Transboundary water management

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International Rivers

- 263 international river basins (214 in 1978)
- Cover 45% of earth’s surface
- 145 countries of which ½ have 80% of territory
  2/3 have 50% of territory in IRB
- 145 international treaties since 1814 established to deal with some non-navigational use aspect
- 1997 culminate in UN Convention on Non-Navigational Uses of Internationally Shared Watercourses
States’ surface within 263 transboundary basins

- 145 states include territory within transboundary basins
- 21 states lie entirely within a transboundary basin
- 12 states have more than 95% of their territory within one or more transboundary basin(s)
Number of states sharing transboundary basin(s)

- 1/3 of the total 263 are shared by 2 or more States
- 19 are shared by 5 or more States
  - 13 are shared by 5-8 States
  - 5 are shared by 9-11 States
10 Nile Basin Countries

Burundi
Egypt
Eritrea
Ethiopia
Kenya
Rwanda
Sudan
Tanzania
Uganda
Number of states sharing MENA river basins

- Nile basin: 10 riparian states
- Jordan basin: 5 riparian states
- Tigris-Euphrates: 3 riparian states
Danube 2009
shared by 18 States
Conflicts??

“The next war in the Middle East will be fought over water, not politics.”

*Boutros Boutros Ghali, former UN Secretary General in 1985*

"The wars of the next century will be about water."

*Ismail Serageldin, former vice president of the World Bank in 1999*

“Fierce competition for fresh water may well become a source of conflict and wars in the future.”

*Kofi Annan, former U.N. Secretary-General in 2001*
First War on Water

- The only war on water!!
- Between *Umma* en *Lagash* in *Sumer* (*Babilonia*)
- 4500 years ago
UN Convention (1997) for non-navigational uses of int. water courses

- Involves both surface and groundwater
- Based on two significant documents:
  - 1961 Salzburg Resolution: ‘use of international maritime waters’
  - 1966 Helsinki Rules: ‘reasonable and equitable share in the beneficial use of the waters of an international drainage basin’
- Downstream state may have to change use profile if upstream may harm it but it is inefficient
UN Convention (1997)

Article 4: all riparian states right to participate

Article 5: ‘equitable and reasonable use’

Article 7: do no significant harm

Article 8: cooperate on basis of ‘sovereign equality, territorial integrity, mutual benefits, good faith

Article 9: regular exchange of information and data

Article 11: give information on any planned activity that may do harm
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UN Convention (1997)

Article 12: prior notification of such a planned event

Article 20-23: environmental concerns

Article 33: dispute resolution procedures: ‘peacefully’, endorse arbitration and mediation, create fact-finding mission
Basis for International Cooperation?

- Some feel it reflects an emerging ‘international norm’
- Others feel that it, at minimum, describes overlapping interests that will form the basis for future cooperation
- UNGA vote: 103 For, 3 Opposed (Burundi, China, Turkey), 27 Abstain (Among which: France, Egypt, Ethiopia, Pakistan, India)
- By 2009: 22 states ratified (needed only 35 to come into force)
UN Convention (1997)

NOT YET IN FORCE AFTER 27 YEARS OF NEGOTIATION
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Basin Specific Accords

- 1874-1996: 150 accords on 52 rivers
- 111 agreements since 1980 alone
- 1957-66 (up to Helsinki): 38
  1967-76: 19
  1977-86: 7
  1987-96: 7
International rivers: Some statistics

- Participation: 88% bilateral
- Substantive issues: hydropower 39%; water supply 37%; pollution 4%
- Issue Linkages: 43% involve non-water issues (but 2/3 of this is about money); only 4% mention land
- Monitoring, Enforcement and Dispute Resolution: 66% mention information sharing; 54% monitoring; 80% have no enforcement mechanisms at all; 54% have no conflict resolution mechanism
Water conflict vs. cooperation

- Numerous agreements/statements/conventions in place and in the making
- Despite such cooperative models: the more powerful actors unilaterally determine ways the resource is allocated/used/managed
Cooperation opportunities

- Equitable sharing of water from a common source
- Sharing data & expertise for flood forecasting
- Watershed management, soil & water conservation
- Institutional linkages between individuals and groups
- Hydro-power generation
- Flood management
- Navigation systems
- Environmental flows
- Reduce water losses
- Cross-border pollution management
- River training works
Scarcity

