

## Basin Risk Indicators - Descriptions, Sources and Links

Risk type	Risk category	#	Risk indicator	Description	Source	Link	
Physical Risk	1. Quantity - Scarcity	1.0	Aridity	Aridity index - expresses the amount of fresh water available by month for the basins in Brazil (ottobacias level 6) for the year 2012. The index was calculated by the ratio of evapotranspiration and precipitation accumulated by month. The input data was based on the product MOD16A2 collected from the Geoprocessing and Remote Sensing Lab from the Universidade Federal de Goiás – Brazil	Laboratório de Processamento de Imagens e Geoprocessamento (LAPIG) - Universidade Federal de Goiás	<a href="https://www.lapig.iesa.ufg.br/lapig/">https://www.lapig.iesa.ufg.br/lapig/</a>	
		1.1	Quantitative water balance	Annual average monthly net water depletion - is the ratio between the consumptive uses and the water availability, in other words, the difference between the amount of water availability and its demand. The consumptive water demand considered in the water balance are the industrial and irrigation (updated until 2014), the urban water supply and animal water (updated until 2013). Water availability was updated in 2015 for some of the country's hydrographic basins and in the regularization reservoirs.	National Water Resources Information System	<a href="http://www.snirh.gov.br">http://www.snirh.gov.br</a>	
		1.2	Baseline Water Stress	<a href="#">See Global documentation on Indicators, Sources and Description</a>			
		1.3	Blue Water Scarcity	<a href="#">See Global documentation on Indicators, Sources and Description</a>			
		1.4	Projected change in water discharge (by ~2050)	<a href="#">See Global documentation on Indicators, Sources and Description</a>			
		1.5	Occurrence of droughts (2003 – 2015)	The raw data is the number of reported droughts by county from 2003 to 2015 (no year is distinguished). The data is expressed in integer numbers ranging from 1 to 25.	National Water Resources Information System	<a href="http://www.snirh.gov.br">http://www.snirh.gov.br</a>	
	1.6	Projected Change in Drought Occurrence (by ~2050)	<a href="#">See Global documentation on Indicators, Sources and Description</a>				
	2. Quantity - Flooding	2.1	Occurrence of floods	The raw data is the number of reported floods by county from 2003 to 2015 (no year is distinguished). The data is expressed in integer numbers ranging from 1 to 16.	National Water Resources Information System	<a href="http://www.snirh.gov.br">http://www.snirh.gov.br</a>	
		2.2	Projected Change in Flood Occurrence (by ~2050)	<a href="#">See Global documentation on Indicators, Sources and Description</a>			
	3. Quality	3.1	Water quality index	It is expressed by the Brazilian Water Quality Index (IQA), which consists of contamination parameters and its weight coefficients (w) according to their importance on water quality, obtained from average variation curves ( <a href="http://portalpnqa.ana.gov.br/indicadores-indice-">http://portalpnqa.ana.gov.br/indicadores-indice-</a>	National Water Resources Information System	<a href="http://www.snirh.gov.br">http://www.snirh.gov.br</a>	

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				aguas.aspx). The formula of IQA is the product of the nine parameters. The parameters and the weights are presented below: <ul style="list-style-type: none"> <li>• pH (0.12)</li> <li>• DBO (0.10)</li> <li>• Temperature (0.10)</li> <li>• Phosphorus (0.10)</li> <li>• Nitrogen (0.10),</li> <li>• Turbidity (0.08),</li> <li>• Dissolved oxygen (0.17)</li> <li>• Thermotolerant coliforms (0.15)</li> <li>• Total residue (0.08)</li> </ul>		
		3.1.1	Nitrogen loading	<a href="#">See Global documentation on Indicators, Sources and Description</a>		
		3.1.2	Phosphorus loading	The input data is the average of phosphorus gauged for monitored basins.	National Water Resources Information System	<a href="http://www.snirh.gov.br">http://www.snirh.gov.br</a>
		3.1.3	Pesticide loading	<a href="#">See Global documentation on Indicators, Sources and Description</a>		
		3.1.4	Soil salination	<a href="#">See Global documentation on Indicators, Sources and Description</a>		
		3.1.5	Organic loading	It is the average of organic material in the river or reservoir in the monitored basins.	National Water Resources Information System	<a href="http://www.snirh.gov.br">http://www.snirh.gov.br</a>
		3.1.6	Sediment loading	The raw data is the average turbidity measured in the monitored basins. The higher the number is, the higher the turbidity is. In other words, the higher the number is, the higher the turbidity is, which refers to the amount of sediment in the river/reservoir.	National Water Resources Information System	<a href="http://www.snirh.gov.br">http://www.snirh.gov.br</a>
		3.1.7	Mercury loading	<a href="#">See Global documentation on Indicators, Sources and Description</a>		
		3.1.8	Potential Acidification	<a href="#">See Global documentation on Indicators, Sources and Description</a>		
		3.1.9	Thermal alteration	<a href="#">See Global documentation on Indicators, Sources and Description</a>		
	4. Ecosystem Service Status	4.1	Fragmentation Status of Rivers	<a href="#">See Global documentation on Indicators, Sources and Description</a>		
		4.2	Catchment Ecosystem Services Degradation Level (tree cover loss)	<a href="#">See Global documentation on Indicators, Sources and Description</a>		

