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Thank you.



Managing river boundaries

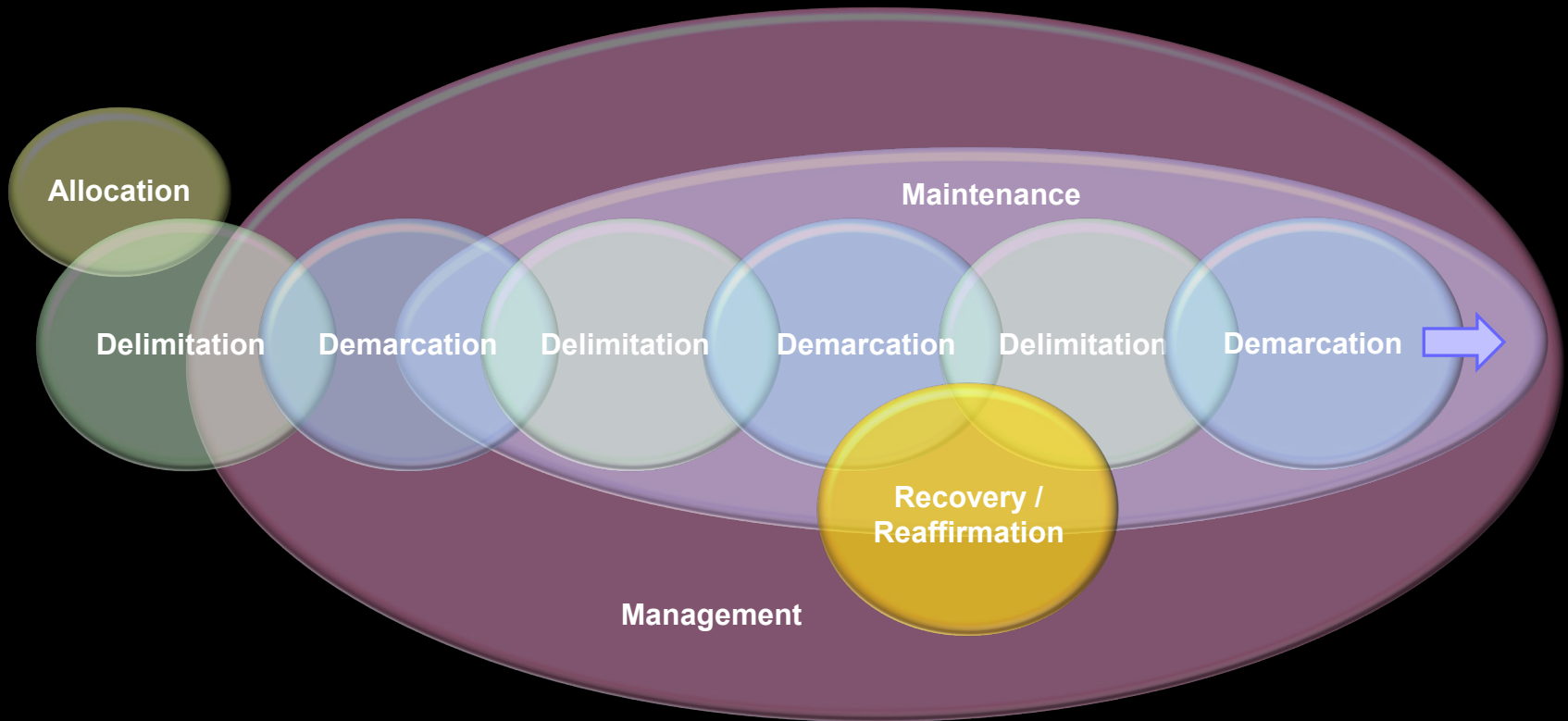


Martin Pratt

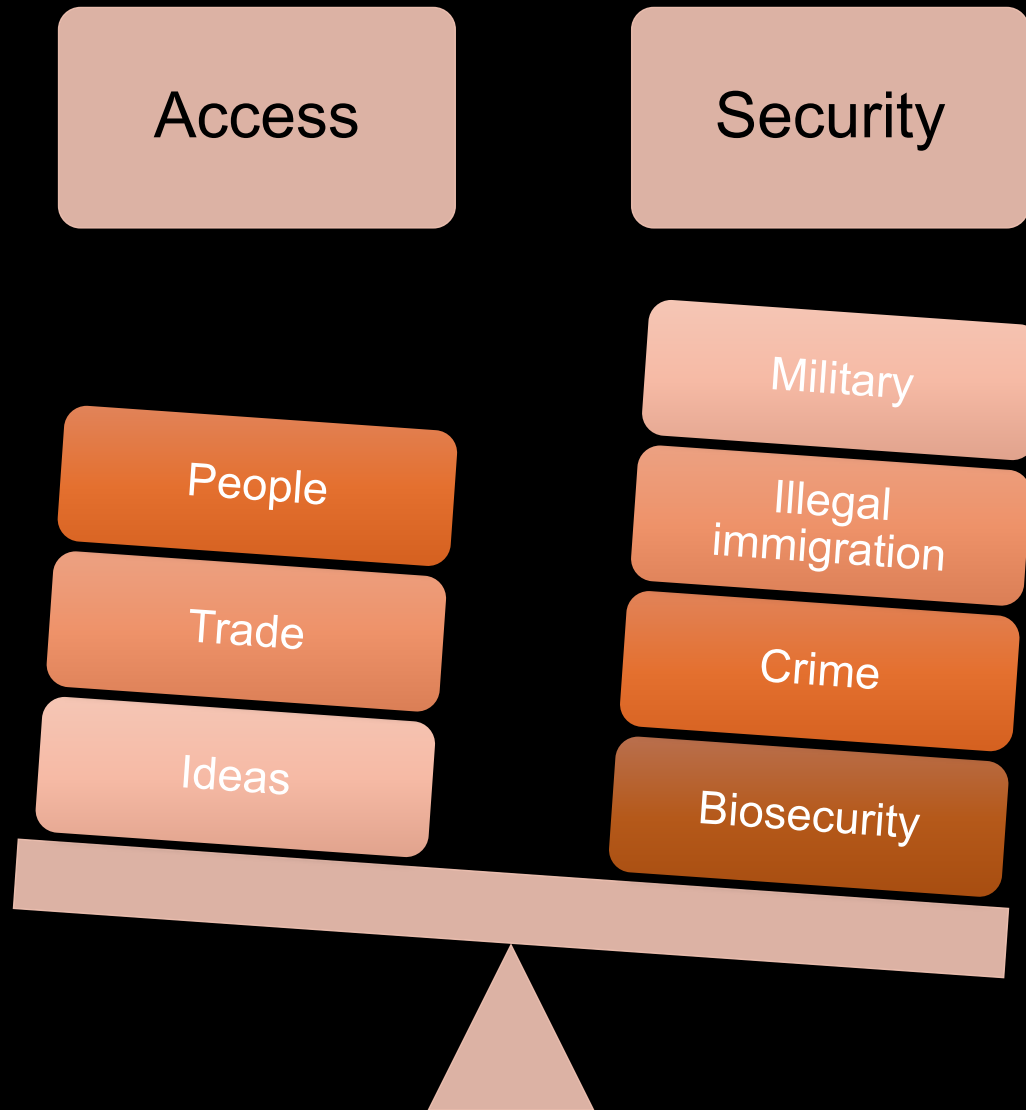
bordermap consulting

Geographical intelligence for international
