

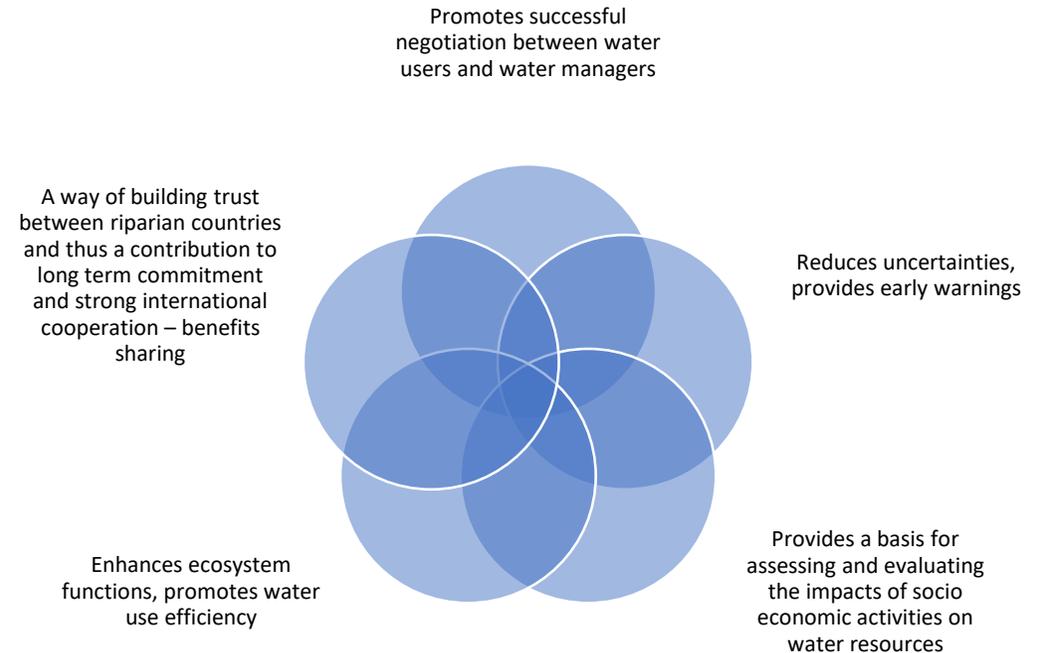
# Data exchange in transboundary waters: assessing on-the-ground practice

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data and information  
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# Why share data in transboundary basins?

- International obligations
- Decision making
- Transboundary cooperation



# Assessing the practicalities of data exchange

## Research aims

- **Develop and apply** a framework that captures the quality of data exchange in shared watercourses
  - How much data is actually being exchanged and at what frequency?
  - What are the factors affecting data exchange?
- **Identify and share** successful examples of data exchange in transboundary watercourses

# Assessment framework

Category	Parameters
<p>Scope of data Exchanged</p> <p>How broad is the scope of data exchange?</p>	<p>Class I</p> <ul style="list-style-type: none"> <li>• Surface water parameters - river flow, dam storage</li> <li>• Groundwater parameters - Groundwater levels</li> </ul> <p>Class II</p> <ul style="list-style-type: none"> <li>• Water quality data - Electrical conductivity, suspended sediment, nitrates, pH, microbiological quality</li> </ul> <p>Class III</p> <ul style="list-style-type: none"> <li>• Water use – abstraction data (SW)</li> </ul>
<p>Frequency of exchange</p> <p>How often are data exchanged?</p>	<ul style="list-style-type: none"> <li>• Frequency of exchange - real time, daily, monthly, biannual, annual, ad hoc</li> </ul>
<p>Extensiveness of exchanged water data</p> <p>How are data collected?</p>	<ul style="list-style-type: none"> <li>• Direct measurement</li> <li>○ Number of functional flow gauging stations per basin area</li> <li>○ Number of functional monitoring stations/ monitoring boreholes per aquifer area</li> </ul>
<p>Potential Explanatory Variables</p>	<ul style="list-style-type: none"> <li>• Existence of data exchange protocol</li> <li>• Means of transmitting exchanged data</li> </ul>

