CHINA

GEF - Hai Basin Integrated Water and Environment Management Project

May 22-25, 2005
Workshop in Poland
Contents

- Hai Basin
- Project design
- Integrated Water and Environment Management (IWEM)
  - Including two technologies, ET and KM involved
Basics of Hai Basin

- One of the largest rivers to Bohai Sea
- Run across 7 provinces with 265 thousand square kilometers
- Population is more than 117 million people
- Account for 15% of China’s GDP
Problems of Hai Basin

- **Water scarcity**
  - 305 m³/capita, 14% of national and 4% of the world average

- **Pollution**
  - 80% of surface water and 50% groundwater

- **Overdraft of ground water**
  - 26 billion m³ per year, 9 billion m³ more than sustainable yield

- **Lack of coordination**
  - Horizontal and vertical
Project Design

- **Main objectives:** improve environment
- **Expected outputs**
  - IWEM/IWEMPs
  - Reduce pollutants loading
  - Real saving water
  - Practical measures to overcome institutional barriers
Project design

- **Components:**
  - IWEM, Knowledge Management (KM), Small City Wastewater Treatment, Project Management Support and Training

- **Key – integration**
  - horizontal and vertical
  - top down and bottom up
  - water quantity and quality
Integrated Water and Environment Management (IWEM)

- **Strategic Studies** – National and basin
- **SAP** (basin and sub-basin) /IWEMPs (counties and municipal/provincial)
  - Water Quantity Management
  - Water Quality Management
- **Demonstration Projects** (16)
SSs, SAPs, IWEM AND IWEMPs

Strategic Studies and continuous support to lower levels

Strategic Action Plans for Hai Basin and Zhangweinan and continuous up and down support and coordination

Municipal/Provincial IWE planning and implementation, and continuous up and down support and coordination

County level IWEM planning, implementation and demonstration projects in Tianjin, Beijing, Hebei & Zhangweinan sub-basin with continuous coordination with upper levels
Water Quantity Management

Precipitation → Evapotranspiration (ET) → RIVER BASIN → Outflow to the Sea

Transfers → Change in Storage

\[ P + T + CS = ET + O \]

Note: Given P and T, we need to manage ET such that CS = 0 and O = objective
Water Quantity Management

- **ET technology – real water saving**
  - Set target ET: based on the water balances with and without project conditions (different precisions)
  - Design and implement plans to meet targets
  - Monitor, evaluate and adjust plans

- **Treated wastewater reuse**
  - Release to downstream to maintain sustainability of water resources
Water Quality Management

- Pollutants loading
  - Identify pollutants loading (quantity and ecological needs) and control it

- Policies:
  - CP, industrial framework, incentives, monitoring, enforcement

- Small cities:
  - Waste water treatment
  - Private sector’s involvement

- Dagu River:
  - Remove the contaminated sediment
Knowledge Management

- Knowledge Management Development
  - Integrated data systems and models
- Remote Sensing and ET Data Systems
  - Remote Sensing and ET Data Center
Hai Basin

Strategic Studies → Knowledge Management
Remote Sensing and ET

Zhangweinan
IWEM/SAP - Plan - Implement
Demonstration

Tianjin
IWEM - Plan - Implement
Small Cities

Hebei Counties
IWEM - Plan - Implement
Demonstration

Beijing Counties
IWEM - Plan - Implement
Demonstration

Quantity of Water
Pollution Loading

Bo Hai Sea
End and thanks!