PERMANENT FORUM OF BINATIONAL WATERS

United States - Mexico Transboundary Groundwater
Virtual Conference
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Panel III *Potential Models of Transboundary Groundwater Management*

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iah aih International Association of Hydrogeologists
IAH TRANSBOUNDARY AQUIFERS COMMISSION

Canada

Question 1 → reply from A Rivera

Lessons learned from **ISARM**:

- We have learned that it is not always necessary, sometimes not even required, to integrate the whole TBA in shared management decisions.

- ***Groundwater flow systems*** are considered instead of aquifer' boundaries as a quantitative analysis to define groundwater *fluxes* and *stocks*, along the borderlines of TBAs; which are essential for managing GW.

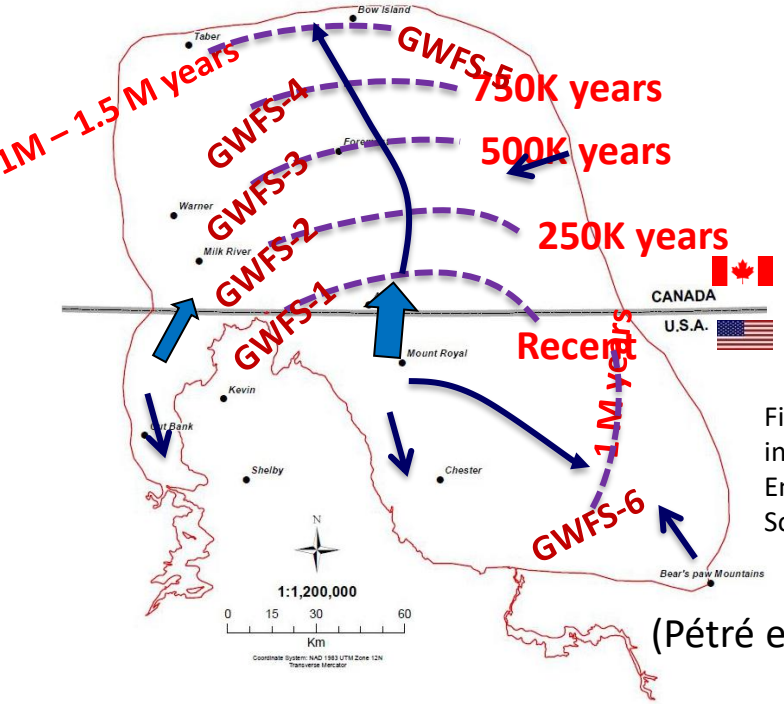
- There are **multiple stakes**, as there are **multiple time-and-space scales**

- These make TBA issues a ***matter of scales***

Question 1 → reply from A Rivera

Example: Milk River Transboundary Aquifer with 30'000 km² extension and multiple Groundwater Flow Systems

Multiple scales

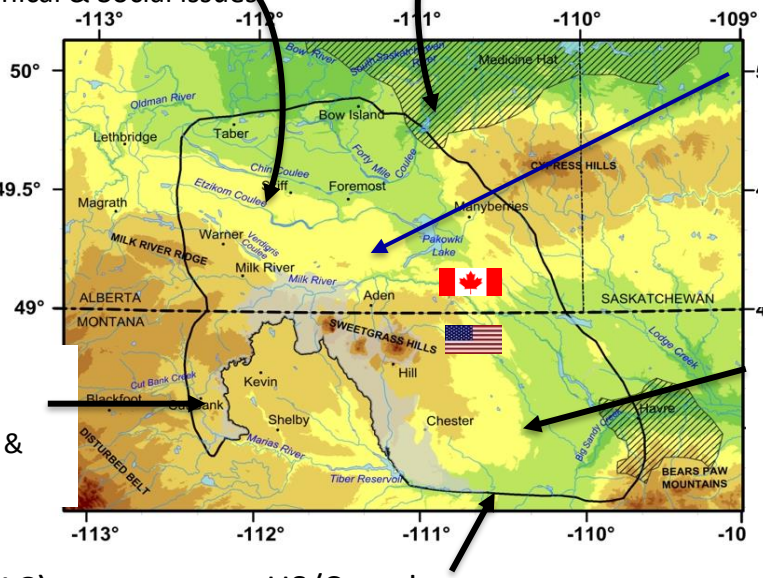


(Pétré et al., 2016)