# Assessment methods and process

Basin selection according to certain inclusion parameters

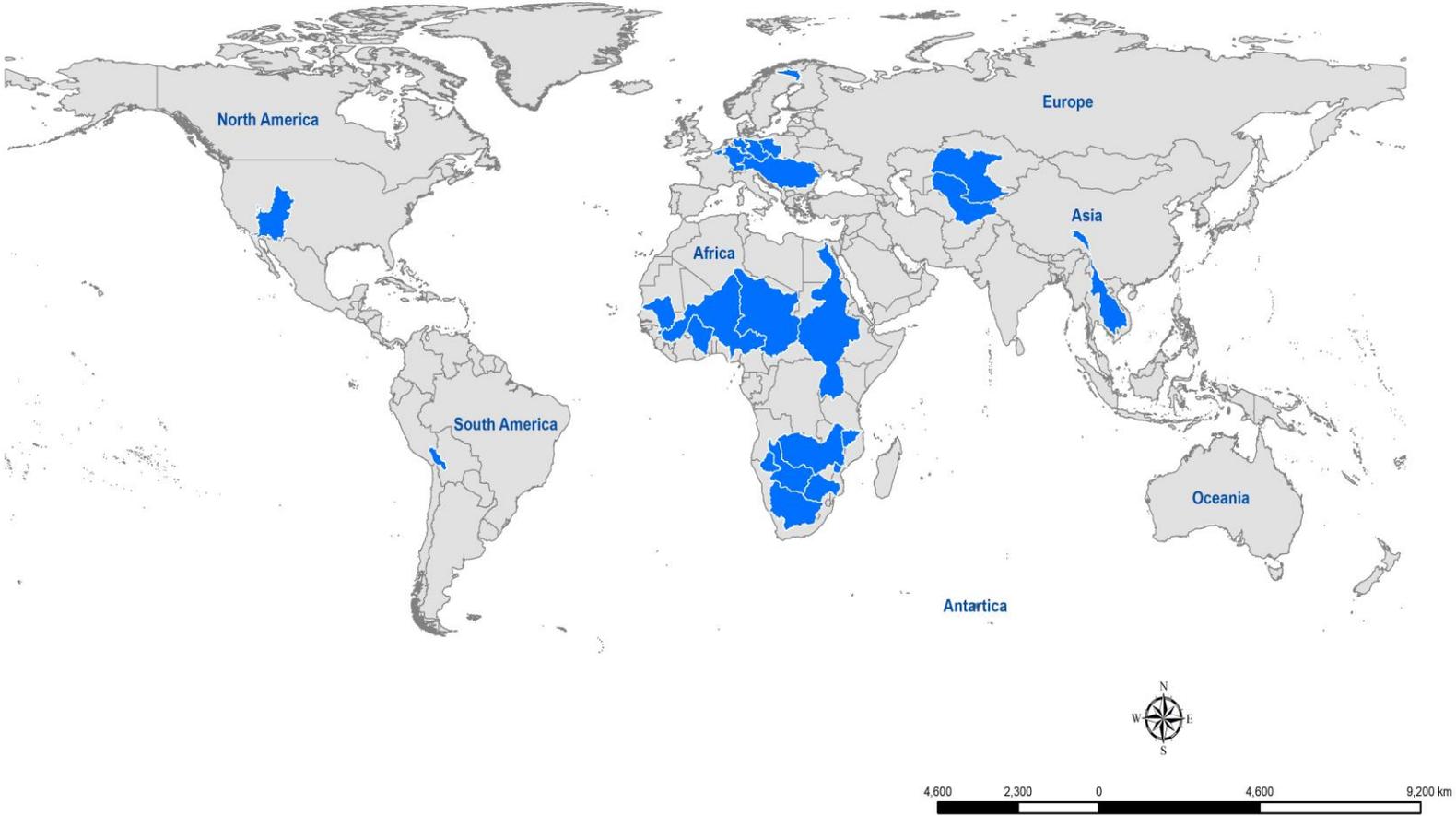
- **Must be full basin**
- **Must have an RBO - RBO does not need to have a secretariat.**
- **Existence of an agreement not sufficient.**

**NB:** *Most existing agreements are based on surface water basins – scope for assessing data exchange in transboundary aquifers*