Water becomes increasingly more scarce

Importance of clean water increases

Change on conflicts due to water scarcity increases
Size of conflicts

Conflicts

- Within states (Gemenc, Dongting Lake)
- Between states (Gabcikovo, Jordan, Rio Grande)
Sorts of conflict

- Both within and between states:
  - Bilateral
  - Multilateral
  - Focused on one location
  - In a catchment area
  - Incidents
  - Strategic
Conflict resolution: practical steps

- Define problem rather than propose solutions
- Focus on interests
- Identify various alternatives
- Separate generation of alternatives from their evaluation
- Document agreements to reduce risk of later misunderstanding
- Create process by which agreements can be revised
- Use the process to create agreement
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Conflict resolution: practical steps

- Create commitment to implementation by stakeholders
- Reach agreement over joint monitoring of water quality and quantity
Possible causes for conflicts

- State boundaries and catchment areas do not match
- Increase in water scarcity
- Pollution/water quality
- Water (ab)use
- “Big engineering” projects
- Too little and conflicting laws
- Culture on water
- Access to water/distribution of water
- Information and communication lack
Water conflicts

Deal with:

- Water distribution
- Culture
- Economics
- Minorities
- ....
Water conflicts

In short:

Water conflicts deal with:

More interests than “just” water!!
Danube 2009
shared by 18 States

Minorities problem
Water conflicts

To solve the problem: look from a broader perspective

- Who are the stakeholders to the conflict?
- What are their (other) interests?

In short: To solve the problem you may want to...
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...enlarge the pie...
Enlarging the pie

• Water quantity
• Water quality
• Other aspects that may help solve the conflict

Also:

• Use a combination of different methods/disciplines
• Involve the policy of other Ministries/Organizations
Enlarging the pie

- Negotiate your interests instead of your position
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Conflict indicators

Causes
- Dams and Reservoirs
- Water extraction
- Pollution
- Floods

Cooperation

International river basin

Conflict

Indicators
- Water availability
  - Absolute
  - Relative
- Power balance
- Domestic stability, Regime type
  - Democratic
  - Authoritarian
- Economic Interdep.
- Ideological disparity
- Demographic pressure
- Imports
- Exports
- Ethnicity
- Religion
- Culture
- Birth rates
- Migration
Conflicts

Are difficult to solve:

- Economic
- Political
- Cultural
- Religious

Differences

Hardly “water quality” in treaties
Scale according to Le Huu Ti

Potential Conflict Intensity

Harmony
Institutional mechanism
Informal mechanism
Tension
Diplomatic action
Open dispute
Armed Conflict
War

Prevention
Resolution
Scale according to Le Huu Ti

Difference in opinion on how to use a scare good (water)

- May lead to a conflict
- Within and between states
- You can measure the scale by using the scale according to Ti
- Many ways to come to a solution: fight etc.
- But also: mediation/politics

- Politics: Policy analysis
- Mediation
Trends

- Water higher on the international agenda
- Water scarcity increases (related to water quality!)
- 21st century: more conflicts expected on water
- Sufficient and enough clean water is a human right
- Water pricing?
- Public participation for a sustainable solution
- Water distribution: equitable and reasonable
River basins
Power Asymmetries

4 Pillars of Power

Geography  Material Balance  Bargaining Power  Ideational Power

Zeitoun and Warner, 2006
MENA region: 3 major transboundary river basins

NILE BASIN
10 riparian states

JORDAN BASIN
5 riparian states

TIGRIS-EUPHRATES BASIN
3 riparian states

COMPLEX HYDROLOGY
COMPLEX [HYDRO] POLITICS
MENA basins
Hydropolitics vs. IWRM (1)

Present

- Strong power asymmetries
- Asymmetric water control, distribution and allocation
- Political conflicts / volatility
- Militarization / Securitization of water resources
- “Resource capture” strategies
- Knowledge, information and institutional (wide) gap
- Politicization of science, models and decision support tools
MENA basins
Hydropolitics vs. IWRM (2)

Not Present

- Basin-wide water negotiations and agreements
- Inter-riparian confidence and dialogue
- Comprehensive transboundary water cooperation
- IWRM and allocation
- Integration and harmonization of knowledge and information
- Information sharing and exchange across borders
- Basin wide decision making
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Rhine basin

