



Cross-Border Impacts Related to Transboundary Aquifers: Characterizing Legal Responsibility and Liability

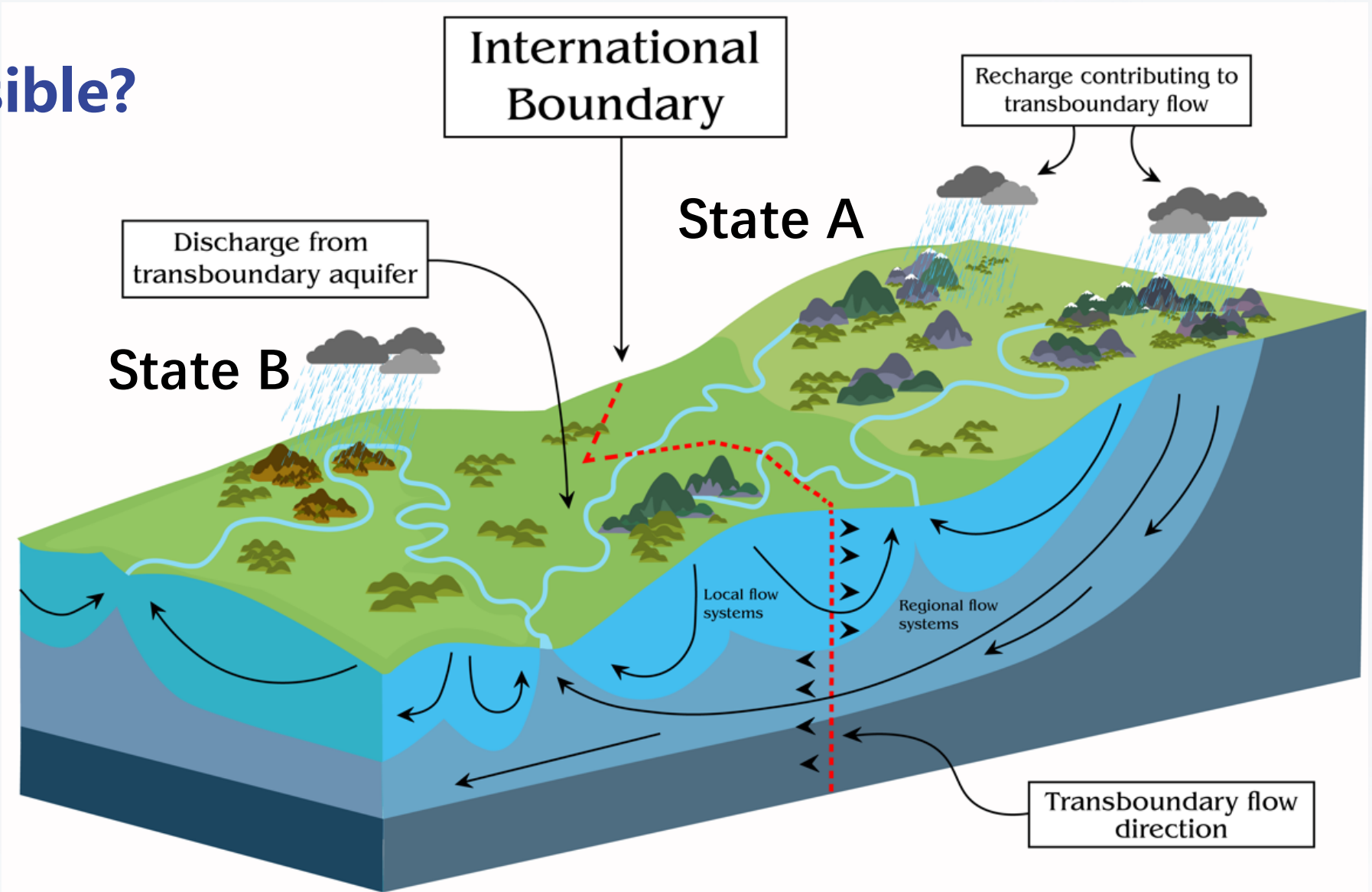
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Who is responsible?

Who is liable?