# Assessment methods and process

- Survey designed to be short, concise - probing actual current practices around data exchange
- Questionnaires developed out of the framework and emailed to just over 30 RBOs mostly in Africa, Europe
- Contacts established with key people in RBOs based on existing relationships and contacts generated through 1<sup>st</sup> SDG 6.5.2 reporting phase
- Response rate improved by telephonic follow up
- In the end **25 basins** responded (> 80% response rate)

# Basins of focus

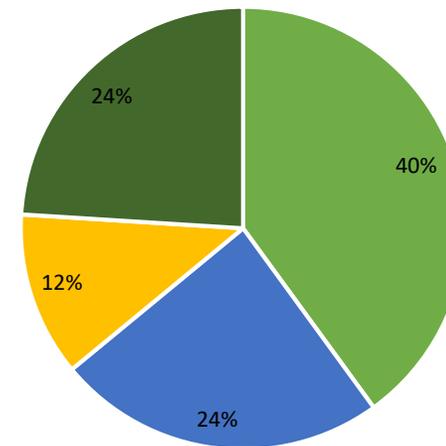


# Key findings

- Most basins (76%) exchange river flow data.
- This is positive!



Flow measuring station: *Mick Garratt*



- real time - daily
- monthly - annually
- ad hoc
- no reported exchange

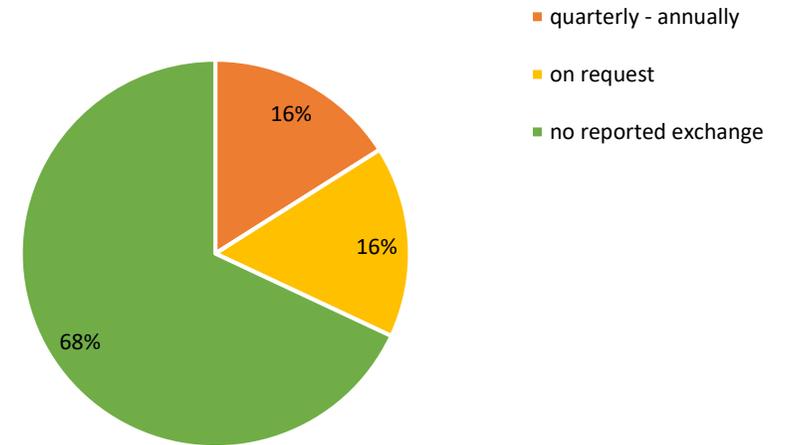
## River Flow

# Key findings

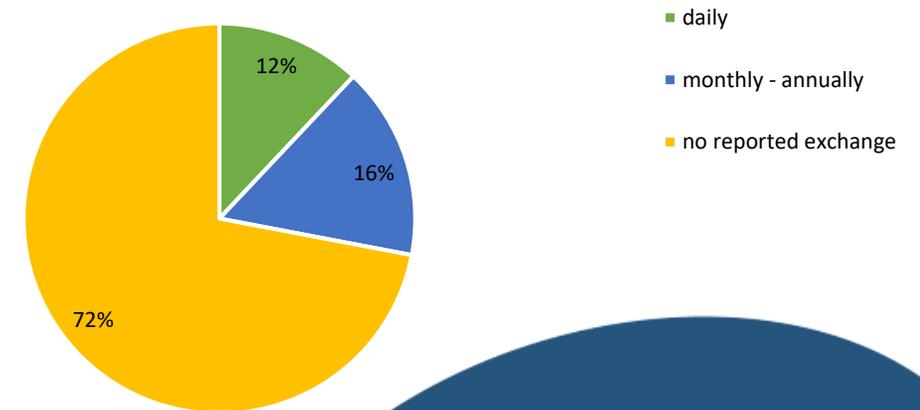
Less than half of basins share data on groundwater levels (32%)

Less than half of basins share surface water abstraction data (28%)