Multiple stakes

Municipalities interests: Technical & Social issues

Industry interests: Gas field, wells issues



Provincial government interests: GW allocation and management

First Nations interests: Environment & Social issues

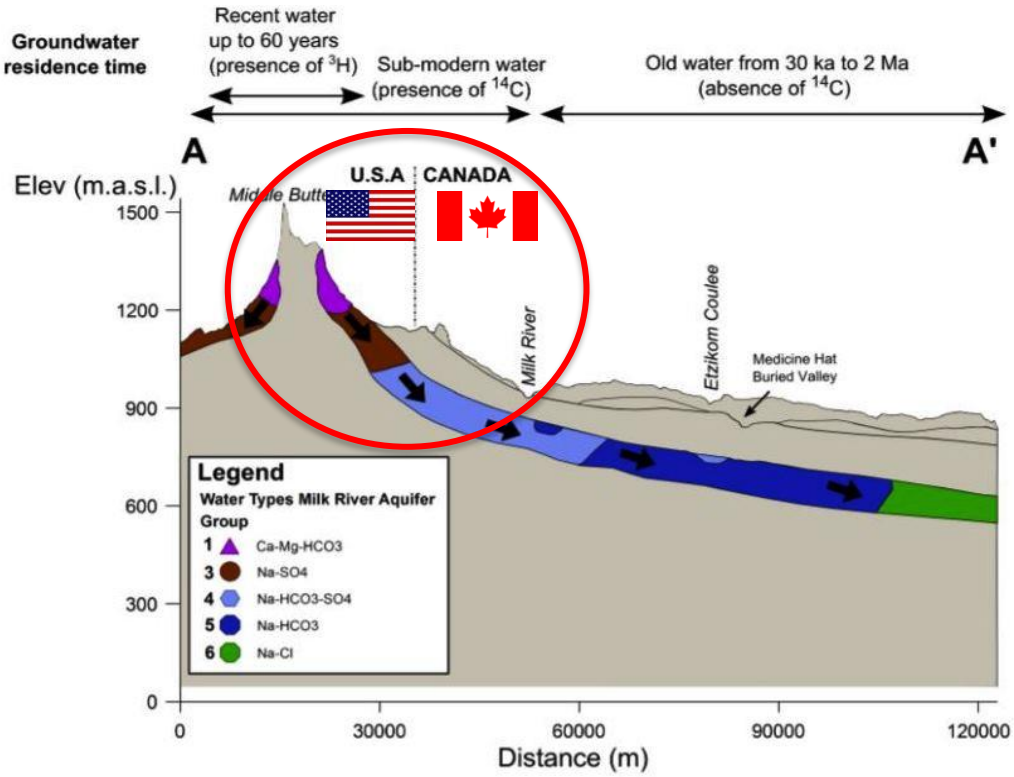
State government interests: GW allocation and management

US/Canada interests: Assessment, planning, sharing, conflict resolution

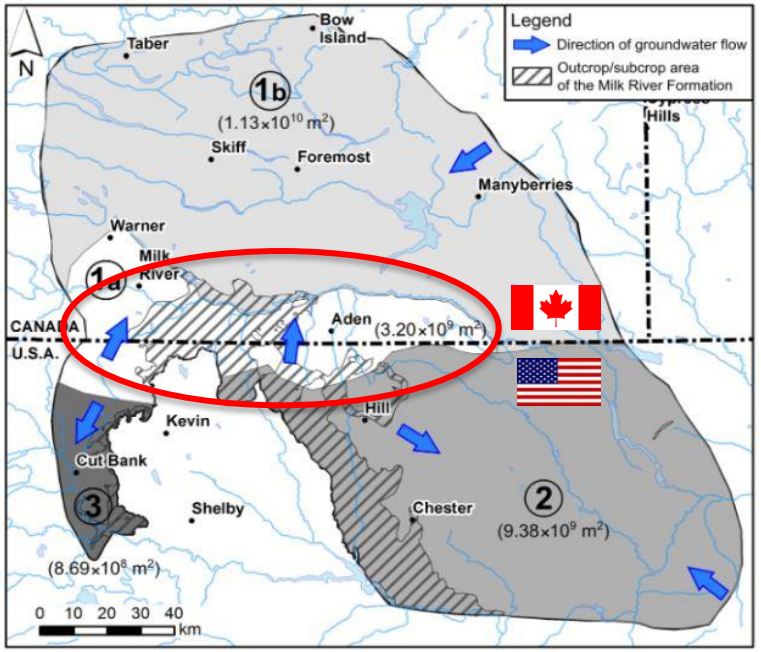
(Rivera, 2017)