Substantive Rights and Responsibilities (*Trends*) Under International Law

- 1) General obligation to cooperate with neighboring aquifer riparians
- 2) Some yet-to-be defined substantive rights (equitable and reasonable use??? / No significant harm???) to use and enjoy groundwater from an aquifer that underlays both its territory and that of a neighboring jurisdiction; and
- 3) Some yet-to-be defined substantive restrictions to prevent or limit interference with equivalent rights of neighboring aquifer riparians



Procedural Rights and Responsibilities (*Trends*) Under International Law

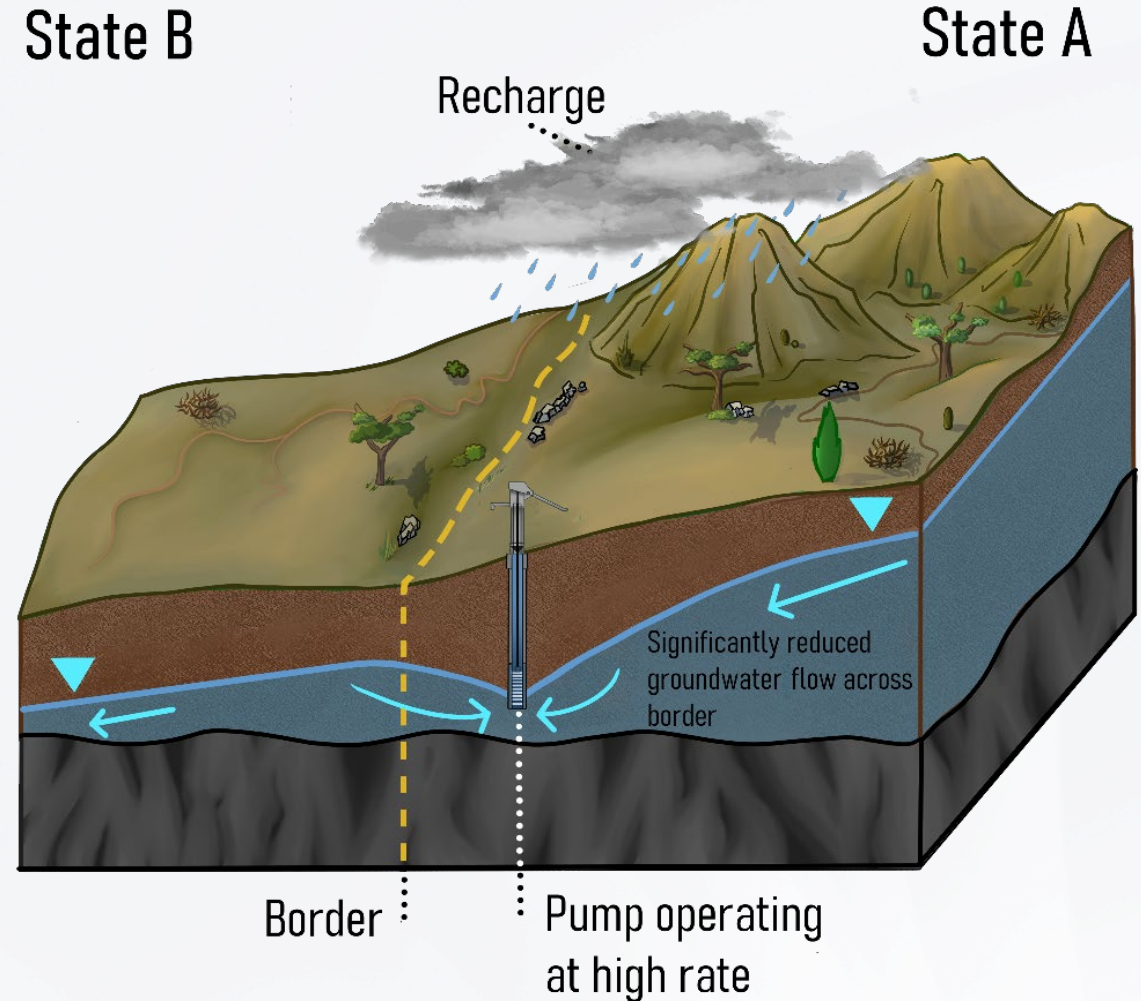
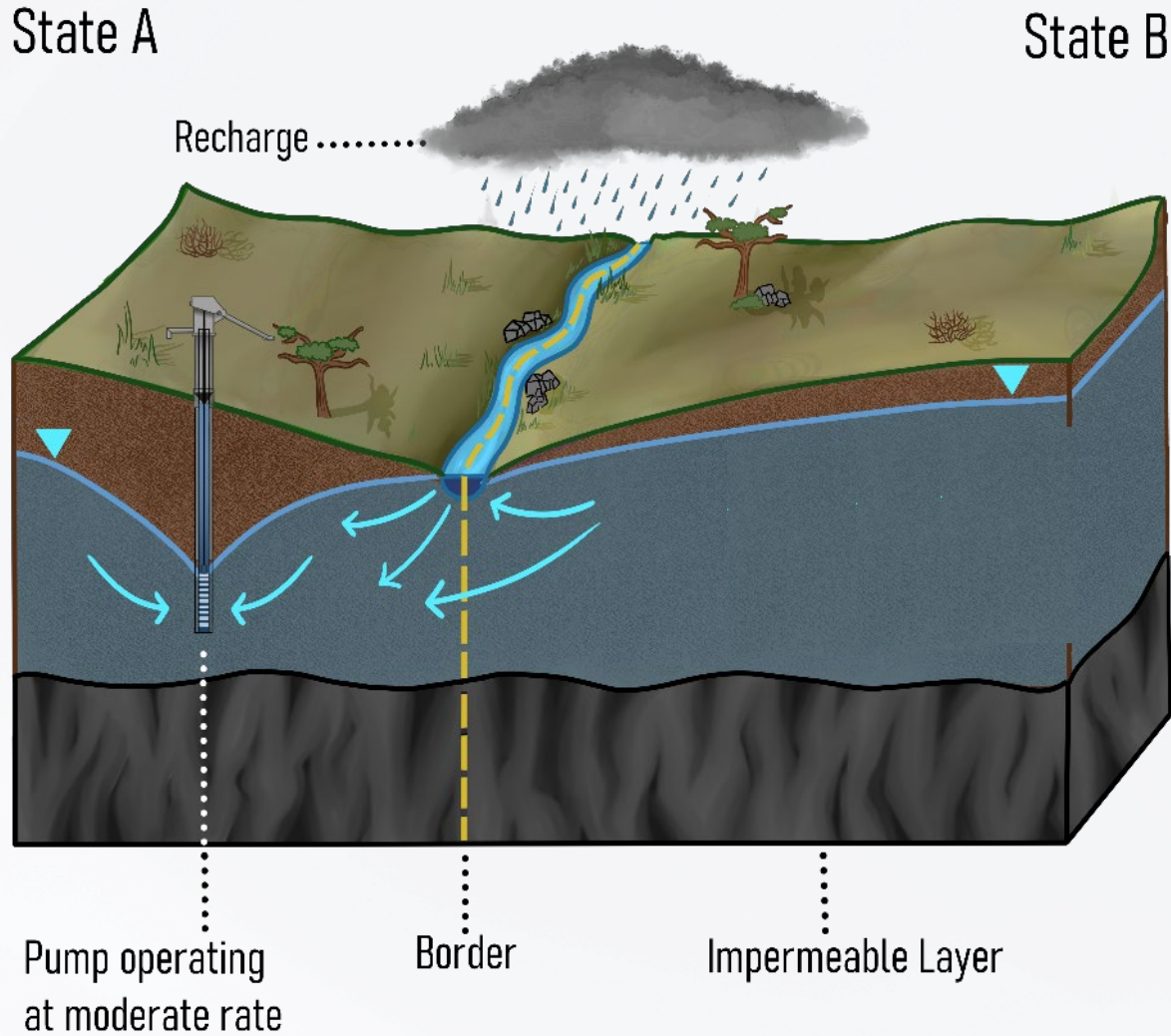
- 1) Obligation to exchange data and information on a regular basis
- 2) Obligation to monitor the aquifer and its characteristics
- 3) Obligation to provide prior notification of planned measures
- 4) Obligation to create joint institutional mechanism to implement agreed-upon tasks



