A Multi-disciplinary Approach to Vulnerability Assessment and Transboundary Water Governance: The Case of the Sesan Basin

Professor Geoffrey D. Gooch, Linköpings University, Sweden

Dr. Alistair Rieu-Clarke, UNESCO Centre for Water Law, Policy and Science, University of Dundee, Scotland

Dr Dan Kim Nhung, Vietnam Academy of Science and Technology, Hanoi, Vietnam
Challenges

The challenges facing water managers have significantly increased.

Water management now has to deal with more issues that affect more people than they did in the past i.e. water management involves not only hydro-electric power and farmers, but also industrial interests, nature conservationists and ordinary citizens etc.

Water management has increasingly become concerned with water-related risks and benefits, and whereas water management has traditionally been considered a predominantly technical field in many countries, the increase in scope, and new demands on water management, now make the political character of the field very clear.

These developments from the primarily technical to a combination of technical and political-social spheres has lead to an increased interest in public and stakeholder participation in water management.
Fig. 1. Sesan River between Vietnam and Cambodia
STRIVER
Strategy and methodology for improved IWRM
- An integrated interdisciplinary assessment in four twinning river basins
STRIVER
Strategy and methodology for improved IWRM
- An integrated interdisciplinary assessment in four twinning river basins
IWRM in the twinned Sesan and Tejo/Tagus basins, with focus on Water regimes in transboundary highly regulated rivers

Objectives
To analyse the role of water regimes and institutions in transboundary regulated rivers through Actor-Network Theory and scenario analyses, and to provide recommendations for integrated policy models for improved transboundary water management.
Identify the main actors in the water regimes, and analyse the relationships (multilevel, multi-functionality) between them through an approach in which actors (human and natural), and domestic and transboundary relationships.
Analyse the use and communication of information in transboundary water regimes by institutions (formal and informal), the public, marginalised groups, stakeholders, and political actors.
The Sesan River

One of the largest tributaries of the Mekong River with a drainage area of 17,000 km², (11,000 km² in Vietnam and 6,100 km² in Cambodia).

Origins in the Central Highlands of Vietnam and the southernmost part of Laos

Flows through mountainous areas in Vietnam’s Dak Lak, Gia Lai and Kon Tum Provinces before entering Northeast Cambodia, where it moves into relatively lowland areas.

In Cambodia, the Sesan winds from east to west through Ratanakiri Province and into Stung Treng Province, where it merges with the Srepok River, another large tributary of the Mekong and then flows east into the Se Kong River just before this river entering the Mekong River close to the Stung Treng Town.
Potential Problems

Traditionally people have relied on subsistence agriculture and fishing, developing techniques suited for small-scale water utilization.

The increase in population and modernisation has created a demand for more intensive utilization of the water resources, such as large-scale hydropower production, large-scale irrigation and increased water supply for urban populations.

Small-scale hydro-electric power production is often managed locally, the central authorities that drive large scale water projects. Both forms can create problems, but it is often the large-scale production that has created unforeseen negative impacts for local communities which are still embedded in an older subsistence oriented system.

The intensified use of water for power production is also at odds with the needs of agricultural irrigation.
Administration

Authorities at the national, provincial, and district level; organisation based on a communist administration system with a strong central-state role.

A large number of research institutions and multilateral and bilateral aid programmes working on the Great Mekong Sub-Region (GMS) and the Sesan involve a multitude of actors, both national and international.

National ministries responsible for the management of the Sesan interact in the context of their work on the Mekong and Srepok Rivers.

Cambodia and Vietnam both members of the Mekong River Commission,

An *ad hoc* Sesan River Committee has been established, but no permanent basin commission has yet been established.
Vulnerability

The analysis of transboundary water governance within the Sesan Basin adopts vulnerability as a unifying idea between different disciplines.

UNEP have defined vulnerability as ‘the interface between exposure to the physical threats to human well-being and the capacity of people and communities to cope with those threats’ (UNEP GEO3). Vulnerability should therefore be considered a combination of social and bio-physical processes, as human ability to manage physical threats is of vital importance.
Three vulnerability assessments are considered in the Sesan Basin

- Bio-physical
- Socio-legal-economic
- Stakeholder-based
Bio-physical vulnerability

Land use, land cover and river bank use

Irrigation systems, location and type of dams

Infrastructure (roads, trains, canals, river navigation)

Topography, including river bed profiles; water levels and water flows

Water level fluctuations

Location of protection areas
Socio-economic vulnerability

Population, including ethnic groups

Administrative divisions

Education levels and training programmes

Economy (distribution of wealth and income, employment, policies)

Literacy

Urban-rural divisions

Ownership patterns; activities of civil society (levels of participation)

HEP regulations; environmental flow regulations; drinking water needs and availability

Fishing; recreation and tourism.
Legal analysis

Assessment of the gaps within the existing system

Identification of barriers to the implementation

Measurement of compliance and enforcement.

Added to these two we are also conducting stakeholder-based vulnerability assessment that involves an identification of the main areas of concern through stakeholder group discussions (workshops and interviews), creating ‘mind maps’ of these areas of concern, then comparing the maps of concern to those produced in the other two vulnerability assessments.
Stakeholder Based multi-disciplinary vulnerability assessment

GIS Database and Maps of “hotspots”

Risk Analysis

Ability

Biophysical Identification

Socio-Legal-Economic

Outputs
Scenarios

Four basic scenarios
10-15 year perspective
Identify key variables
Ask key questions for the future
Determine the most probable scenarios
Method

An overview of the areas considered vulnerable according to natural science criteria.

A similar overview of the areas considered vulnerable from a socio-economic, legal and political point of view, including law.

The identification of the main areas of public concern through stakeholder group discussions. The creation of ‘mind maps’ of these areas of concern.

The construction of maps that can be used in GIS systems.

The incorporation of all aspects into a GIS database.

The identification of the basin ‘hot-spots’, that is, the places where there is a high risk (according to the natural science criteria) and a low capability to manage those risks (according to the socio-economic and political criteria).

The use of the knowledge gained in these processes to construct combined qualitative-quantitative scenarios.
HỘI THẢO
"QUẢN LÝ TỔNG HỢP TÀI NGUYN NƯỚC - LƯU VỤC SĕNG SĕSĭ"
Tp. Pleiku 14/12/2006
What next?

Field trip to Cambodia 3-12 April
Next stakeholder meetings in December 2007
Focus groups in December 2007
Interviews
Reports

Thank you for your attention!