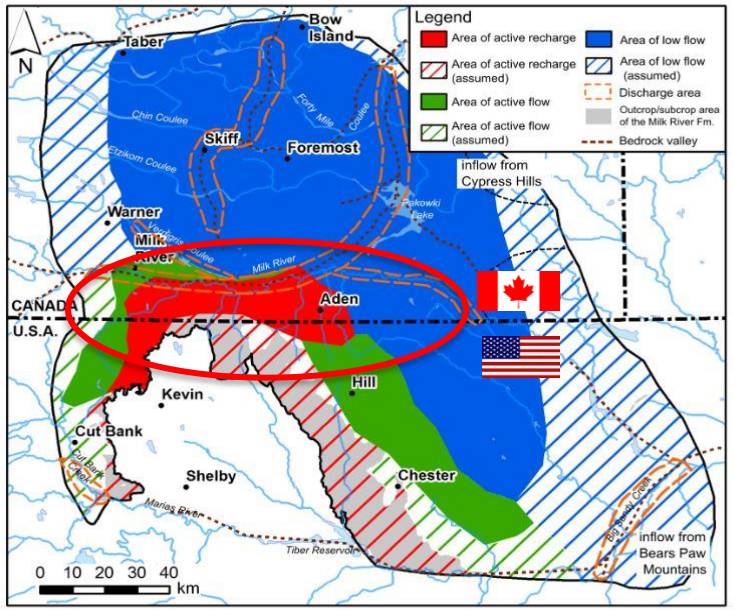
Question 1 → reply from A Rivera

The unit of management



(Pétré et al., 2016)