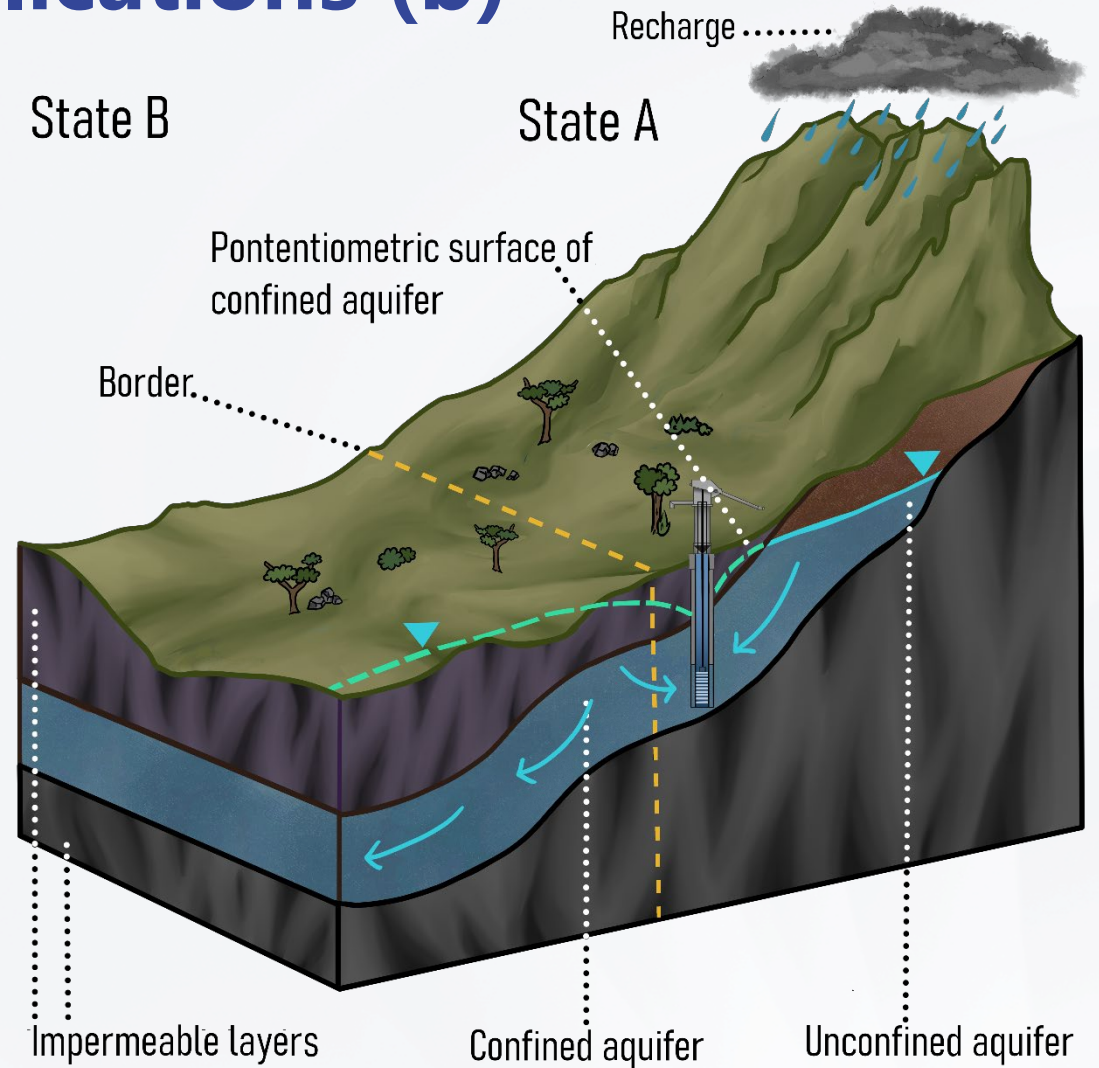
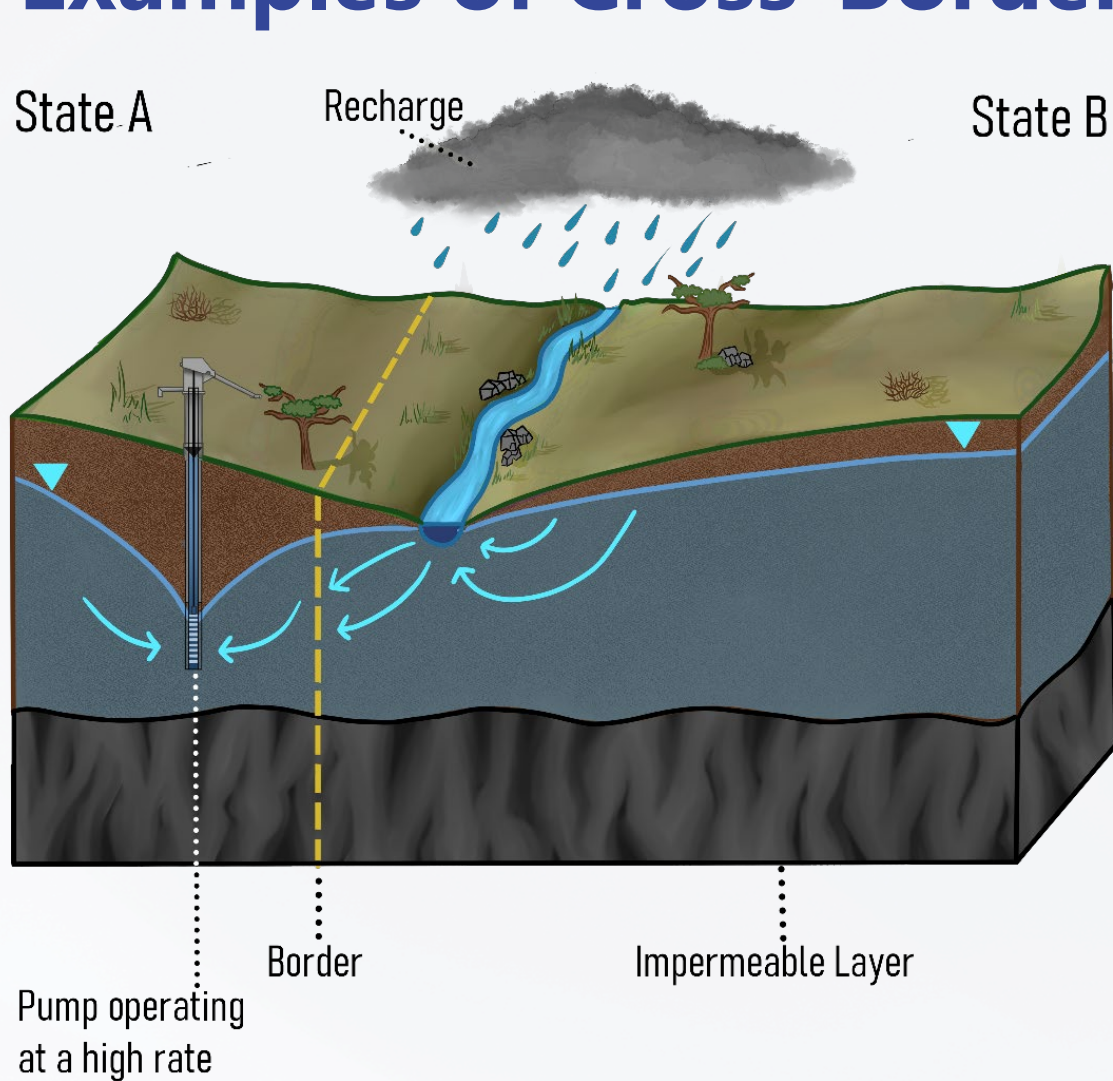
Legal Implications from the Use of Transboundary Aquifers

