend
- River area
- Park area
- Protected species
- Miscellaneous

Conservation of water environment
Control of sediment inflow
Restoration of meandering river
Conservation of wildlife habitat
Control of wetland vegetation
Conservation of groundwater
Restoration of wetland
Restoration of meanders
Management of nutrients
Water quantity management
Retention of continuity
Water quality management
Restoration of floodplain

Source: Website of Kushiro Development and Construction Department, Hokkaido Development Bureau
Restoration of Ishi-Ibi Intake Weir on the Kase River, Saga

Courtesy: MLIT
Kids are studying Ishi-Ibi Restoration plan

Courtesy: CTI Engineering
Present state of nature-oriented river works

Number of nature-oriented river projects (national projects + subsidized projects)


Total

Courtesy: FRIR
International Cooperation for Restoration of Environment against Climate Change

Restoration - key measure of Sustainable Development

JSCE will offer our experience to the colleagues for not to repeat the same failure.
Japanese Civil Engineers’ Slogan of Restoration:

- *The last Tokyo Olympics degraded the Nihonbashi Bridge and the River*
- *The Next Tokyo Olympics restore the Nihonbashi*

- Thank You!