



Geopolitical Risk Index | Case Studies | 2024

Geopolitics of **WATER CONTROL**

How scarcity affects businesses and increases the centrality of water control in geopolitical relations between countries

This presentation explores the different implications that the geopolitics of water control can have for states, businesses and other entities, examining the challenges posed by water scarcity, the potential for conflict, and the imperative of cooperation

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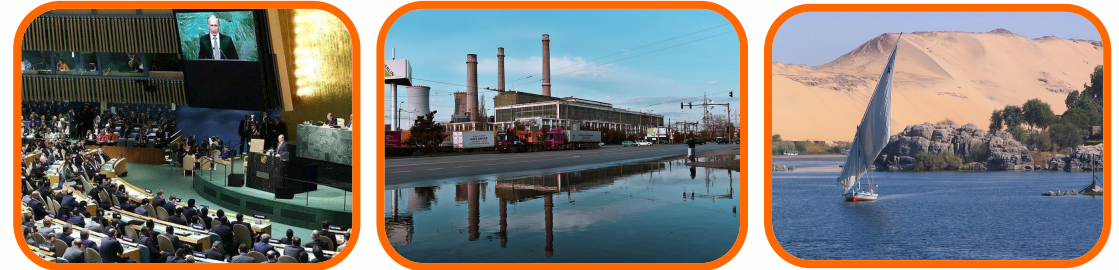


Introduction

Of all the water on Earth, more than 99 percent of Earth's water is unusable by humans and many other living beings

Less than three percent of Earth's water is freshwater and according to the U.S. Geological Survey, most of that three percent is inaccessible.

More than 68 percent of the freshwater on Earth is found in icecaps and glaciers, and just over 30 percent is found in groundwater. Only about 0.3 percent of our freshwater is found in the surface water of lakes, rivers, and swamps. Therefore, **water, a natural resource that supports all life on our planet, is scarce** and as populations grow, urbanization increases, and climate change accelerates, the geopolitical significance of its control becomes increasingly apparent. This impacts relationships among states, hinders economic stability damaging water-dependent sectors and industries, and is a threat for entire communities that see their access to such a vital resource being threatened.



Through this report we want to explore the different implications that the geopolitics of water control can have for states and businesses, examining the challenges posed by water scarcity, the potential for conflict, and the imperative of cooperation.

Through a comprehensive analysis, we will:

- 1) First delve into **the geopolitical importance of water control and how it can be a source of both conflict and cooperation.**
- 2) Second we will analyze its **implications for businesses and economies,** and the complexities of water geopolitics.
- 3) To close this report, we will be using the **Nile River as a case study** in our third part as we believe that it illustrates the various types of conflicts related to water and explores potential avenues for cooperation.





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The **essential nature** for human societies and its **strategic value** make water an important aspect of geopolitics



Essential nature

- “**Sufficient water of adequate quality** is an essential precondition of human life, socioeconomic development, and environmental sustainability” (Global Water Security Assessment, 2023)
 - **Access to safe and clean water is essential for human life** -> UN recognized the human right to safe drinking water (2010) and to sanitation (2015)
 - **Access to water is critical for human activity** (agriculture, industry, and energy production) + **for economic development** -> water security key issue for countries
- **Water security** = “ capacity of a population to safeguard sustainable access to adequate quantities of **acceptable quality water** for sustaining livelihoods, human well-being, and socio-economic development, for ensuring protection against water-borne pollution and water-related disasters, and for preserving ecosystems in a climate of peace and political stability” (UN, 2013) (Figure 1.1)
 - Constraints on water resources can restrain a country's growth:
 - Countries with **abundant water resources** can use them to promote agricultural production, energy generation, and industrial activities
 - Countries **lacking water resources** may become reliant on importing water or water intensive goods -> vulnerable to water-rich nations
 - Necessity of ensuring water security makes the control over water sources (rivers, lakes, and aquifers) a critical issue for countries
 - 2018-2028 = Water Action Decade for Sustainable Development (UN) -> increase & accelerate efforts to meet water security challenges