### Groundwater levels



### Surface water abstraction data



# Key findings

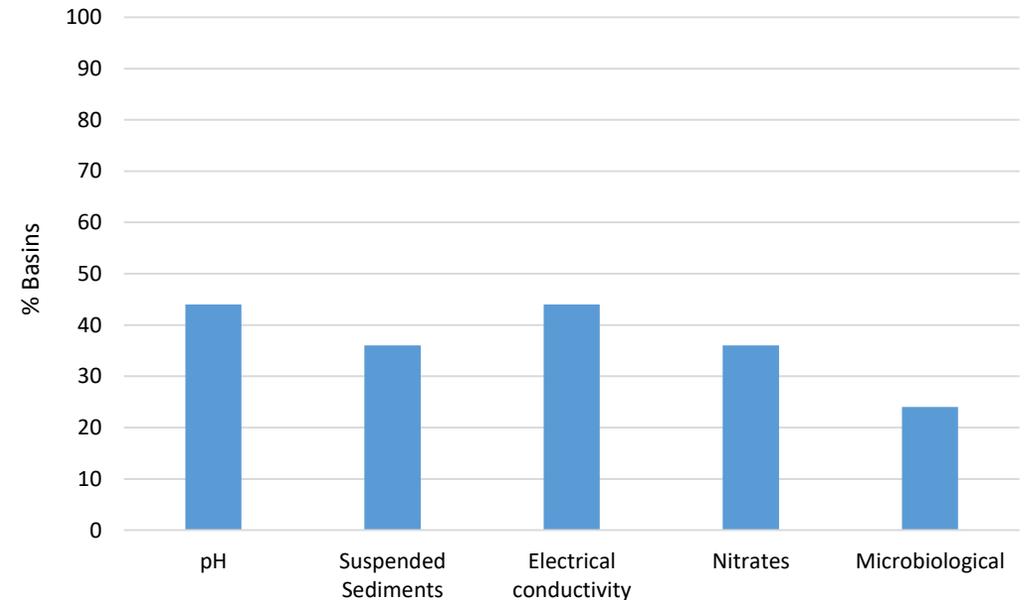
**Less than half of basins exchange data on water quality on a regular basis.**

pH and conductivity the *most exchanged* water quality parameters - 44% of the basins report at least annual exchange

Microbiological data is *least* shared, 24% of the basins reported regular exchange.

Data exchange on suspended solids and nitrates similar - 36%

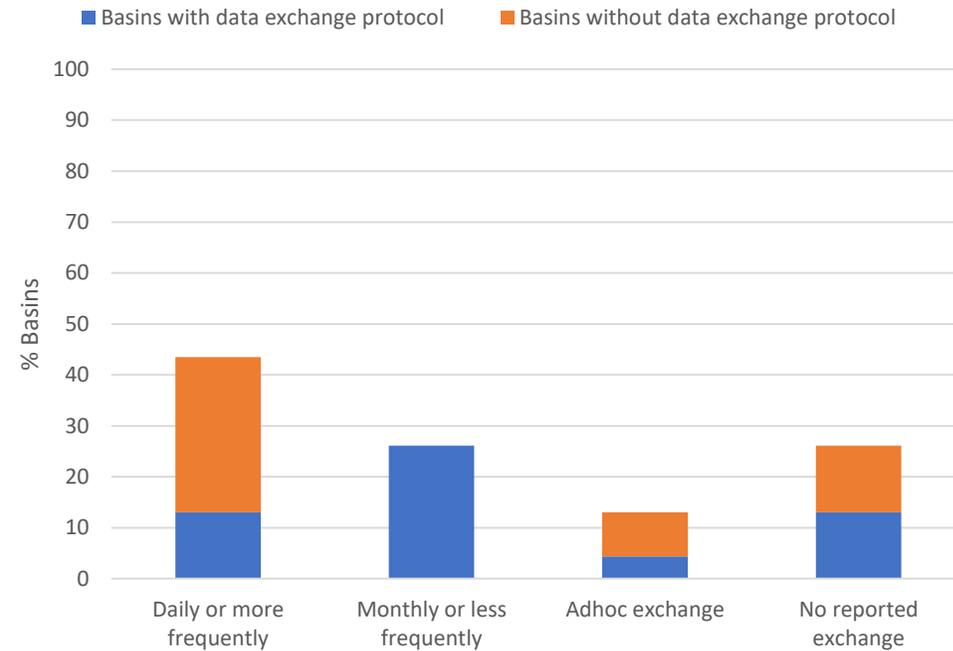
**Wide variation in density of data exchanged on key parameters such as river flow**



# Key findings

**Impact of data exchange protocols** on data exchange is inconclusive.

Similar proportion of no reported exchange in basins with or without a data exchange protocol



