AFDI Lecture Series to Commemorate 30 Years of Partnership between Asian Development Bank and People's Republic of China

Healthy Rivers and Ecosystem Restoration: the Role of ADB

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HEALTHY RIVERS ARE THE FOUNDATION FOR SUSTAINABLE DEVELOPMENT



Vision: 5 Dimension Water Security

- Satisfy household water and sanitation needs in all communities
- Support productive
 economies in agriculture and industry
- 3. Develop vibrant, livable **cities**
- 4. Restore healthy **rivers** and ecosystems
- 5. Build resilient **communities** that can adapt to change.



Healthy Rivers are the Foundation for Sustainable Development



Premier Wen's Comments in 2007: "the pollution of Tai Lake has sounded the alarm for us...the problem has never been tackled at its root."



IWRM is essential: four factors

- Institution: Effective management structure
- Economic: Integrated water and land use planning
- Social: Alternative livelihood to support local community
- Environmental: PES to reflect environmental "externality"



II. RESTORING HEALTHY RIVERS AND ECOSYSTEMS —ADB'S EFFORTS



ADB is not just a bank.

- Increased water use efficiencies across the range of users
- Expanded sanitation and wastewater management
- Embedded IWRM, including improved risk management
- Expanded knowledge and capacity
- Enhanced partnerships with the private sector





Rural Water



Urban Water



Basin Water

ADB's Water Financing Program 2006-2020

- To deliver substantial investment, reform, and capacity development in:
 - o Rural and urban water services
 - o River basin water management

Targets:

- o 500 million with safe drinking water & improved sanitation
- o 96 million people with better irrigation & drainage services
- o 170 million people with reduced flood risks
- Integrated water resources management introduced in 30 river basins in Asia
- Annual investment: \$2 billion-\$2.5 billion in 2011-2020
- Water Operational Plan (2011-2020)

NEPAL: Bagmati River Basin Project

- Approved in 2014
- Objective: Support the Government's efforts in improving water management and river environment in the basin.
- Structure measures: Construct upstream water storage, riverbed oxygenating weirs, riverbank beautification, and community initiatives to improve the river environment in Kathmandu Valley.
- Nonstructural measures: Support the formation of a river basin organization with adequate capacity and decision support systems for IWRM.

Integrated Citarum Water Resources Management Investment Program (2008)

"Most important river basin in Indonesia"

- 15-year, \$1 billion assistance
- Upgrade infrastructure, institutions (IWRM)
- 1,400 MW hydro
- 400,000 hectare irrigation
- Water supply for Jakarta, Bandung

Challenges:

- Water insecurity
- Groundwater depletion
- Water quality (severe)
- Flood risk in upper basin



INDIA/Ganges: Kolkata Envrionemntal Improvement Investment Program

- Multi-Tranche Finance: \$400 million (until 2023)
- Structure measures: Expanded sewerage and drainage network, augmented sewage treatment plants, conducted slum improvement, improved solid waste management capacity.
- Benefit: Additional 128 km additional sewer-drain pipes and connect 83,400 additional households to the S&S network.
- Nonstructural measure: Strengthen Kolkata's climate resilience through improved land use planning and flood risk management.

PRC: Chao Lake Environmental Rehabilitation Project

- Introduce an integrated approach to overcome the issues of point source pollution control, nonpoint source pollution management
- Lake authority capacity building, and strengthening of wastewater services
- Solutions included structural measures such as wastewater treatment and sewer networks
- Solutions included institutional reform and capacity building for IWRM
- Solutions included innovative nonstructural measures such as ecocompensation and nutrient trading to reduce the agricultural nonpoint sources flowing into the lake

Nanjing Qinhuai River Environmental Improvement Project

- Public-private participation: water bond issuing
- WWTPs and collection systems
- River rehabilitation: diversion and water replenishment, wetland parks
- Flood control: stormwater drainage system



Outline of the YREB Master Plan

By 2020,

- Ecological environment: 75% of water bodies achieved class III water quality standard, forest cover rate achieved 43%, and ecocompensation mechanism established.
- Golden waterway: Connectivity and function significantly improved.
- Innovation-based industrial transformation: R&D investment achieved 2.5% of GDP & industries upgraded.
- New type of urbanization: Urbanization rate achieved or exceeded 60%, and absolute poverty eliminated.
- Yangtze River integrated management mechanism: Coordinated, unified, and highly efficient.
- Quality of economic development: Significantly improved.