boundary-making and dispute resolution

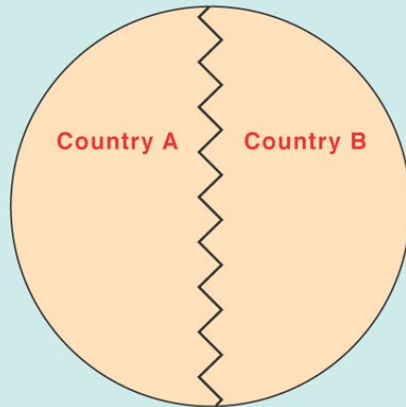
Developing the boundary-making model



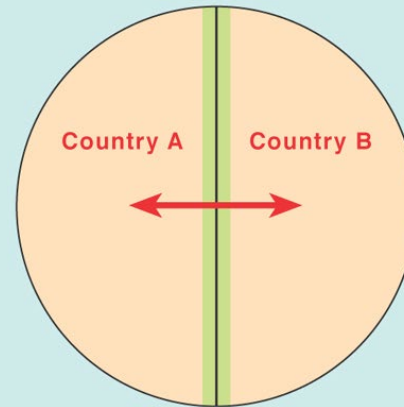
The key challenge of border management?



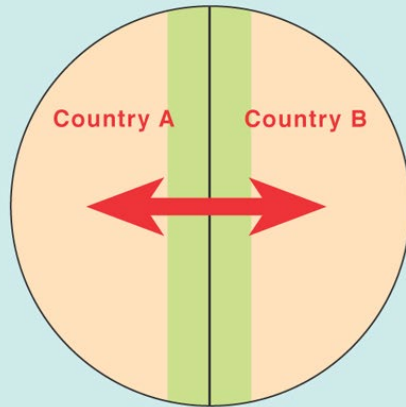
Martinez's model of borderland development