Strategic value

- **Water = powerful tool for asserting geopolitical influence and control:** control over water sources can provide a **strategic advantage** to nations, particularly in regions where water scarcity is a pressing issue, and often directly corresponds with **territorial sovereignty**
- **Transboundary water issues:** many rivers, lakes or aquifers cross national boundaries -> force states to negotiate usage rights -> one of the major sources of issues to the **bilateral or multilateral relations** among the riparian countries
 - Desire to control transboundary water sources can be driven by:
 - Will to ensure **water security**
 - As a source of **power**
 - Translated by the construction of infrastructures (dams, reservoirs or irrigation systems) (Figure 1.2) -> that provide countries with greater **control over water resources + bargaining power**
- E.g.: countries that have control over water sources such as major rivers or underground aquifers can **influence the quantity and quality** of water reaching downstream countries, by restricting or diverting water flows -> grants them the power to exert influence over downstream states' economies and pressure in geopolitical disputes



The importance of the **geopolitics of water control** is increasing due to several **factors**

Increase of water scarcity & of the stress of water crisis

- 1) **Rapid growth of the world population** is increasing the demand for freshwater (Figure 1.3)
- 2) **Climate change**: heightened occurrences of droughts and floods. E.g., agriculture (=70% of the annual water consumption) profoundly influenced by shifts in precipitation patterns: droughts and floods are becoming more prevalent, rainfall may be delayed for extended periods before arriving suddenly, rather than being evenly distributed throughout the growing season -> unpredictability complicates agriculturors' reliance on rainfall for crop irrigation and underscores the necessity for enhanced water storage and irrigation systems (Figure 1.4)
- 3) **Other factors**: industrialization, urbanization, collapsed infrastructure and distribution systems, pollution, conflict, poor management of water resources

Geopolitical implications of water scarcity

- Can hamper **agricultural production, industrial activities, and energy generation** -> food shortages, economic instability, even famines, affecting the economic stability and the development of the country
- Can lead to **population displacement and migration**, both internally and across borders
- Can lead **governments to face challenges** in managing water resources, meeting the needs of their populations and of businesses, and maintaining political stability
- Can **exacerbate existing political tensions and instability** within countries, and scarce water resources can lead to increased competition between countries sharing transboundary water sources, potentially leading to shifts in trade patterns and geopolitical alliances
- Can also **incentivize countries to engage in cooperative efforts** to manage shared water resources more effectively
- Can lead to the **over exploitation of water resources**, which contributes to environmental degradation, including the depletion of ecosystems, loss of biodiversity, and desertification.

Water scarcity figures

- **2.2 billion** people do not have access to safe drinking water
- **50%** of the global population do not have access to sanitation facilities
- **4 billion** people experience severe water scarcity for >1 month / year
- **>2 billion** people live in countries where water supply is inadequate
- **700 million** people could be displaced by intense water scarcity by 2030
- By 2025 two-thirds of the world's population could be under water stress
- By 2025 **1.6 billion** people will be living in regions with absolute water scarcity (Figure 1.5)
- Most water-stressed regions: Middle East and North Africa (**83%** of the population exposed to extremely high water stress) & South Asia (**74%**)
- By 2050 **4.3 billion** people will be living in arid areas and regions with high water stress (+1 billion vs today)



The importance of water control can be the source of intra-state as well as inter-state conflicts that may escalate into a hot war (Figure 1.6)

1

Water can be a trigger or the root cause of a conflict

When there is a dispute over the control of water or water systems, or where economic or physical access to water, or scarcity of water, triggers violence

Example, the Indus River (flowing through India and Pakistan):

- 1947: partition of British India, beginning of the conflict
- 1960: Indus Waters Treaty, division of Indus River between India and Pakistan
- Despite the treaty, disputes and tensions over water sharing have persisted: both countries have accused each other of violating the treaty by constructing dams that could potentially affect the flow of water to downstream areas. E.g., Pakistan affirms that India's construction of hydroelectric projects on the western rivers, such as the Baglihar Dam on the Chenab River, could disrupt the flow of water to its agricultural region in the Punjab province (Figure 1.7)

