

# BIG DATA IMPACT ON TRANSBOUNDARY WATER AGREEMENTS

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## RESEARCH QUESTIONS:

What role Big Data can play in the management of shared freshwater resources? How can we efficiently regulate its use through transboundary water agreements?

## WHAT IS BIG DATA?

Data characterized by "the 4 Vs":

- Volume
- Velocity
- Variety
- Veracity



## WHERE DOES IT COME FROM?

- satellites
- ground-based monitoring networks
- Internet of Things
- field experiments
- social media
- etc...



## HOW CAN IT IMPROVE SHARED WATER MANAGEMENT?

Capturing, storing, managing and analysing big data can provide valuable and up-to-date information to the parties involved



Wiser political decisions

## WHAT COULD DISCOURAGE STATES FROM USING BIG DATA?

- Shortage of accurate informations
- Risk of ending up in a less favourable position
- Lack of technical expertise, capacity and know-how
- Costs associated with data collection and exchange

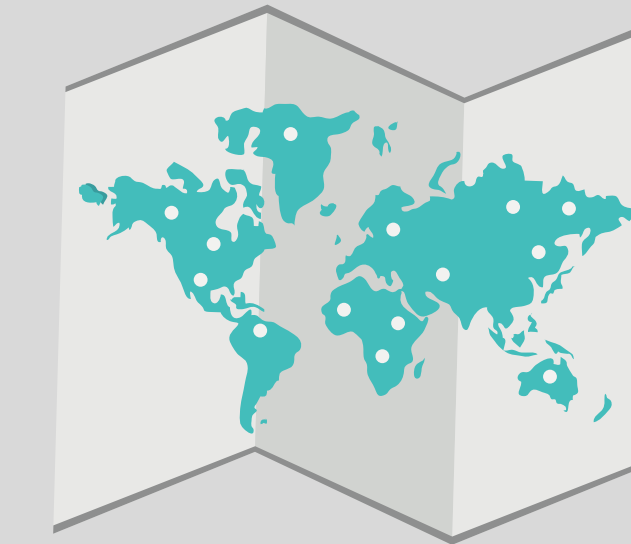


To benefit from Big Data all parties must be willing to collaborate



## 4 POSSIBLE SCENARIOS:

- All Nations decide to use Big Data
- Some States choose to use Big Data
- One Country makes use of Big Data
- No parties use Big Data



## WHICH ONE IS THE MOST LIKELY?

We can answer this question by applying the game theory:

### THE PRISONER DILEMMA

2 criminals arrested and put in 2 different rooms:

- if nobody confesses, both go to prison for 1 year
- if both confess, they go to prison for 3 years
- if one confesses he is free, the other gets 5 years



### What will most likely happen?

They will both confess, to avoid the risk of going to prison for 5 years. This is called "Nash equilibrium".

### Which is the Nash equilibrium in our case?



## ALL STATES WILL DECIDE TO USE BIG DATA:

- to avoid the risk of losing advantages
- to improve their positions
- to support their arguments with scientific data

## WHAT ARE THE PROBLEMS WITH THE CURRENT TRANSBOUNDARY WATER TREATIES?

- They are vague about data and information exchange
- They are complicated to amend
- Few States actually ratified them
- States often misinterpret provisions to protect their interests



We need to find a balance

Regulating Big Data



Ensuring flexibility

## WHAT ARE THE POSSIBLE SOLUTIONS?

To regulate Big Data

Is there a framework convention?

- ✓ Specific follow-up agreements/ protocols and MoU
- ✗ Add a specific provision to a new convention

To ensure flexibility

Include a flexibility provision:



To keep up with tech development



To allow States to withdraw