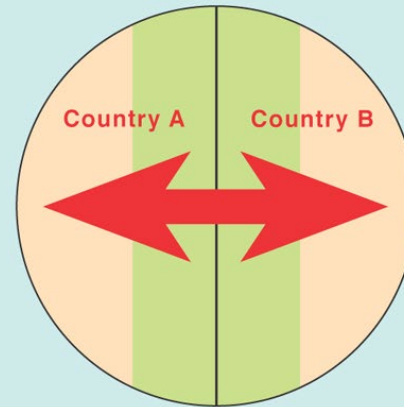
ALIENATED BORDERLANDS



CO-EXISTENT BORDERLANDS



INTERDEPENDENT BORDERLANDS



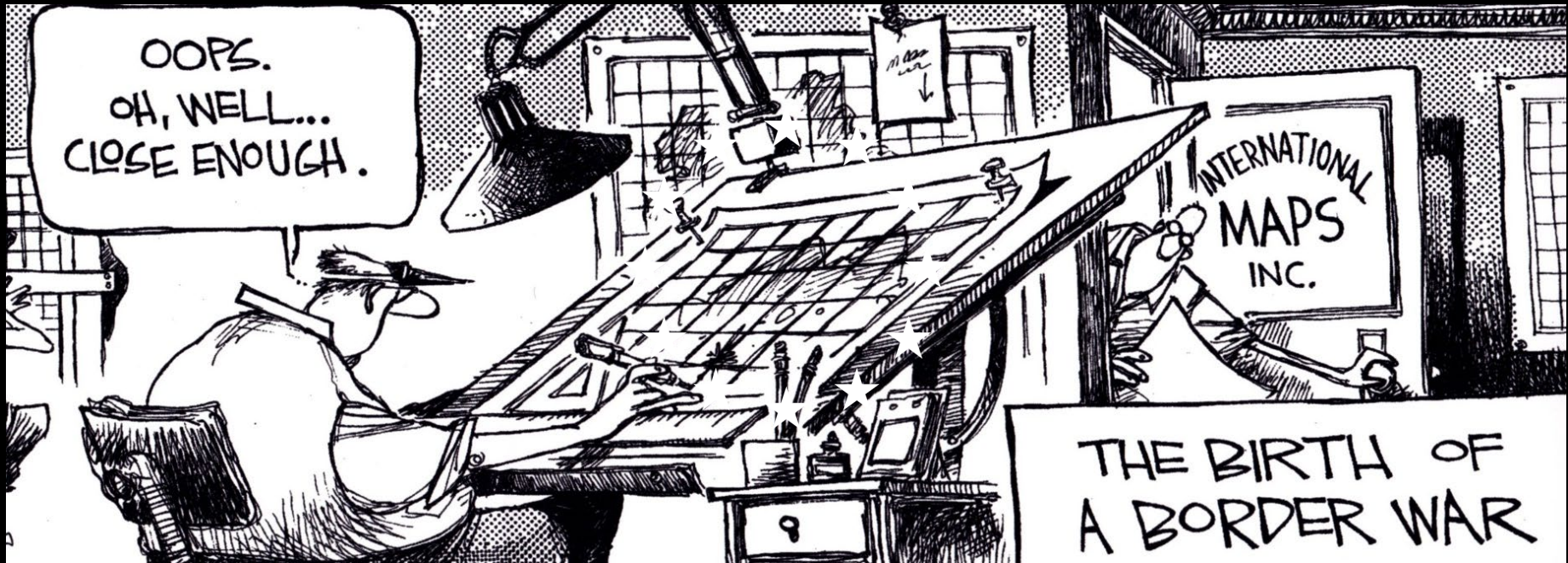
INTEGRATED BORDERLANDS

(after O.J. Martinez, 1994)

Key strategic questions in boundary-making and border management

- What are the physical and human landscapes through which the boundary runs?
- How difficult/expensive will it be to demarcate / maintain the boundary?
- How open do you want the border to be?
- How difficult / expensive will it be to regulate the border?
- What resource and environmental management challenges exist along the boundary?
- What political, legal and/or economic obstacles undermine prospects for effective cross-border cooperation?
- **Answers to these questions may vary along the course of the boundary**

The need for geographic expertise in boundary-making and border management



The need for geographic expertise in boundary-making and border management

- Good boundaries require an understanding of / sensitivity to both the physical and human landscape of the border area.
- Boundary delimitation and demarcation require technical skills relating to positioning and mapping.
- Boundary dispute resolution invariably involves the analysis and interpretation of complex geographic information.
- Effective border management requires the organisation (and ideally the exchange) of a wide range of spatial data.