2

Water resources or systems can be used as a weapon of conflict

Water infrastructure can be exploited as a tool of conflict, with the potential to cause significant harm to civilian populations and exacerbate existing conflicts in a region

Example, Mosul Dam in Iraq (Tigris River and operational since 1986)

- Largest dam in Iraq, crucial water resource for irrigation, hydroelectric power generation, municipal water supply
- 2014: ISIS seized control of the Mosul Dam -> fears that they could use the dam as a weapon of war, by either releasing large amounts of water downstream, which would cause flooding and devastation, or by withholding water, causing drought and depriving downstream populations of water resources
- Control of the dam became a strategic objective -> intense fighting in the region
- ISIS was eventually driven out of the area and control of the dam was regained by Iraqi government forces (Figure 1.8)

3

Water resources or systems can be intentional or accidental casualties of a conflict

Critical water infrastructure (dams, pipelines, treatment plants, and pumping stations, etc.) may be intentionally targeted or inadvertently damaged as a result of military operations -> severe disruptions in water supply, sanitation, and irrigation, affecting civilian populations and exacerbating humanitarian crises

Example, dam irrigating Crimea

- 2014: annexation of Crimea by Russia, Ukraine voluntarily cut off the water supply to Crimea -> severe water shortages that ended only after Russian forces seized the canal when they invaded Ukraine in 2022 (Figure 1.9)



Water plays a key role in shaping the **diplomatic and strategic interests** of riparian states

Water cooperation' entails various players and sectors working together

Partnerships for water cooperation involve a variety of actors engaged in diverse sectors and at different levels.

Examples include:

- Multi-stakeholder partnerships
- Corporate partnerships
- Academic/research partnerships
- Public-private partnerships (PPPs)
- Basin organizations that involve multiple countries as partners
- Water user associations (WUAs)
- Water operator partnerships.

Example: An example can be the creation of the Organisation pour la Mise en Valeur du Fleuve Sénégal in 1972 which enabled Guinea, Mali, Mauritania and Senegal to reach high levels of cooperation in order to share the the ownership of the dams, built along the river, by Mauritania, Mali and Senegal (Figure 1.10).

International law sets objectives and aligns the strategies of the different actors

International law provides a framework for addressing water-related challenges and disagreements across scales, sectors, and disciplines.

Indeed, within partnerships, each party has different interests and objectives that sometimes can lead to disagreements on priorities and strategies, making it more difficult to reach agreements or common grounds for understanding. In those cases, international legal rules provide principles and guidelines for equitable and sustainable management and allocation of shared water resources

Among the most important **global instruments** are:

- The 1997 UN International Watercourses Convention (UNWC) and
- Two resolutions adopted by the UN General Assembly, one on the Right to Water and Sanitation and another related to transboundary aquifers.

At the regional level, the two most relevant legal documents contributions are:

- the UNECE Water Convention and
- The 2000 SADC Revised Protocol on Shared Watercourses (SADC Revised Protocol).

In addition to treaty law, rules of customary international law confer some general legal entitlements and impose obligations on riparian States.

The most important legal rule of this body of law is the principle of **"equitable and reasonable use"** which encompasses both a right and a duty to use an international watercourse in an equitable and reasonable manner.



Dispute Settlement Mechanism allow for the peaceful resolution of water-related disputes

In line with the fundamental precepts of the UN Charter, States are obligated to resolve their disputes by peaceful means

States have used all these methods to resolve water disputes but the most common recourse is **negotiations**, **good offices**, and **fact-finding**, supported by the use of joint bodies and regional institutions. However, in many cases, **riparian states have uneven bargaining powers and different capacities** which can be an issue in negotiations.

