



Intelligent Water Transfers

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Outline

River fragmentation and flow regulation

Difficulties in dealing with water crisis in Brazil

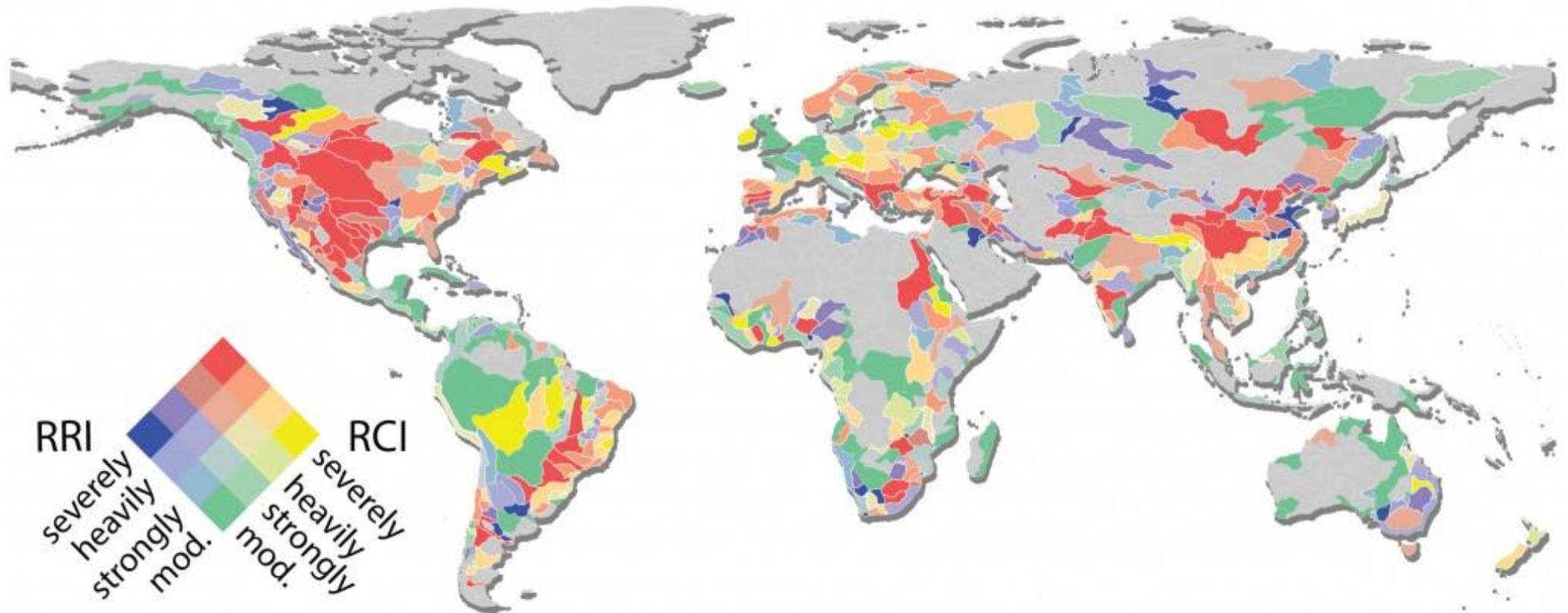
Pressure for water transfers

Some Experiences of Water Transfers – Assessing water transfer and their effects

What then would be the path toward an interbasin water transfers?

Summary – What is “Intelligent**” water transfer?**

River fragmentation and flow regulation



Global HydroLab developed two indicators: the River Regulation Index (RRI) and the River Connectivity Index (RCI). This figure shows a preliminary assessment of the combined effect of river regulation and fragmentation from current and future dams (future dams based on list of hydropower projects under construction).

DIFFICULTIES IN DEALING WITH WATER CRISES IN BRAZIL

Too much emphasis on infrastructure

Infrastructure should be viewed as **part of the solution**, but it may become a problem if we do not take into account the climate change scenarios*.

The emphasis on big infrastructure **overshadows the importance of water management**. Focus is on the increase of water supply, but what about demand management?

Water Sector:

Take water where, for what and for whom?

Development model should be in the spotlight.

Water Management at local scale

At this scale, **farmers use water as long as it is available**. When water is no longer available, they look for new sources.

Need for rethinking the water governance at this level: more engagement at the municipality level is needed!

Need for more coordination among Institutions, in particular, when they belong to different levels of administration (Municipalities, States and Union).

Most institutions operate the same way when they were created and they have to face new challenges (environment, society, ...).