Challenges in river boundary and international river utilisation and management

Navigational uses

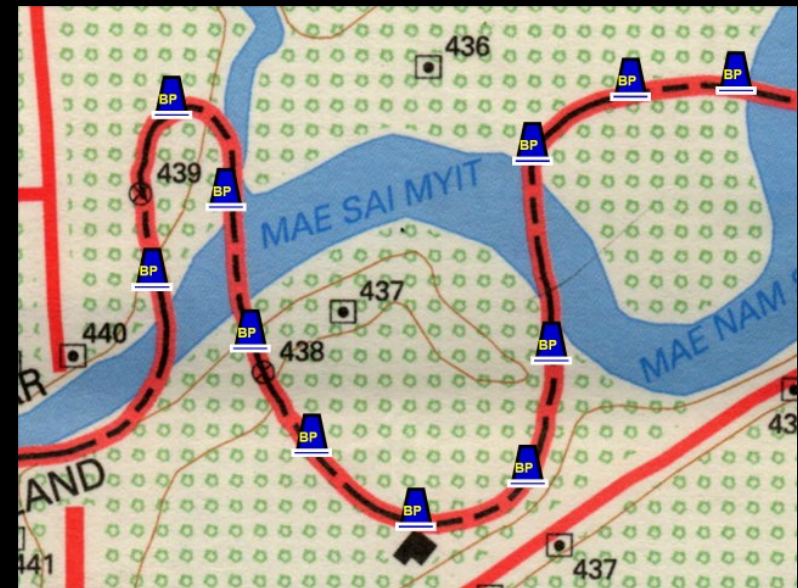
- Travel
- Commerce
- Recreation

Non-navigational uses

- Domestic use
- Fishing
- Minerals
- Irrigation
- Hydropower
- Industry
- Flood control

Demarcation of river boundaries

- Is demarcation necessary at all?
- Does it need to be mentioned in delimitation agreement?
- Method of demarcation
 - Monuments in the river
 - Witness markers
 - Signs for borderland inhabitants
- Demarcation of old river channel



River boundary maintenance?

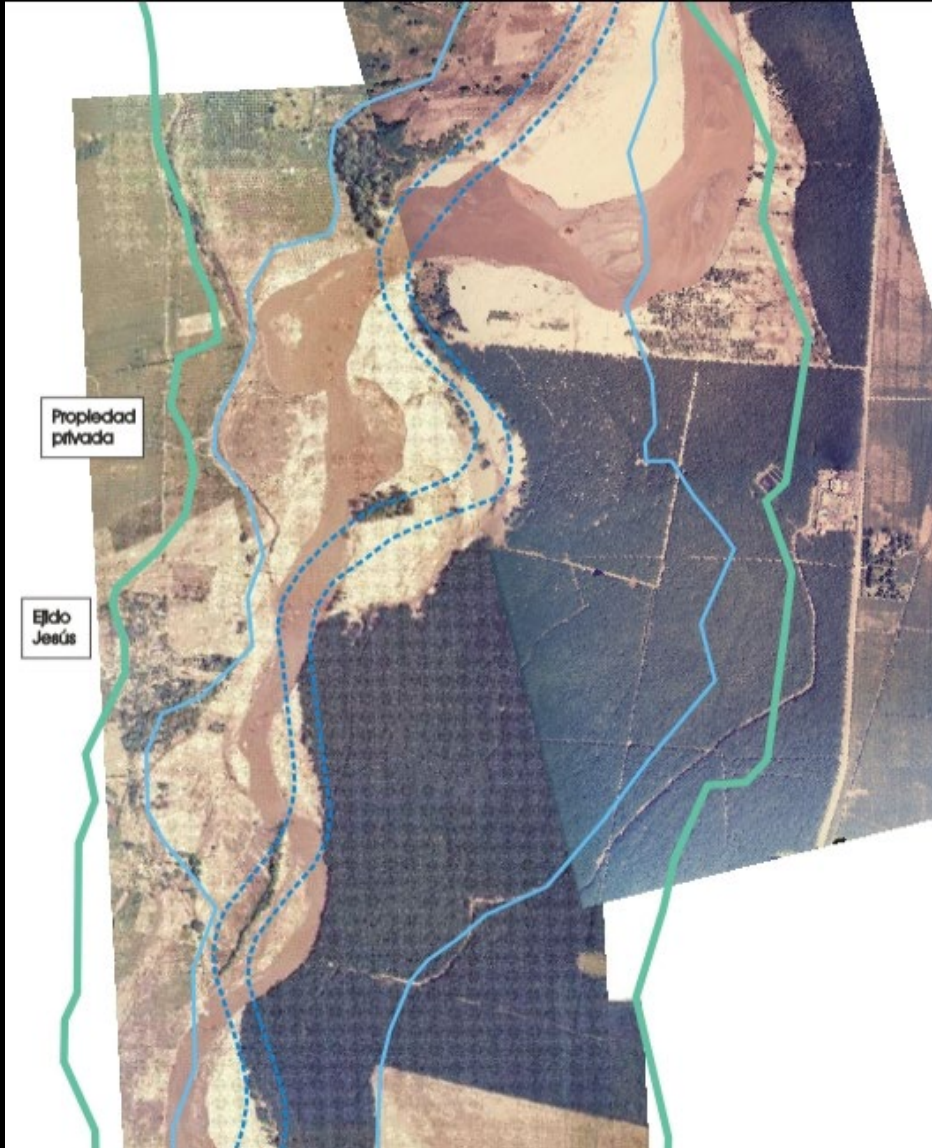
Guatemala-Mexico (Suchiate River)



Images courtesy of Alejandro Reyes Huerta

River boundary maintenance?