Question 2 → reply from A Rivera

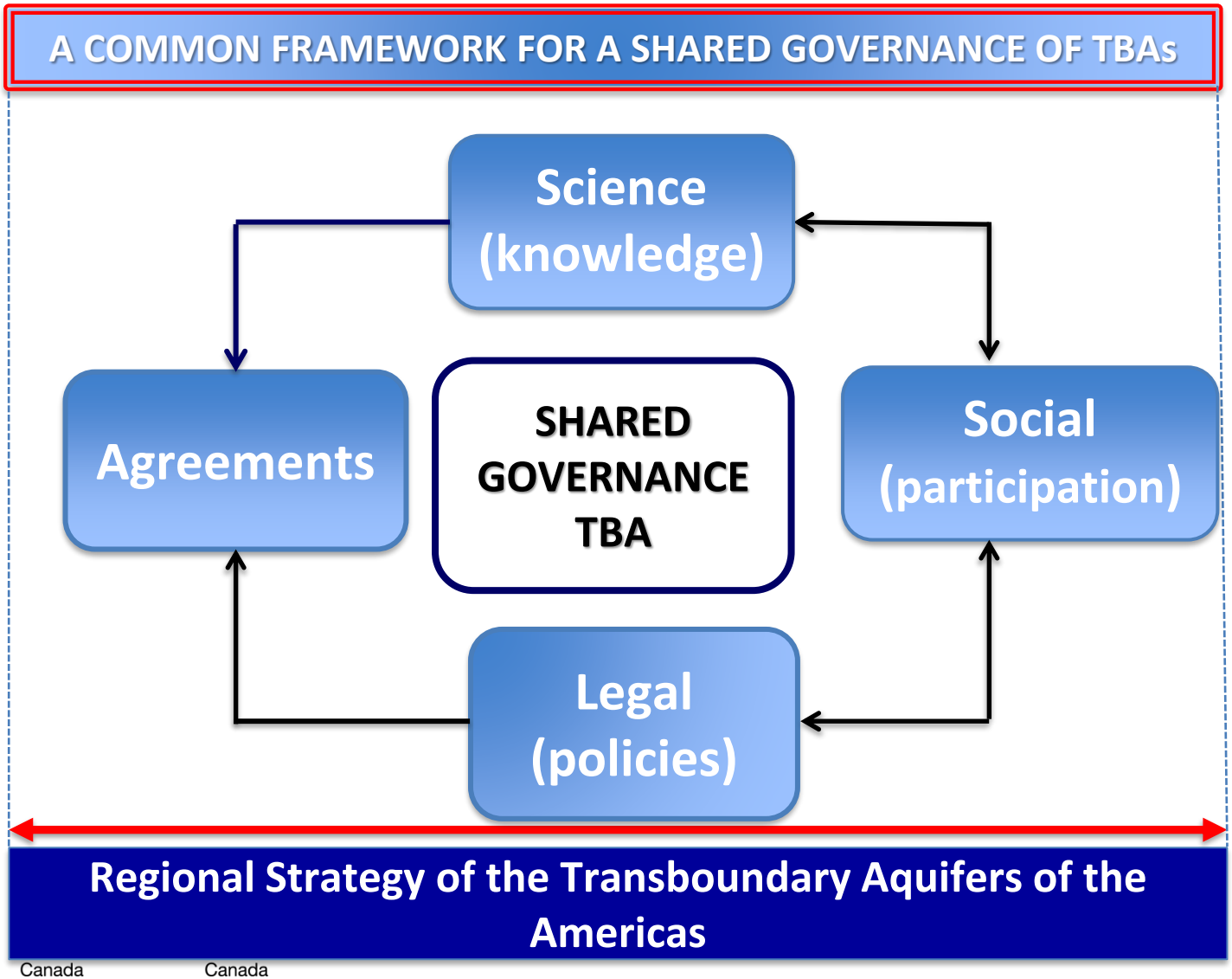
An ***institutional framework*** operates best at the specific-aquifer and local-community scales for achieving a successful TBA-GW management.

The framework should operate with a ***local level governance***.

To be successful, however, the framework should receive support from the two or more states sharing the TBA.

Question 2 → reply from A Rivera

Example of a common governance framework proposed for the Americas



(Rivera, 2017)

Question 3 → reply from A Rivera

- Any regulatory mechanism should be incorporated into a management framework.

- Regulatory mechanisms for TBAs should be designed to **protect** water, and to **identify** and **support** opportunities for societal and economic benefits, in balancing multi-jurisdictional and international interests.

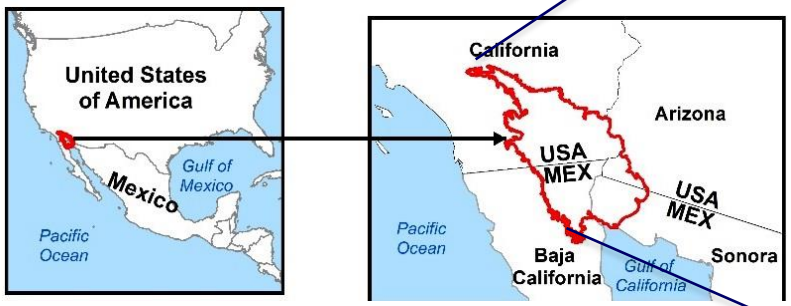
- The main *challenge* in the design and implementation of an ad-hoc regulatory mechanism, is how to **combine it** with existing legal and institutional instruments of each jurisdiction.