In those cases where the parties cannot reach an agreement by negotiation they may request **mediation or conciliation by a third party** or make use, if applicable, of joint watercourse institutions. Resorting to an **international or regional court** or to **international arbitration** is only possible where the parties have consented to the jurisdiction of that court or tribunal. State's consent may be expressed by special agreement between the parties to the dispute or by recognising the jurisdiction of the International Court of Justice.

Example: Silala Dispute (Figure 1.11)

An example of states resorting to an international court was the case of the dispute over the Status and Use of the Water of the Silala (Silala Dispute), where Chile brought to the **International Court of Justice (ICJ)** a case against Bolivia on the status of the Silala waters, as an international watercourse, and to determine Chile's rights as a riparian State. The dispute was brought on the basis of Article XXXI of the **American Treaty on Pacific Settlement of 1948** that both Chile and Bolivia had ratified. Such article reads as follows: *"In conformity with Article 36, paragraph 2, of the Statute of the International Court of Justice, the High Contracting Parties declare that they recognize, in relation to any other American State, the jurisdiction of the Court as compulsory ipso facto, without the necessity of any special agreement so long as the present Treaty is in force, in all disputes of a juridical nature that arise among them concerning [...] b) Any question of international law"*. Therefore, **both Chile and Bolivia recognized the jurisdiction of the ICJ to arbitrate over the dispute.**



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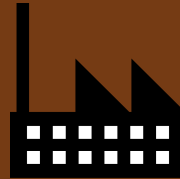


Water plays a significant role across sectors



Agriculture

The agriculture sector is responsible for 70% of global water withdrawals (Fedotova, 2023).



Industry

the Industrial sector encompasses aiding production, manufacturing, and shipping for businesses
It is responsible for 19% of global water withdrawals (Fedotova, 2023).

Water is indispensable in various stages of the value chain.

Sectors and business depend on water from the extraction to consumption process.



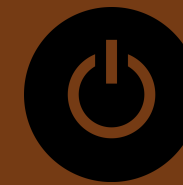
Consumer Staples

Includes all food, beverage, agriculture, and tobacco industries & is heavily reliant on the agricultural sector, thus also very water dependent (Fedotova, 2023).



Bottled Water & Beverages

The beverage sector relies on water as a raw material in the products, as water scarcity increases, there is less available water for the products & more competition for it.



Others

The energy, mining, oil, construction & engineering rely on water at the end of production to washing purposes it requires a large quantity of water (UN World Water Development Report 2022, 2023).



Water scarcity induces risks and economic costs

Business relying on water face heightened **physical and geopolitical risks** resulting in reputational and regulatory consequences and **increased costs** (Meredith, 2021)

1

Physical Risks

When waterways start to dry up leading to lower water levels, the supply chain is disrupted and there are heightened physical risks for transporting materials or goods (Meredith, 2021).

- periods of impassibility on major trade routes
- losses and challenges connecting consumers & products
- loading and transportation issues

2

Geopolitical Risks

Water scarcity increases risks abroad from foreign political agents and can result in reputational damage and regulatory consequences.

Example, Coca Cola bottling plant in Mehdiganj, India

- local demonstrations accusing CC plant of over extracting shared ground water (reputational damage)
- local authorities shut down plant and fine Coca Cola (regulatory consequence)

3

Increased Costs

The economic costs of disruptions are significant, with global companies experiencing \$38.5 billion in water-related losses in 2018 alone (Koncagül et al., 2021).

- \$200B projected impact on consumer staples sector due to operational disruptions from extreme weather conditions, fluctuating prices of water, and fines & lawsuits related to water pollution (Meredith, 2021).
- In 2022 the contamination and depletion of water supplies equated to stranded assets worth \$13.5 billion across major industries (electricity, oil and gas, metals and mining, and coal) (Fedotova, 2023).



Inaction induces more risks and economic costs

Although companies recognize the importance of water and the serious risks and costs that water scarcity imposes...



STATUS QUO

- only 31% of companies in sectors highly impacted by water have established incentives to change current trends of water scarcity (Fedotova, 2023).
- Most companies have not aligned their water withdrawal levels with SDG goals



Comparing Costs

- Although the costs to amend water management practices is costly, the cost of inaction are much higher
- For example, it would cost the consumer staples sector \$11B to change its water management practices, but the cost of inaction would be 18 times more (Meredith, 2021).