Guatemala-Mexico (Suchiate River)



Images courtesy of Alejandro Reyes Huerta

River boundary management in treaties

Mozambique (Portugal)-Tanzania (UK), 1937

4. Freedom of navigation in the River Rovuma, without distinction of nationality, shall be maintained in accordance with the treaties and conventions in force.

5. In order to supply their needs the inhabitants of both banks shall have the right over the whole breadth of the river to draw water, to fish and to remove saliferous sand for the purpose of extracting salt therefrom.

6. The local authorities shall conclude whatever agreements may be necessary in order that the inhabitants on both banks may be granted such facilities as are possible with regard to hunting, fishing and the collection of salt in the neighbourhood of the river, without prejudice to the existing sovereign rights and in such measure as may, in the circumstances, be permissible without inconvenience to the two Administrations concerned.

International boundary commissions around the world

91 commissions identified:

- 72 joint commissions
- 19 national commissions

Probably only a fraction of the real number

Functions:

- Boundary definition/maintenance
- Transboundary energy resource management
- Transboundary water management
- Security/access management
- Ecosystem/environmental management
- General transborder development/cooperation



Transboundary water management – commission structures

- 1) Project-specific commissions – established for a specific project (hydroelectric, irrigation etc.)
- 2) Bilateral commissions – usually established for specific watercourses or all shared watercourses between two states
- 3) Multilateral commissions – usually established around a specific river or lake basin

Transboundary water management

1) Project specific commissions

- Commissions established to manage specific transboundary water projects (e.g. hydro-electric plants, canal diversions, reservoirs, irrigation projects)
- Representatives from both states, usually including hydrologists/engineers
 - Argentina-Uruguay (Salto-Grande Dam)
 - Kazakhstan-Kyrgyzstan (Chu Talas hydro-projects)
 - Zambia-Zimbabwe (Zambezi River Authority – Kariba Dam)
- Manage technical issues dealing directly with the projects:
 - Production and allocation of electricity
 - Infrastructure maintenance
 - Flood control/research
 - Water allocation and release



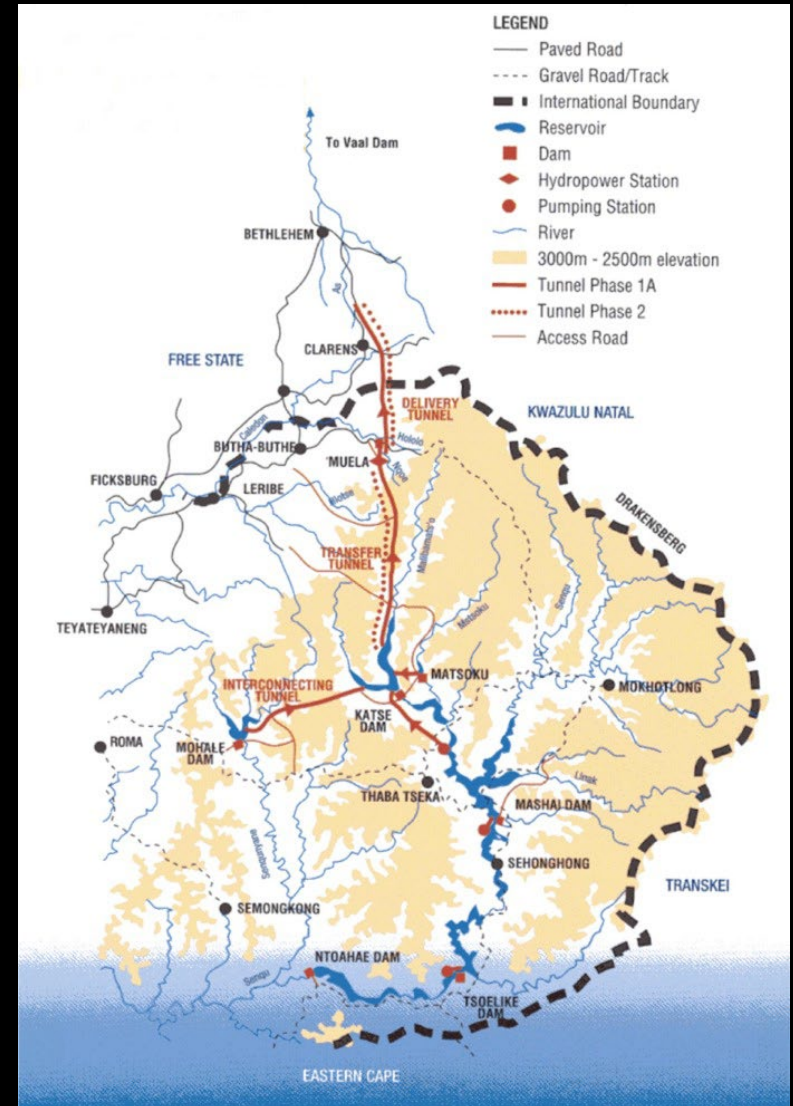
Joint secretariat of the Kazakhstan-Kyrgyzstan commission on Chu river.
Source: www.chutalas.org