# Key findings

## A mix of data exchange channels

- Email
- Online platform
- Telephone

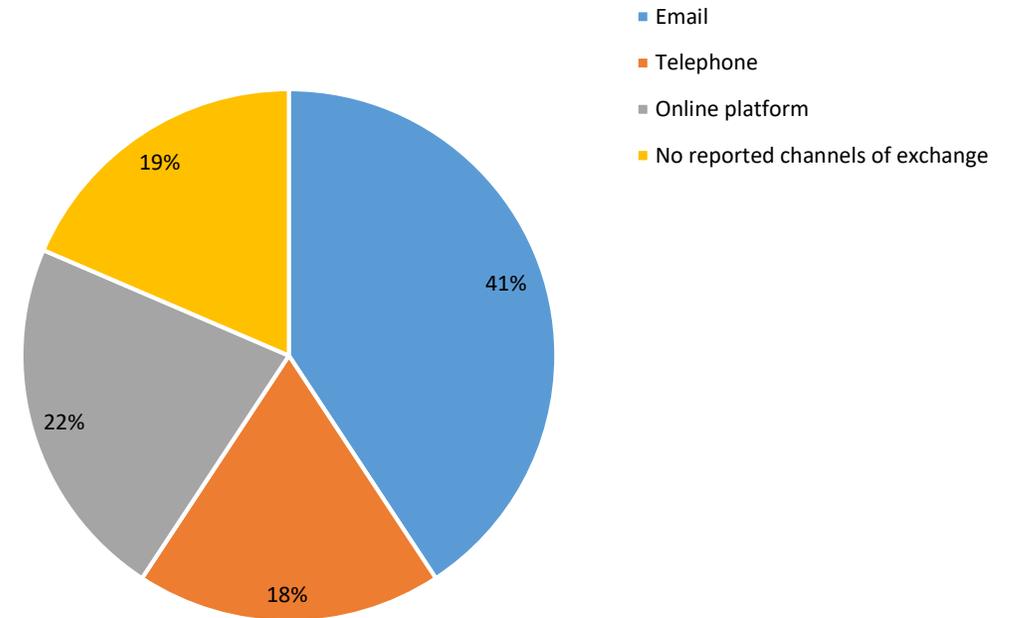
Exchange via *email* was the most common form of data exchange medium and utilised in 41% of data exchanges. Followed by:-

Online platforms - 22%

Telephone -18%.

## Types of exchange channel links is associated with frequency of exchange

- River Flow data exchanged at daily or more frequent is shared through Telephone and Online platforms

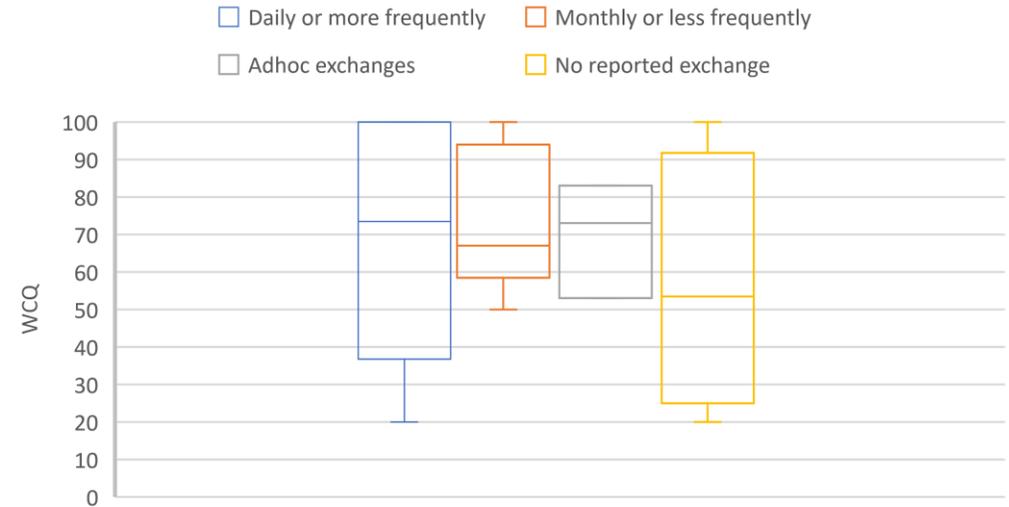


		Monthly or less frequent	Ad hoc	Total
Telephone	83	17	-	100
Email	42	42	16	100
Online Platform	80	20	-	100