- 1) Affecting the natural cross-border flow direction, volume, or quality of the groundwater
- 2) Resulting in transboundary effect that exceeds the threshold ('significant' or 'substantial,' but more than *de minimis*)
- 3) Examples of actions with possible cross-border consequences
 - Extraction of groundwater
 - Injection of fluids and gases into the formation
 - Burial of wastes within the formation
 - Diminution or increase of the natural recharge into or discharge out of into the aquifer
 - Mining of the aquifer matrix
- 4) Remedies
 - Substantive law violations = damages, remediation, other
 - Procedural law violations = compliance with procedures

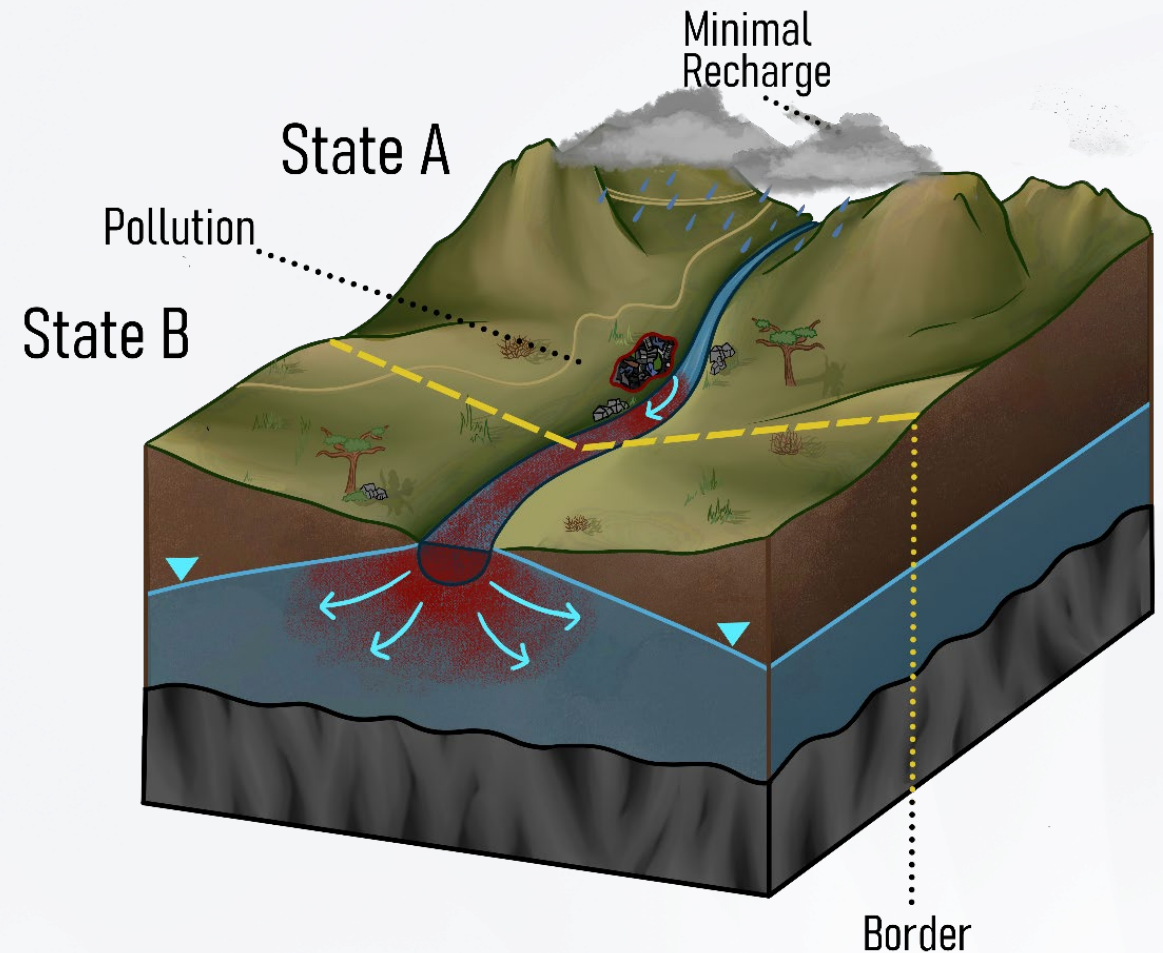
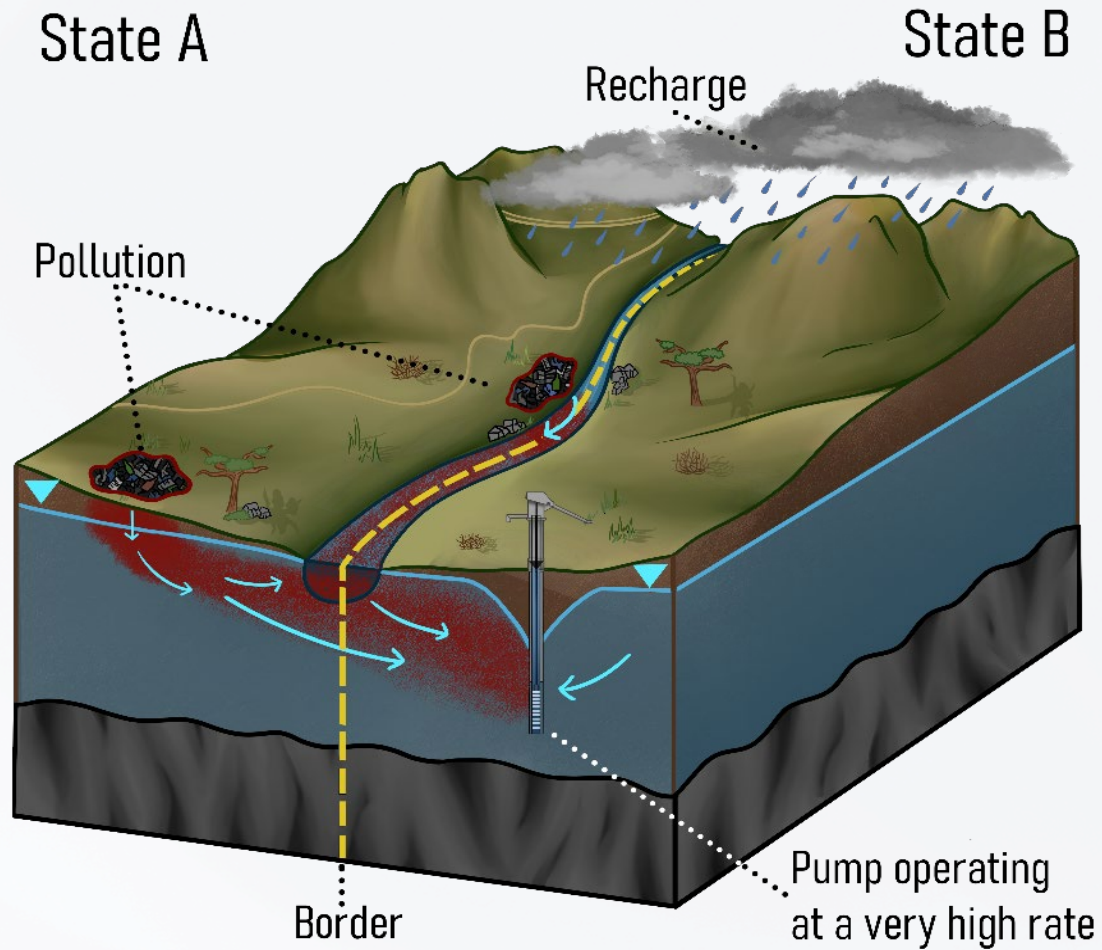
Examples of Cross-Border Implications (a)