Prioritizing Sustainability

- Investing and prioritizing sustainable water management practices today will help avoid costlier risks in the future
- in 2020 the World Economic Forum's Global Risk Report estimated that due to water scarcity, pollution, and climate change, there is approximately \$301B business value put at risk (The Value of Water for Business, 2021).



Measurement is key for proper water management

Effective water management is crucial for mitigating the risks and impacts of water scarcity on water dependent sectors

In order to sustainably manage water, companies need to take steps to first **measure their water usage** through assessing their **dependencies on water** and its **value chain wide impact** (Fedotova, 2023)

1

Water footprint & Risk Assessment

Companies need to conduct water footprint and risk assessments in order to identify areas of improvement by utilizing tools like the WWF's Water Risk Filter, Aqueduct Platform, and Water Risk Monetizer

2

WWF's Water Risk Filter

facilitates companies and relevant stakeholders to identify the most important areas to address water risk

3

Aqueduct Platform

Developed by the World Resource Institute to identify and analyze water risk around the world

4

Water Risk Monetizer

Facilitates the assessment of water risks of certain businesses to help bridge the gap between what businesses pay for water and the potential costs of the risks water scarcity brings to businesses.



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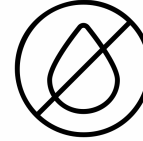
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A delicate balance of competing interests and historical grievances

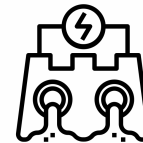
Countries in the Nile river basin



With an estimated annual flow of over 84 billion cubic meters, the Nile serves as a vital artery for eleven riparian countries - Egypt, Sudan, South Sudan, Ethiopia, Eritrea, Kenya, Uganda, Rwanda, Burundi, Tanzania, and the Democratic Republic of the Congo (Figure 3.1). However, the distribution of this precious resource is far from equitable.



Downstream countries like Egypt and Sudan historically claim the lion's share of Nile waters, owing to colonial-era agreements and infrastructure development that gives them significant control over its flow. These agreements, such as the 1929 Anglo-Egyptian Treaty and the 1959 Nile Waters Agreement, allocated the majority of the Nile's flow to Egypt and Sudan, establishing a system that marginalized the interests of upstream riparian states. This disparity in access exacerbates tensions with upstream countries like Ethiopia, which holds the source of the Blue Nile, contributing the majority of the Nile's flow. Ethiopia's efforts to harness its water resources for hydropower and irrigation have raised alarm bells downstream, where reliance on the Nile is deeply ingrained in agricultural practices and national economies.



The proliferation of infrastructure projects, such as dams and irrigation schemes, disproportionately benefits certain countries while potentially depriving others of their fair share of water. This unequal distribution not only fuels diplomatic disputes but also perpetuates socio-economic disparities within and between Nile basin countries.



Contemporary issues exacerbate an already complex and worrying situation

The Nile region illustrates the three types of conflicts related to water

1

Water can be a trigger or the root cause of a conflict

Disagreements over how much water each country should receive have strained relations

→ Sudan's agricultural expansion along the Nile has raised concerns in Egypt about reduced water availability downstream, leading to diplomatic disputes and occasional threats of military action.

2

Water resources can be used as a weapon of conflict

Throughout history, states have sought to leverage control over the Nile's water resources as a means of exerting influence or coercing neighboring countries, heightening regional instability.

→ The Aswan High Dam in Egypt reinforces the country's control over the Nile's water, which has long been a source of tension and has been used in diplomatic negotiations.

3

Water resources or systems can be intentional or accidental casualties of a conflict

In times of political strife or warfare, critical water infrastructures may become targets

→ During the Second Sudanese Civil War, the Jonglei Canal (Figure 3.2) project was abandoned, causing disruption to natural flood patterns and exacerbating tensions between communities reliant on the river for irrigation and livelihoods.