Proposed Framework for ADB's Assistance

- Period: 2017-2020
- **Budget:** \$2.0 billion
- Financing modality: combination of different modalities, including MFF & RBL, depending on the nature of projects and borrowers' needs
- Geographical areas: 7 provinces and 1 municipality in the middle and upper reaches of the YREB
- Thematic areas:
 - 1. Rehabilitate the ecological environment and mitigate flood risks
 - 2. Strengthen industrial transformation
 - 3. Improve waterways' transport and logistics

Catalytic, Innovative, and Responsive

Integrated Water and Environmental Rehabilitation

Support the Yangtze Water Environmental Fund (FI)

- Pilot Chishui water environmental fund, and Xi'an river ecocompensation fund
- Invest in watershed services, WWTP, and nonpoint source pollution management
- Comprehensive rehabilitation of key lakes, wetlands, and reservoirs in the middle-reach (RBL)
 - o Phase II and Phase III of Chao Lake rehabilitation
 - Integrated lake rehabilitation for Poyang Lake and enhance lake-river connection

Integrated Water and Environmental Rehabilitation

- Integrated Flood Risk Management in the middlereach (RBL)
 - Invest in flash floods (hidden disasters) risk mitigation in small/moderate sub-basins*
 - Invest in slope-stabilization and river trainings for landslides and debris flows control
 - Pilot stand-alone flash flood early warning (not yet covered by national program)

* In July 2016, a total of 77 flash floods caused about 400 human deaths, i.e., more than 50% of the total human casualties and majority of them are from the Yangtze River Basin.

Yangtze River Green Ecological Corridor Project

- Applying a river basin approach to promote ecological protection and watershed restoration
- Addressing nonpoint source pollution, agriculture waste management, water resource management, and support farmer organizations



6 Provinces: Hubei, Hunan, Chongqing, Sichuan, Yunnan, and Guizhou

Key features:

Institutional strengthening

- Watershed-level farmer organization and local authorities
- Interagency cooperation along the Yangtze
- Key agencies: State Office of Agriculture Comprehensive Development, NDRC Rural Economic Division, and the Yangtze River Commission

Comprehensive approaches

- River basin approach to strengthen ecosystem services and quality
- Eco-compensation for nonpoint source pollution reduction
- Improved agriculture systems for rural livelihoods and food safety

III. KEY LESSONS

1. Integrated Land and Water Planning

- Protection: environmental state of the water resources in providing goods and services.
- Balanced Development: social and economic outcomes related to water use, land use or catchment areas
- **Disaster Risk:** human, property or ecological risks of flooding and other disasters.
- Institutional: institutional intent for cooperation, collaboration and stewardship.

2. different rivers, different challenges

- Ganges River
 - difficult to coordinate among the stakeholders
 - aging supply infrastructure
- Yangtze river
 - rapidly growing industrial and urban growth
 - Regional disparity among provinces
- Mekong rivers
 - High demand for hydro-power
 - Urgent need for regional cooperation

3. Environmental Externality Reflected



4. Promoting Wastewater Management, and Investing in the 3Rs

- A lost service and a missed business opportunity
- Establishing tariff schemes
- Opening wastewater management market
- Integrated wastewater management approaches
- Wastewater reuse

5. Delivering on Effective River Basin Management

ADB, with the Network of Asian River Basin Organizations (NARBO) and other partners, support:

- integrated water resources management (IWRM);
- adaptive management approach;
- benchmarking for performance improvement of river basin organizations; and
- greater participation by water users' in river basin management.



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