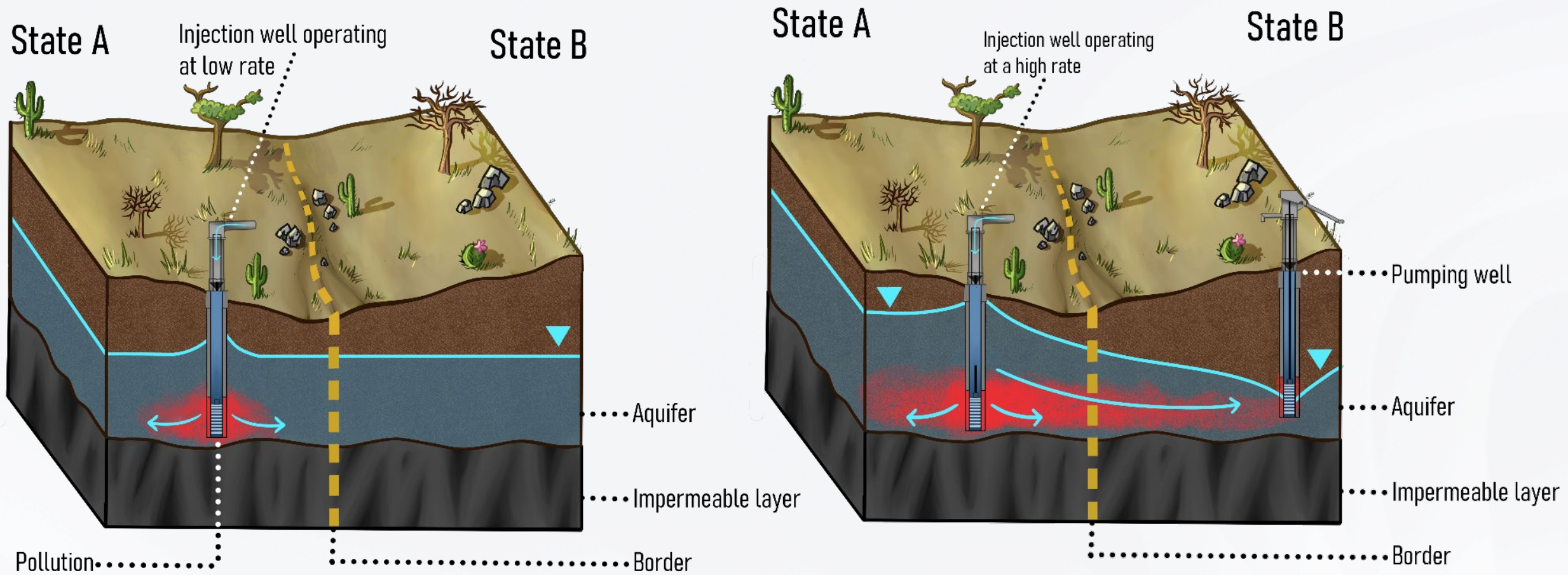
Examples of Cross-Border Implications (b)