Orto-Tokoyskoye seasonal storage water reservoir on the Chu River.
Source: www.chutalas.org

Lesotho-South Africa: Lesotho Highlands Water Project

- 1986 Lesotho Highlands Water treaty
- Context: Lesotho required domestic electricity supply, South Africa required water supply for urban growth
- Katse and Mohale dams
 - Supplies fresh water to Vaal reservoir in South Africa via the Trans-Caledon tunnel and the Aa river
 - Generates electricity for Lesotho



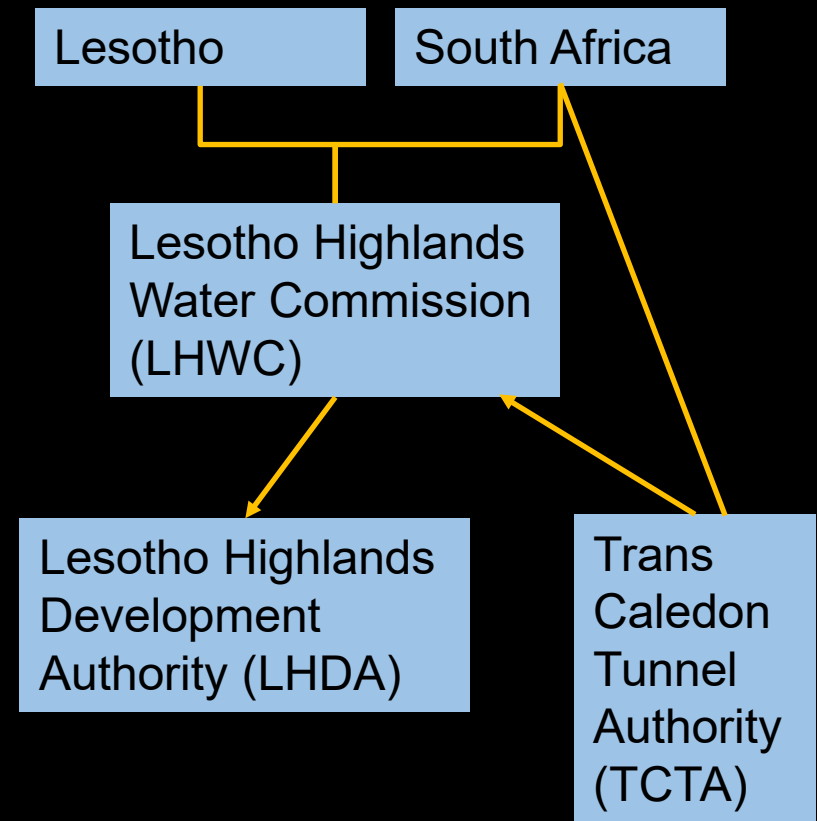
Lesotho-South Africa: Lesotho Highlands Water Project

Lesotho: responsible for all aspects of electricity generation

South Africa: responsible for all aspects of water diversion (TCTA)

Lesotho Highlands Water Commission

- Joint body (3 members from each side)
- Oversees construction projects
- Allocates financing
- Approves budget/work of LHDA
- LHDA (autonomous statute)
- Maintains primary infrastructure (dams, tunnels, generators)
- Manages secondary effects – resettlement, compensation fisheries, water quality, irrigation and tourism