9 Countries involved
Rhine river basin
Power Asymmetries

- Geography
- Material Balance
- Bargaining Power
- Ideational Power

Switzerland
Rhine river basin
Power Asymmetries

The Netherlands

Geography

Material Balance

Bargaining Power

Ideational Power
Institutional arrangements

- **Central Government**
  - Ministry of Water
  - Other ministries

- **Decentralised Organisation**
  - River basin organisation
  - Other regional authorities

- **Functions**
  - Water resources management functions
  - Environmental, land and infrastructure management functions

- **Output**
  - Status of water resources
River Basin Organization

• Can act as
  – Regulatory body for the functions they have been given responsibility for
  – Strong stakeholder for other functions
Discussion

• Make a chart of the Power Asymmetrics in
  – Mekong basin
  – Jordan basin
  – Tigris-Euphrates basin

• What type of RBO is needed to solve IRWM-problems (in a river or aquifer)
  – Mandate
  – Composition
  – What first tasks are given to the International RBO
Case study 1: South Africa Development Community (SADC)
SADC shared vision

The SADC vision is one of a common future, within a regional community that will ensure economic well-being, improvement of the standards of living and quality of life, freedom and social justice; peace and security for the peoples of Southern Africa.

Angola  Botswana  DRC  Lesotho  Madagascar  Malawi  Mauritius  Mozambique  Namibia  Seychelles  South Africa  Swaziland  Tanzania  Zambia  Zimbabwe
SADC Water Treaties

- 16 agreements on 13 shared watercourses
- 9 negotiated by current member states
- These 9 fall into 3 broad categories
  - General Watercourse Commissions
  - Single watercourse focused
  - Specific watercourse projects
Dispute Resolution Mechanisms

**SADC Tribunal:**

“A Tribunal shall be constituted to ensure adherence to and to ensure the proper interpretation of the provisions of this Treaty and subsidiary instruments and to adjudicate upon such disputes as may be referred to it. Decisions of this Tribunal shall be final and binding”
Revised Protocol on Shared Watercourses

Inter alia:

2b: advance the sustainable, equitable and reasonable utilization of the shared watercourses

2c: promote coordinated and integrated environmentally sound development and management of shared watercourses
Revised Protocol on Shared Watercourses

Article 4: Specific Provisions

1. Planned measures:
   a. information
   b. notification
   g.(ii) The consultations and negotiations shall be conducted on the basis that each State must in good faith pay reasonable regard to the rights and legitimate interests of other States
Revised Protocol on Shared Watercourses

Article 4: Specific Provisions (cont-d)

2. Environmental protection and preservation:
   a. Ecosystems
   b. Pollution
   c. Alien species
   d. Aquatic environment

3. Management:
   a. Flow
   b. Construction of regulation works
   c. Installation
Article 4: Specific Provisions (cont-d)

4. Prevention and mitigation of harmful conditions: (a) natural or human causes; (b) waste management

7 Settlement of Disputes:
7.1 strive to resolve disputes amicably
7.2 disputes not settled amicably shall be referred to Tribunal
7.3 SADC versus a member State can ask for ‘an advisory Opinion’
Case Study 2: Nile River
The Nile River – Characteristics & Potentials

- Longest River in the World, 6700km
- Basin Area: 3 million sq.km, 10% of Africa
- Ten Basin countries:
  - Population of over 300 million
  - 160 million in the basin
- Rich natural and environmental assets
- Rich historical heritage
The Nile River – Challenges

- Wide spread poverty: Many are among the poorest countries
- History of instability
- Rapid population growth: to double in 25 years
- Environmental degradation
- Climatic variability
- Scarce water resources
The Nile River – Opportunities

- Significant opportunities for win-win gains & socio-economic development
- Food production
- Energy availability
- Environmental conservation
- Transportation
- Industrial development
- Trade
- Peace \rightarrow Regional Integration
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Nile Cooperation

**Multi Track Strategy:**

- Development Focus
  - Shared vision and investment programs
- Development of legal and permanent institutional framework
  - Cooperative Framework
- Cooperation with international community
  - Partnership, discourse, collaborate
The Nile Basin Initiative

- Launched by NBI countries in 1999
- Key countries included for the first time
- Governed by the Council of Ministers of Water Affairs of the Nile Basin
- Secretariat: Entebbe, Uganda
Shared Vision Programs

- Thematic projects
  - Nile Transboundary Environmental Action
  - Nile Basin Regional Power Trade
  - Efficient Water Use for Agricultural Production
  - Water Resources Planning and Management

- Facilitative
  - Confidence Building & Stakeholder Involvement
  - Applied Training
  - Socio-economic Development & Benefit Sharing
The Shared Vision

“To achieve sustainable socio-economic development through equitable utilization of, and benefit from, the common Nile Basin water resources”
**Strategic Action Program for the Nile Basin**

- **SVP:** Create an **enabling environment** for cooperative investments and action on the ground, within a basin-wide framework.

