

# Application of Valuation in Decision-Making

## Case studies

- Ebro Water Transfer, Spain
- The Catskill Mountains and New York City's Watershed
- Okavango Basin (World Bank and IUCN)
- Tana River, Kenya
- Waza Logone Floodplain, Cameroon
- Paute hydroelectric Scheme, Ecuador
- Barotseland Floodplain, Zambia

# Ebro Water Transfer, Spain

- The Spanish National Hydrological Plan (SNHP) consisted of a water transfer of 1,050 cubic hectometres from the Lower Ebro River in the north of the country for urban and agricultural uses
- Cost-Benefit study that included ecosystem goods and services found the SNHP had net negative benefit of 3.5 billion Euros
- Alternative water provision possible such as desalination, the reuse of waste water and improved use of ground water.
- New government cancelled SNHP and would seek other methods to solve water problems

# The Catskill Mountains and New York City

- Catskills and Delaware watersheds provide NYC with 90% of their drinking water
- Choice between building a water filtration system or protecting watersheds for high quality drinking water
- Economic studies found cost of building and operating a new water filtration system = US\$6-8 billion
- NYC decided to invest in the protection and management of the watershed





# Okavango Delta

- IUCN carried out a cost benefit study for the diamond industry in 1990s which included the Okavango wetlands
- Botswana government wanted to build a pipeline to transfer water
- World Bank evaluated project and refused funding, suggesting alternative water strategies
- Pipeline was never built and water law was rewritten to protect wetlands



# Tana River, Kenya

- Mutonga-Grand Falls Dam proposed downstream of existing hydropower schemes
- Economic analyses did not include environmental impacts and costs of ecosystem degradation
  - End bi-annual flood pattern
  - Lower water table and loss of seasonal water bodies
  - Loss of riverbank sediment depositions
  - Loss of riverine forest and mangroves
- Revised cost-benefit analyses found dam would nearly double existing environmental costs (-\$26 million)
- Investing in dam design to simulate downstream flows could avoid many environmental and economic costs



# Waza Lagone Floodplain, Cameroon

- Construction of irrigated rice scheme in 1979 reduced flooding and had devastating effects on ecology and livelihoods
- Study was carried out to value environmental and socio-economic benefits of flood release and costs of flood loss
- Flood loss incurred livelihood costs of \$50 million over 20 years
- Re-flooding measures to restore 90% of floodplain will cost \$10 million but add \$2.5 million/year to regional economy
- Benefits of restoring flood regimes will cover cost in less than 5 years



# Paute Hydroelectric Scheme, Ecuador

- Invested in a range of upstream catchment management activities to generate water supply and quality benefits
- Model assessed economic and financial returns of investment in forest management as part of hydroelectric scheme
- Benefits ranged between \$15-40 million and included:
  - increased lifespan
  - Increased storage capacity
  - reduced delivery of sediments and soils that would have harmed turbines
- Demonstrated continued upper watershed management is in direct financial interests of power utility

# Barotse Land Floodplain, Zambia

- Estimated that the floodplain and associated wetlands has a direct use value of \$12.25 million/year from fishing, livestock, cropping, plant and animal harvesting
- Including ecosystem values in decision making changed the cost and benefit equation
- Valuation showed wise use and conservation was most economically valuable future management option for the floodplain
  - Yields a Net Present Value of US\$90 million
- Economic benefits generated by land conversion to agriculture were outweighed by economic costs of wetland goods and services lost

# Please share your experiences

## Do you have...

- Examples of valuation studies used or taken up in decision making on water management?
- Examples of impact of economic studies in decision making?