Examples of Cross-Border Implications (c)



Examples of Cross-Border Implications (d)



Factors for Assessing Cross-Border Legal Implications Involving Transboundary Aquifers

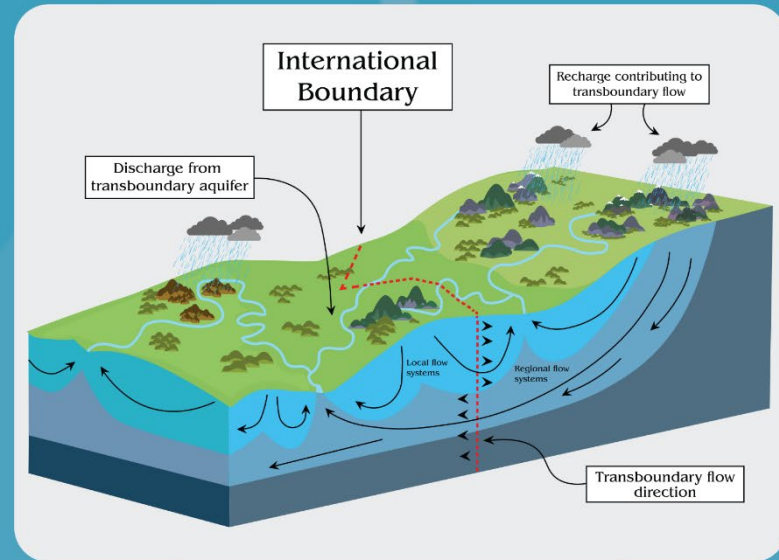
- 1) Losing (influent) and gaining (effluent) relationship between groundwater and hydrologically connected surface water
- 2) Effect of groundwater pumping on cross-border groundwater flow direction, volume, or quality
- 3) Aquifer recharge and discharge processes, rates, and geographic locations
- 4) Non-recharging characteristics
- 5) Groundwater flow direction
- 6) Pressure
- 7) Baseline (original) groundwater quality
- 8) Others ...



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Thank you for your attention!



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