Amidst historical tensions, contemporary challenges continue to exacerbate the complexities of water governance in the Nile basin.

Population growth, urbanization, and climate change present pressing issues.

The increasing demand for water resources, coupled with changing rainfall patterns and the melting of glaciers, threatens the availability and reliability of Nile waters.

The proliferation of infrastructure projects further complicates water management efforts.

The construction of the GERD on the Blue Nile, one of the major tributaries of the Nile River, has emerged as a significant point of contention in the Nile basin (Figure 3.3). Initiated by Ethiopia in 2011, it represents one of Africa's largest infrastructure projects, with the aim of harnessing the country's abundant water resources for hydropower generation and economic development.

Upon completion, the dam is expected to have a total installed capacity of around 6.45 gigawatts (International Hydropower Association). However, the GERD has sparked significant controversy and geopolitical tensions, particularly with downstream countries like Egypt and Sudan.

Despite ongoing negotiations and diplomatic efforts, the GERD remains a focal point of regional tensions, underscoring the complexities of water governance in the Nile basin.



Towards more cooperation in the region?

Despite the challenges and tensions surrounding water control in the Nile region, there are signs of potential cooperation and dialogue among riparian states.

Example: The Nile Basin Initiative

- Founded in 1999, the NBI represents a bold attempt by Nile basin countries to transcend historical animosities and work towards collective action in the management of shared water resources.
- Through its platform, member states engage in dialogue, negotiation, and joint project implementation, with the overarching goal of promoting sustainable development and equitable utilization of the Nile's waters.
- This initiative stands as a beacon of regional cooperation amidst the turbulent waters of geopolitical rivalry.

However, the road to cooperation is fraught with challenges.

→ The principle of "**water sovereignty**" often underpins national water policies, wherein states assert their rights to unimpeded access and control over water resources within their territories. This assertion of sovereignty can complicate efforts to forge consensus and compromise, particularly when it comes to contentious issues such as water allocation, infrastructure development, and environmental protection.

→ the specter of power asymmetry looms large in the context of Nile geopolitics, with downstream states wielding disproportionate influence due to their historical reliance on the river's waters. This power dynamic can engender mistrust and skepticism among upstream states regarding the fairness and equity of cooperative frameworks, hindering progress towards genuine collaboration.

Fostering a culture of trust, transparency, and inclusivity is imperative to overcoming the barriers to cooperation in the Nile region.



Similar situations can be observed worldwide

The case of the Nile region serves as a poignant example of the geopolitical complexities inherent in water control and management, with parallels observable across the globe.

Example: The Mekong River basin in Southeast Asia

- As one of Asia's largest rivers, the Mekong flows through six countries: China, Myanmar, Laos, Thailand, Cambodia, and Vietnam
- It plays a vital role for millions of people in the region, serving as a source of water for irrigation, fishing, drinking water, and hydroelectric power generation
- China has constructed numerous dams along the Mekong to address its increasing energy demands and manage flooding, a strategy often tied to its Belt and Road Initiative (BRI : initiative launched by president Xi JinPing in 2013).downstream countries have expressed concerns about these dams.
- To address these challenges, riparian countries of the Mekong have established the Mekong River Commission (MRC) to encourage cooperation in managing the river's water resources. China is not a member of the MRC.

Lessons learned from the Nile region can help conflict resolution, diplomacy, and sustainable water governance worldwide, offering valuable insights for addressing future challenges.