- **SAP:** **Promote Shared Vision** through a limited, but effective, set of sub-regional investment projects.
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Drivers for transboundary water cooperation

Prof. Jan Leentvaar, UNW-DPC
Case study:
Cooperation along river Rhine
Countries involved
Rhine at German-Dutch border
Development of cooperation (I)

- 1815 Central Commission for Navigation of the Rhine (CCR)
- Before 1950: shipping and salmon fishing
- But increasing pollution
- 1950/1963: ICPR
- 1976: Chemicals Convention and Chlorides Convention
- 1986: Sandoz disaster
Central Commission for Navigation of the Rhine

- 1815 Congress of Vienna
- 1868 Mannheim Act (Rhine Navigation Act)
- Freedom of Navigation
- Uniform legal navigation regime along the Rhine
- Netherlands, Belgium, Germany, France, Switzerland
- Unanimous decisions needed
- Decisions are legally binding
CCR - Rhine as shipping lane
Number of Salmon in river Rhine

![Graph showing the number of salmon in the River Rhine from 1860 to 1960. The graph indicates a significant decrease in salmon numbers over the period, with a peak around 1900 and a sharp decline thereafter.](image-url)
History of the Rhine Committee

• 1950: Diplomatic notes on Rhine cooperation
• 1963: “Bern Treaty” : ICPR
• 1976: “EU” contracting party in Bern Convention
• 1976: “Chemical Treaty”
• 1976: “Chloride Treaty”
### Rhine - Lobith

**Years**
- 52
- 62
- 72
- 82
- 92

**Oxygen mg/l**
- Yearly minimum
- Yearly average

The graph illustrates the yearly minimum and average oxygen levels in mg/l over the years 1952 to 1992 in the Rhine at Lobith.
1986: Fire at Sandoz (Basel-CH)

- Fire in a chemical storage facility
- 15,000 l of water for firefighting were discharged in the river
  - 20 tons of mercury and pesticides
- Nearly all fishes, especially eels died
- Drinking water facilities were shut down for 18 days
- Ca. € 90 million damages
Development of cooperation (II)

• 1987: Rhine Action Plan: „Salmon back into the Rhine“
• 1993: Floods
• 1998: Action Plan Flood Protection
• 1999: New Rhine Treaty
• 2000: EU Water Framework Directive
Rhine Alarm system
Rhine flood of 1995
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Rhine flood of 1995
Rhine flood action plan

- Targets
  - reduce damage risks
    - 2005: 10%, target: 25% (2020)
  - reduce high-water levels
    - 2005: 30%, target: 70% (2020)
  - increase flood awareness
    - e.g. via flood risk maps, Rhine flood atlas
  - improve flood forecasting system
- First evaluation report
  - it is difficult to achieve the targets
  - new EC flood directive has to be taken into account
Cooperation

- Data exchange
- Standard procedures
- Joint monitoring
- Joint reporting
- Permanent technical secretariat

» Very slow progress!!
Basis of cooperation in ICPR

- Confidence building
- Scientific co-operation between gov. institutions
- Participation of science AND policy-makers in Working groups
- Always the same representatives in Working groups
- Limit the number of persons in a meeting
- Create specialist sub-groups
Is the Rhine cooperation a success?

- The water quality has improved drastically

But .........
But other factors...

- Technological developments
- Structure industry
- National legislation
- Environmental awareness
- Public pressure
- EU Directives
- North Sea co-operation
And...

- Cooperation not always smooth
- Implementation of some plans difficult
- Potassium mines paid for reducing pollution: conflicts with polluter pays principle!
- Political will triggered by accidents
Conclusion

- Confidence building
- Exchange of data is first step
- Cooperation between scientific institutes
- Political commitment/will
- Cooperation between states
- Accidents and disasters boost cooperation
- Public participation in needed
Thank you!!