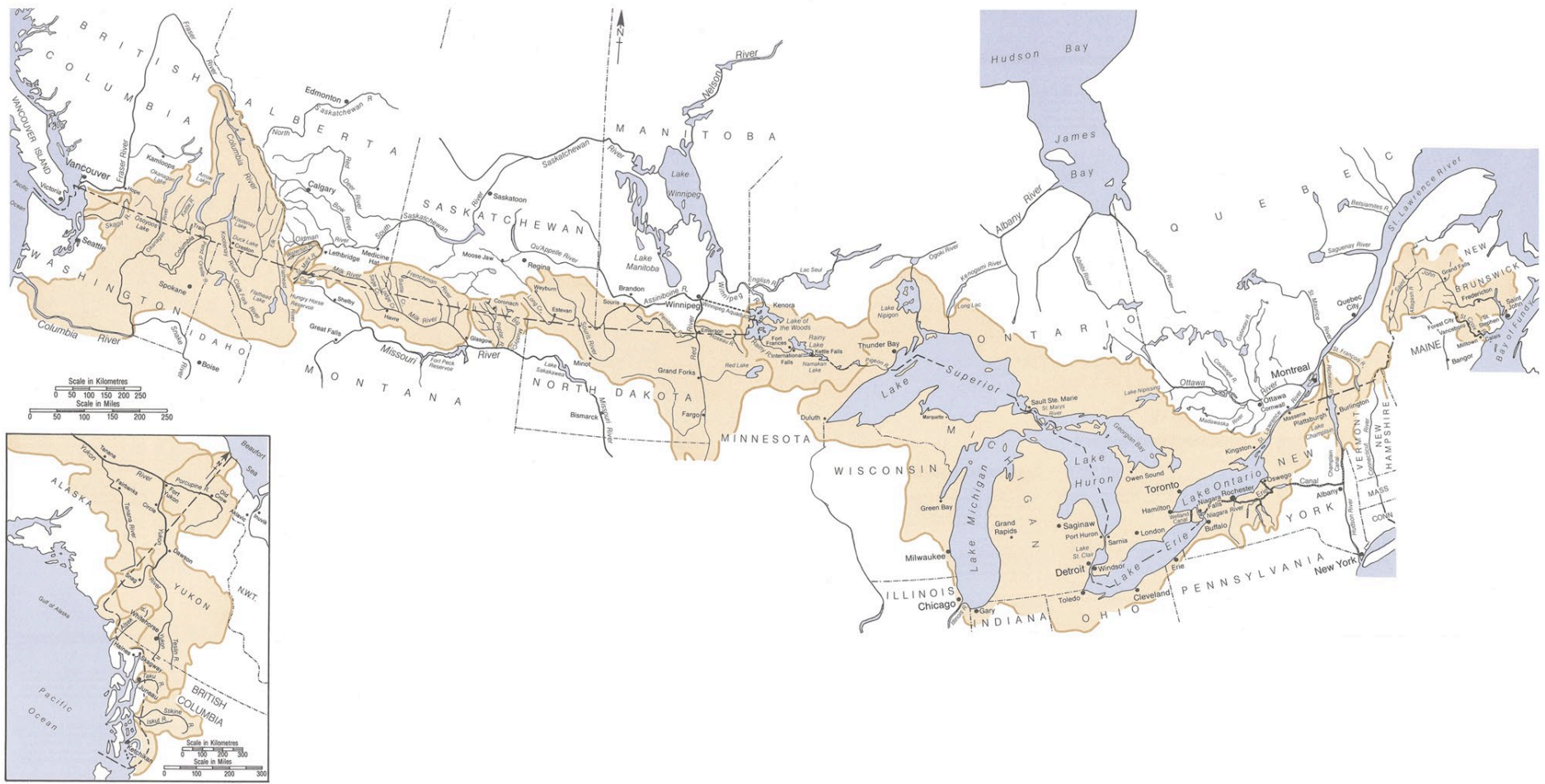


Transboundary water management

2) Bilateral commissions

- Joint river/water commissions set up to address a variety of transboundary water issues
 - Navigation
 - Monitoring pollution
 - Coordinating scientific research
 - Approving projects affecting boundary watercourses (e.g. dams, diversions, bridges etc.)
 - Regulating fishing on the boundary watercourse
- Examples
 - Canada-USA International Joint Commission (IJC)
 - Angola-Namibia Permanent Joint Technical Commission for the Cunene River
 - Bangladesh-India Joint Rivers Commission (JRC)

Canada-USA International Joint Commission (IJC)



Canada-USA International Joint Commission (IJC)

- Autonomous international organization established by treaty in 1909 “to help prevent and resolve disputes relating to the use and quality of boundary waters”
- Approves water projects along shared water bodies (e.g. dams, irrigation projects) submitted by the national or local authorities
- IJC can investigate and monitor pollution levels in transboundary water bodies, if requested
- In 1991 the IJC was authorised to monitor trans boundary air pollution and report every two years
- IJC is not responsible for boundary identification within water courses
- Composed of 6 members, 3 from each side
- *www.ijc.org*

Mexico/USA International Boundary and Water Commission

Created in 1889 as the International Boundary Commission (IBC) to apply the existing boundary treaties (demarcation)

1906 Convention: IBC becomes responsible for water distribution along a portion of the Rio Grande

1933 Convention: Rio Grande rectification project

1944 'Water Treaty': provided for water distribution along the Colorado, Tijuana rivers and Rio Grande; the IBC was changed to the International Boundary and Water Commission (IBWC)

1963 Chamizal settlement: relocated river channel and identified the boundary

Today: IBWC remains responsible for boundary maintenance, water distribution and water quality management

Led by two appointed 'engineer-commissioners' who meet weekly



Bangladesh-India Joint River Commission

- 4,000+ km boundary; numerous short river segments and cross-border rivers
- The JRC works to maximise the benefits of water usage for both states, cooperates on flood control initiatives, and examines the equitable use of water for irrigation.
- Established in 1972; currently includes one chairperson and three members (two of whom are engineers)
- 1996 Ganges Water Sharing Agreement