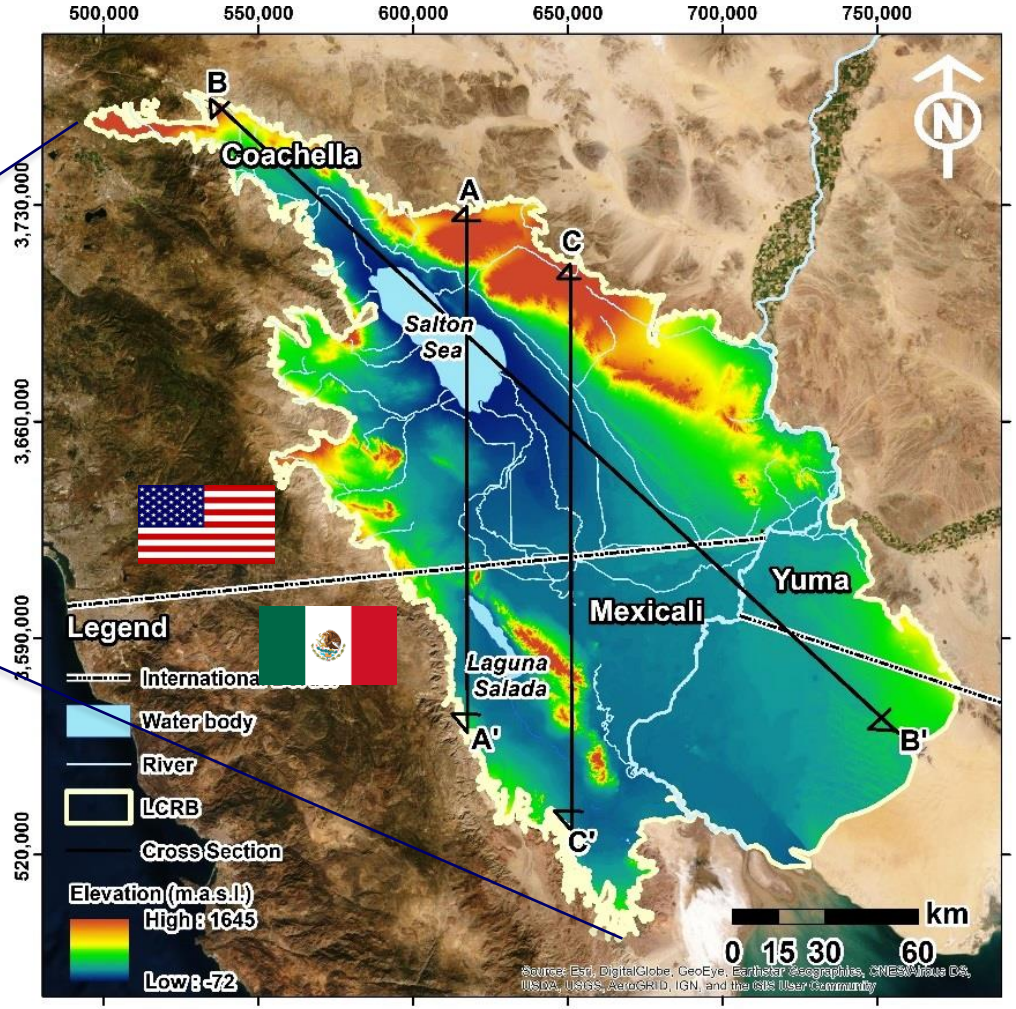
- However, at present, there are not many examples to show this type of regulatory mechanism (the Guarani?).

Question 4 → reply from A Rivera

The Lower Colorado River Basin Transboundary Aquifer

Ca 30 000 Km² of SW/GW shared by 6 jurisdictions: 4 states and 2 countries





(Cital et al., 2021)

Question 4 → reply from A Rivera

The Lower Colorado River Basin Transboundary Aquifer

Challenges and opportunities to achieving binational (or multi-jurisdictional) cooperation:

- Many jurisdictions involved
- Inter-state management practices exist (US and MX separately), but no binational management
- SW (Colorado River) is interconnected with GW
- TB Management is embedded within River Basin Organizations, representing a big challenge for collaboration
- Science/policy/management cooperation and collaboration exist through the IBWC 1944 Treaty, and Minutes 318 and 319 → but mostly on SW
- Current efforts include a conceptual model integrating SW-GW-TB effects, as a first step in a joint scientific assessment, which represents the basis for future shared binational cooperation.