# Key findings

- **Water Cooperation is not a strong predictor of data exchange frequency.**
  - average basin WCQ does not vary widely across frequencies of exchange.
  - *High frequency exchange* (daily or more frequent exchanges) - **average WCQ of 72**
  - *Monthly or lower frequencies* **average WCQ of 74.**
  - *Ad hoc* exchanges recorded in basins averaging a **WCQ of 70.**

\*Basins who reported **no exchange in river flow data** had a lower **average WCQ of 57**



Water Cooperation Quotient Developed by the Strategic Foresight Group



# Where is “successful” data exchange found?

Are data exchanged from each of the data classes (river flow or groundwater level, water quality, water abstraction)?

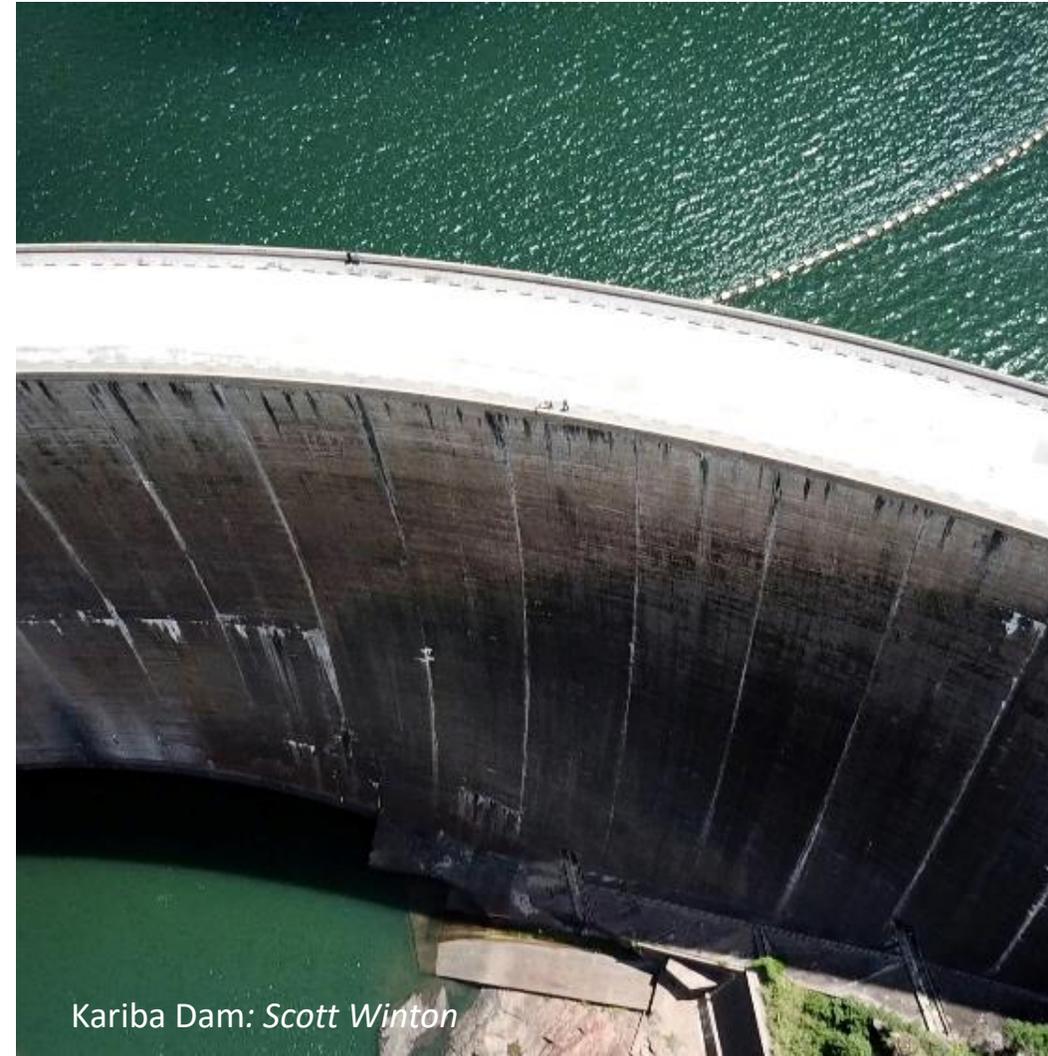
Are these data exchanged regularly (at least once a year)?