Transboundary water management

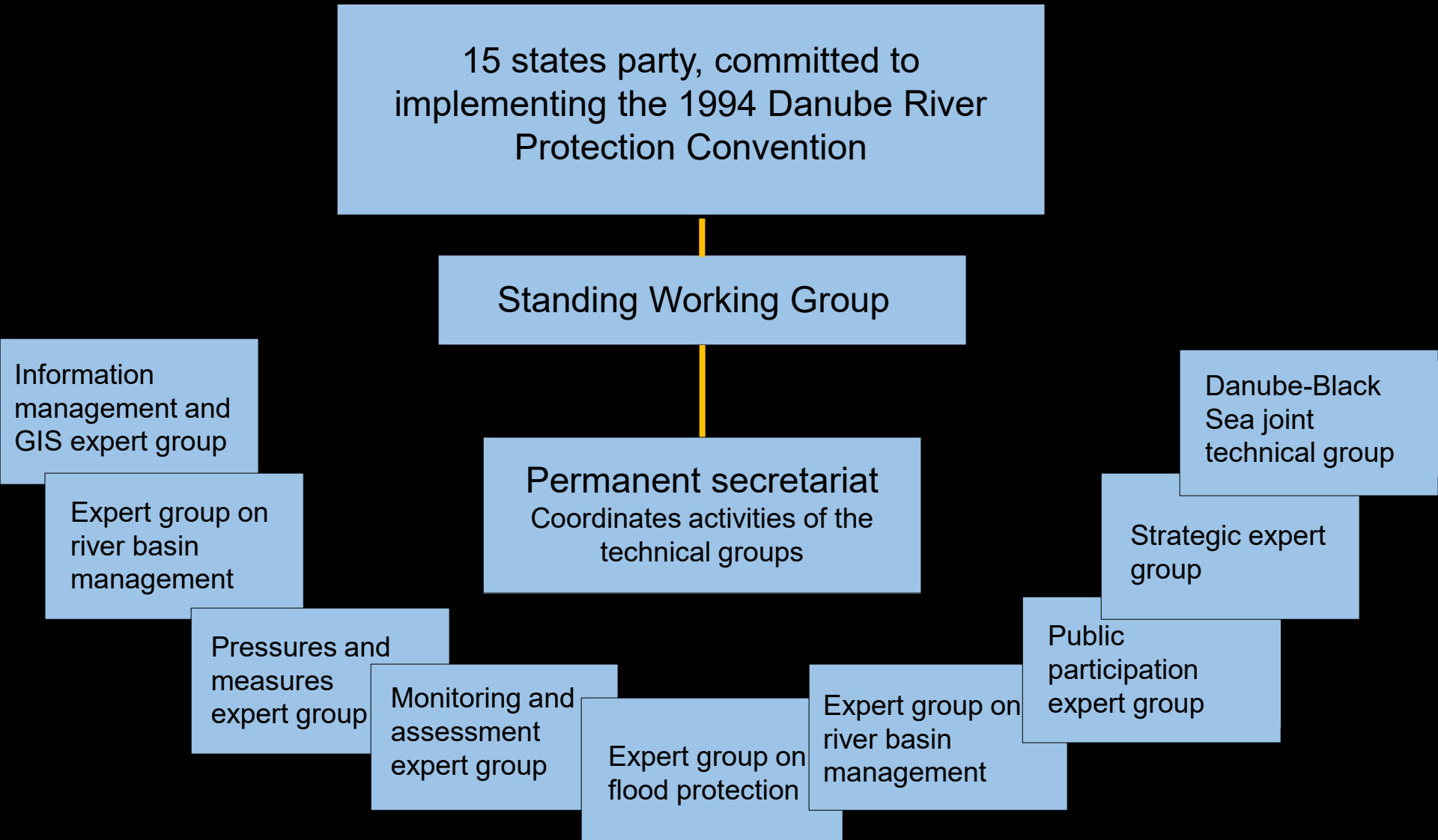
3) Multilateral commissions

- Multilateral commissions normally organised around river or lake basins
- Responsibilities are usually limited or only broadly defined:
 - Navigation
 - Fishing
 - Water quality
 - Scientific research

Examples:

- Mekong River Commission (www.mrcmekong.org)
- International Commission for the Protection of the Danube (www.icpdr.org)
- Nile Basin Initiative (www.nilebasin.org)
- Limpopo Basin Permanent Technical Committee
- Lake Chad Basin Commission (www.cbilt.org/en)

International Commission for the Protection of the Danube



Transboundary water management: structure comparison

Bilateral commissions have technical advantages and provide short-term benefits:

- Easier to establish
- Focused on limited goals
- Efficient decision making
- Given stronger mandate

Multilateral commissions have potentially greater political advantages and longer term benefits for more people:

- More difficult to establish
- Often play only advisory role
- More vulnerable to political instability
- More difficult to maintain political momentum

Are your river boundaries 'fit for purpose'?

Are your country's river boundaries defined with sufficient clarity for most practical purposes?

If not, what needs be done to achieve acceptable definitions?

Are existing management regimes sufficient to meet the needs of users of the rivers?

If not, what improvements could be made?

What one step would have the most beneficial impact?

How achievable is that step?

Are there 'easy' / short term improvements that could be made, even if they are not high priority?

Thank you!



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Geographical intelligence for international
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