Institutional Challenge

DIFFICULTIES IN DEALING WITH WATER CRISES IN BRAZIL

Transparency regarding
problem and decisions

**The negative of the crisis! (BRA:
Southeast & Northeast)**

**The resistance to using the right
terms to describe the situation:**

Water Rationing	→	Conscious use of water
Dead volume	→	Strategic reserve
Rotating water supply	→	Scheduled system maintenance

Use of the Climate Information

Long-Term:

The Climate Information is not, in general, incorporated into the decision process. There is a long way to go in order to make this happen!

The results are not always well received:

the results can point out that current decisions may be wrong, but one has to consider that such analyses were not available when the decisions had to be made.

Pressure for water transfers

The case for water transfers

New demands must be met primarily through either the increase of efficiency in use or reallocation of existing supplies.

If we restrict water use and promote water savings, is it still necessary to import water from other basins?

In many cases, water use in the recipient basin is not evaluated prior to the construction of a water transfer project. This **may contribute** to the continuity of **unsustainable water use practices** and, over time, increases the “**thirst**” for more water.

Water transfer schemes attempt to make up for water shortages by constructing elaborate systems of canals, pipes, and dredging over long distances to convey water from one river basin (the donor basin) to another (the recipient basin).

Under certain circumstances, large-scale water transfers fulfill an important role in providing water to those in need, but their benefits may be doubtful.

Pressure for water transfers

Water transfers promoting agricultural production in water poor areas

With many IBTs being driven by agricultural water demands, it is important to assess the economic viability of agricultural practices in the proposed recipient basin.

Some Experiences of Water Transfers – Assessing water transfer and their effects

IBWT Project	Donor Region	Recipient Region	Purpose
Colorado Big Thompson Project	Colorado River Basin	South Plate River Basin	Irrigation, Industry, Hydropower Generation
ChaViMoChic (Peru)	Santa River Basin	Inter-valleys of Chao, Virú, Moche and Chicama	Agriculture, Agroindustry, Water Supply, Industry, Hydropower Generation
São Francisco River Diversion Project (Brazil)	São Francisco River	Jaguaribe and Piranhas Açu River Basins, and East portion of Pernambuco and Paraíba States	Urban Water Supply, Irrigation
Trasvase Daule-Santa Elena (Equador)	Daule River Basin	Santa Elena Peninsula	Irrigation, domestic and industrial uses
Tagus - Segura Transfer	Tagus	Segura	Irrigation, Urban Water Supply
El-Salam Channel in Sinai (Egypt)	Nile Delta and Nile River Basin	Deserts of north Sinai	Agriculture
Lesotho Highlands Water Transfer to South Africa (Southern Africa)	Orange/Senqu Basin	Vaal River System	Water Supply, Industry, Hydropower Generation
The South-to-North Water Transfer projects (China)	Yangtze River (Chang Jiang) basin	North and Northwest China	Agricultural, Municipal, Industrial, Environmental, Water Transportation
Snowy Mountains Hydroelectric Scheme (Australia)	Snowy River and Murrumbidgee River Basins	Murray River Basin	Agriculture, Hydropower Generation

What then would be the path toward an inter-basin water transfers?

- Reducing water demands;
- Reducing losses in the water supply network (urban and rural networks);
- Increasing water use efficiency for domestic/urban (water saving practices) and agricultural water uses (increasing the share of the water actually taken up by plants, and producing more crop per unit of water);
- Implementing educational programs;
- Recycling waste water;

What then would be the path toward an interbasin water transfers?

- Supplementing water supplies locally (e.g., rainwater harvesting; water conservation; restoring traditional water management structures; desalinization);
- Reviewing policy and regulations;
- Using the water management instruments to promote efficiency (e.g., Improving monitoring of water uses and increasing water prices);
- Implementing conjunctive use of surface and groundwater resources where possible;

And then...

What then would be the path toward an interbasin water transfers?

INTER-BASIN WATER TRANSFER.

“The order above seems to be a natural one to follow, however it does not take into account the political capital in place for the water transfer decision, which may not be there in the future. In this case, either you take the decision in favor of the IBWT at the current moment, or simply hope for a forthcoming political opportunity.”

Martins et al., 2021.

Summary - What is “Intelligent” water transfer?

In summary, an intelligent IBWT should be implemented in the context of more general sustainable development strategies and Integrated Water Resources Management.

Negotiation between donor and recipient stakeholders should be done and agreements reached previously to the construction of the projects.

However, one should also consider the political momentum for the water transfer decision, which may not be favorable in the near future.