TRANSBOUNDARY ENVIRONMENTAL SECURITY in the Mekong River Basin

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Non-OECD 2010-2035

- 90% population growth
- 70% GDP growth
- 90% new energy demand
Nine River Basins
1.5 billion people depend on ‘the water tower’
TRANSBOUNDARY PROBLEMS REQUIRE TRANSBOUNDARY SOLUTIONS
High sediment flux from large Asian rivers

- High rainfall
- Heavily weathered under humid (sub)-tropical climate
- Active tectonic activities
- High population density and frequent human activities
- Rapid alteration of land use/land cover

Fig. 15.11  Sediment and solute loads for the world's largest drainage basins. Solute loads represent the estimated denudational component only. Data for the Nelson, Tocantins and São Francisco Basins are not available. (Based primarily on data in M. Meybeck (1976) Hydrological Sciences Bulletin 21, 265–89 and J. D. Milliman and R. H. Meade (1983) Journal of Geology 91, 1–21.)
封山育林区

山洪市2002年天然林保护工程
31.30 vs. 10.00 USD
Integrated Assessment of All Research Components

Future Health of Asian Highlands Linked Climate and Socio-ecological System Functions

New Scientific Assessment of Climate Impacts on Water Resources

Innovative Policy Review and Engagement with Decision Makers to Develop Trans-boundary Capacity

Case Studies Exploring Local Vulnerability and Resilient Adaptations to Change Drivers

Dialogues with Key Stakeholders to Build Social Learning and Expand Understanding of Multiple Viewpoints

Research Components:
- Increased New Information
- Reduced Knowledge Resilience
- Greater Understanding Stakeholders
- Enhanced Capacity to Innovate Policy
WATER + FOOD + ENERGY

NEXUS
CHINA  2010-2020

Water for energy?
Coal   23%—28%

Water for food?
Agriculture  62%---54%

CHOKEPINTS??
WHAT’S MISSING?

ENERGY
Coal+ Hydro+ Nuclear
Water quality
Power plant technology- sub vs. super vs. ?
Demand post- 2020
23 yrs. = US + Japan new energy
WHAT’S MISSING?

FOOD

Water Use Efficiency
Arable Land  135.5  121  121.7  111  
Meat Consumption
Irrigation Systems
OTHER CHOKEPOINTS?
POPULATION

China 2025  120/ 335
(Peng 2011)

Mekong Basin  2025  33/17
(UNESCAP 2009)