## Only three basins:

- Amu Darya
- Colorado
- Mekong

# So what? Significance of this study

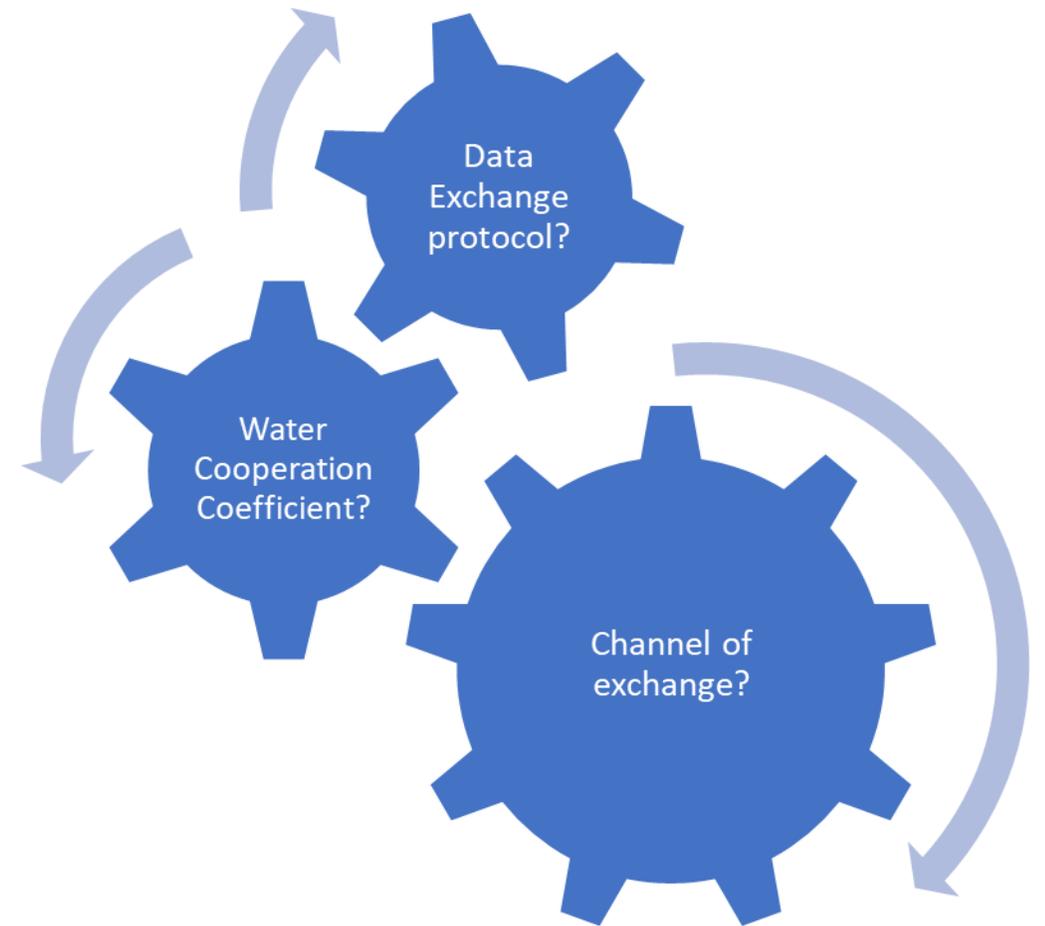
- Data exchange widely viewed as important
- Growing (anecdotal) speculation that – at a practical level – data exchange can be a challenge in transboundary waters
- First study to systematically assess practical exchange in transboundary waters, to provide a clue how much exchange is really occurring
- Results suggest scope for improvement



Kariba Dam: Scott Winton

# Concluding remarks

1. Levels of exchange of river flow data are encouraging
  2. More comprehensive consideration of data exchange shows mixed results
  3. Logical variables were not strong predictors of data exchange
    - a. Cooperation level
    - b. Existence of data protocol
    - c. Channel used for exchanging data
- Work needs to be done to expand the breadth of data exchange. Review of logical drivers does not reveal clear tools to catalyse broader data exchange.
- One possible driver, need for data, was tough to evaluate.





**Thank you!**