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		4.3	Projected impacts on freshwater biodiversity	<a href="#">See Global documentation on Indicators, Sources and Description</a>		
Regulatory Risk	5. Enabling Environment (Policy & Laws)	5.1	Freshwater Policy Status (SDG 6.5.1)	<a href="#">See Global documentation on Indicators, Sources and Description</a>		
		5.2	Freshwater Law Status (SDG 6.5.1)	<a href="#">See Global documentation on Indicators, Sources and Description</a>		
		5.3	Implementation Status of Water Management Plans (SDG 6.5.1)	<a href="#">See Global documentation on Indicators, Sources and Description</a>		
	6. Institutions and Governance	6.1	Corruption Perceptions Index	<a href="#">See Global documentation on Indicators, Sources and Description</a>		
		6.2	Freedom in the World Index	<a href="#">See Global documentation on Indicators, Sources and Description</a>		
		6.3	Business Participation in Water Management (SDG 6.5.1)	<a href="#">See Global documentation on Indicators, Sources and Description</a>		
	7. Management Instruments	7.1	Management Instruments for Water Management (SDG 6.5.1)	<a href="#">See Global documentation on Indicators, Sources and Description</a>		
		7.2	Groundwater Monitoring Data Availability and Management	<a href="#">See Global documentation on Indicators, Sources and Description</a>		
		7.3	Density of Runoff Monitoring Stations	<a href="#">See Global documentation on Indicators, Sources and Description</a>		

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	8. Infrastructure & Finance	8.1	Distribution of safe drinking water (2013)	it is the conditions of access of drinking water structure by county and it is a qualitative assessment obtained from the National Water Resources Information System	National Water Resources Information System	<a href="http://www.snirh.gov.br">http://www.snirh.gov.br</a>
		8.2	Access to Sanitation	<a href="#">See Global documentation on Indicators, Sources and Description</a>		
		8.3	Financing for Water Resource Development and Management (SDG 6.5.1)	<a href="#">See Global documentation on Indicators, Sources and Description</a>		
Reputational Risk	9. Cultural importance	9.1	Cultural/religious roles	The main input is the official indigenous lands across the country from the official organization National Indian Foundation ( <a href="http://www.funai.gov.br/index.php/shape">http://www.funai.gov.br/index.php/shape</a> ). This parameter assumes that on the basins with indigenous lands within their boundaries, the water is considered somehow important to cultural and/or religious activities.	FUNAI - National Indian Foundation	<a href="http://www.funai.gov.br/index.php/shape">http://www.funai.gov.br/index.php/shape</a>
		10.1	Freshwater Endemism	<a href="#">See Global documentation on Indicators, Sources and Description</a>		
	10.2	Freshwater Biodiversity Richness	<a href="#">See Global documentation on Indicators, Sources and Description</a>			
	11. Media Scrutiny	11.1	National media coverage	Exposure of this country to local/national media coverage reporting on criticizing possible water issues – based on research, indicates how aware of the water issues the residents are. The data is qualitative information and the quality of the information varies across the country.	Various	NA
		11.2	Global media coverage	Exposure of this country to global media coverage reporting on criticizing possible water issues - based on research, indicates how aware of the water issues in Brazil the residents from other countries are. The data is qualitative information and the quality	Various	NA
	12. Trust & Conflict	12.1	Conflict News Events (RepRisk)	<a href="#">See Global documentation on Indicators, Sources and Description</a>		
		12.1.1	Water Scarcity	<a href="#">See Global documentation on Indicators, Sources and Description</a>		
		12.1.2	Local Pollution	<a href="#">See Global documentation on Indicators, Sources and Description</a>		
		12.1.3	Overuse and wasting of resources	<a href="#">See Global documentation on Indicators, Sources and Description</a>		
12.1.4		Impact on community	<a href="#">See Global documentation on Indicators, Sources and Description</a>			
		12.1.5	Impact on ecosystem	<a href="#">See Global documentation on Indicators, Sources and Description</a>		

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		12.2	Hydro-political Risk	<i>landscape</i> <a href="#">See Global documentation on Indicators, Sources and Description</a>		