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Conclusion

Water has a multifaceted significance in geopolitics that can influence the quality of life and development in countries, their economies, and the political stability of regions

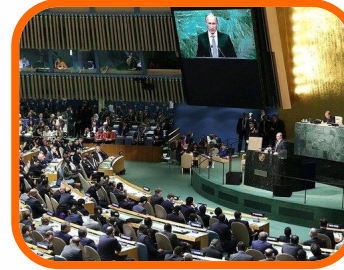
Water is essential for human survival and access to sanitary water is a irrefutable human right

Through various international institutions and legislation, multilateral cooperation is fostered to broker peaceful negotiations to share water resources between states and entities

Water also influences the dynamics of geopolitical power by creating intense competition

Water increasingly becomes a catalyst for sovereignty disputes and a reason for conflict, a weapon of conflict, and a casualty of conflict

The Nile River Case Study exemplifies these geopolitical properties of water



Many sectors and businesses are heavily dependent on water at every stage of the value chain and can incur geopolitical risks, loss of revenue, and increase costs when there is an insufficient supply of water

The adoption of proper water measurement and sustainable water management best practices is necessary if companies want to adapt to the changing water geopolitical dynamic and reverse the the tide of water scarcity





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Figure 1.1

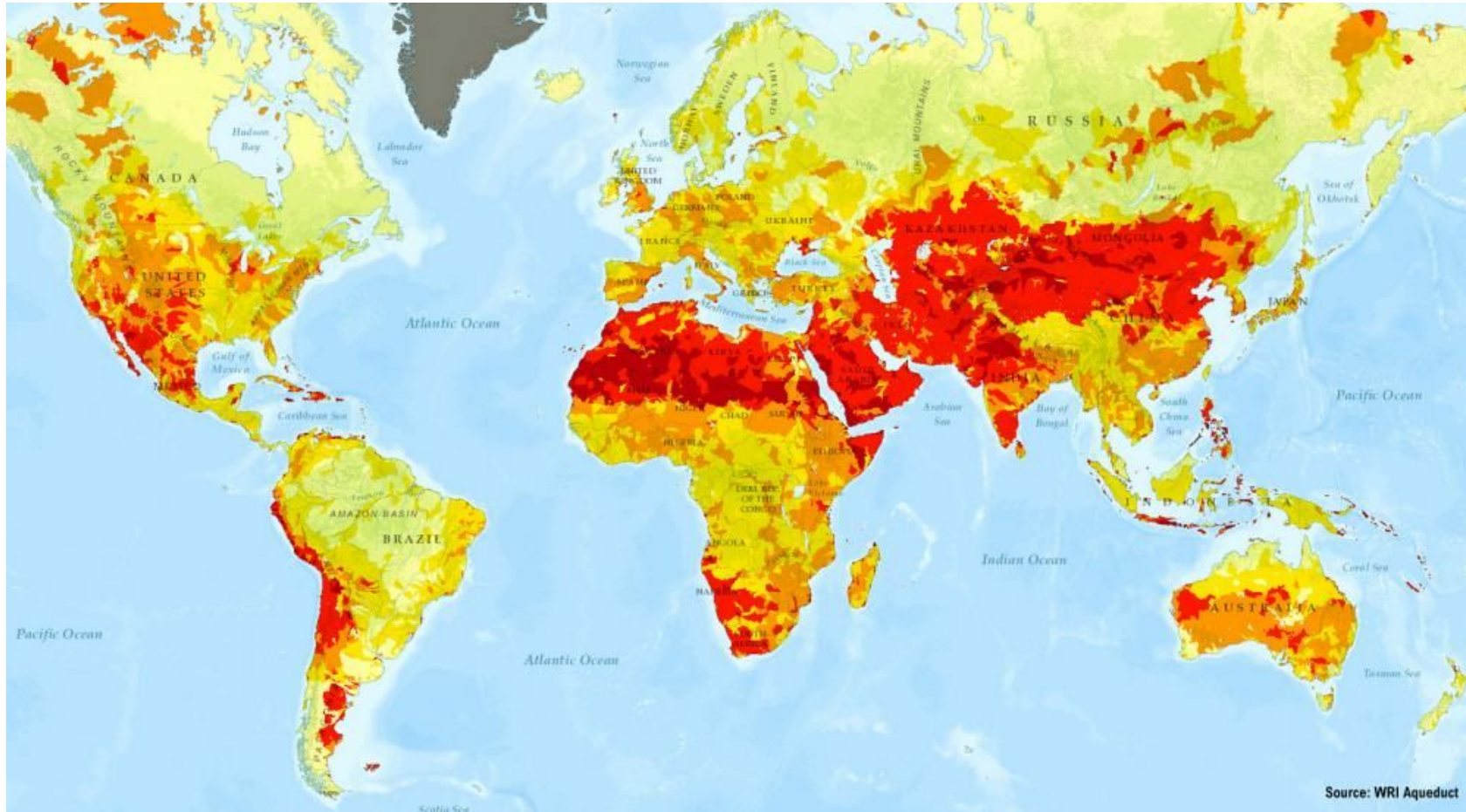




Figure 1.2



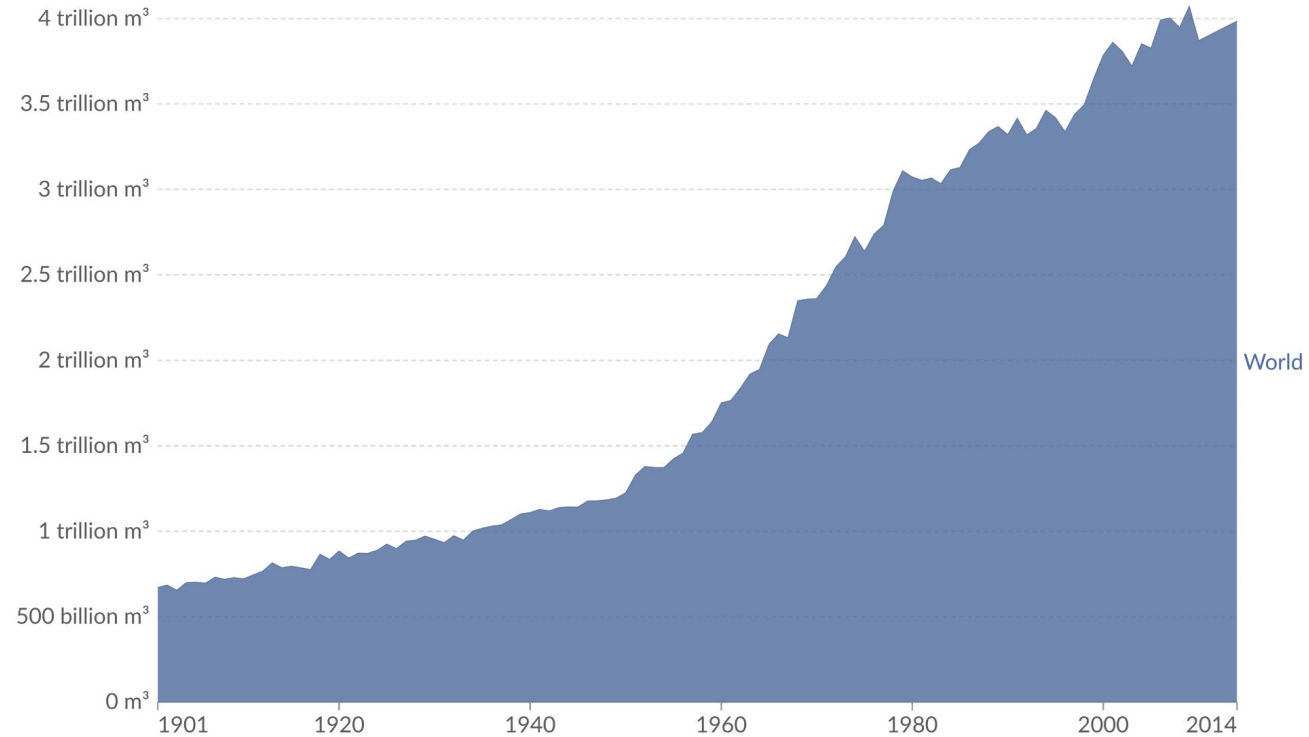


Figure 1.3

Global freshwater use over the long-run

Our World in Data

Global freshwater withdrawals for agriculture, industry and domestic uses since 1900, measured in cubic metres (m³) per year.



Data source: Global International Geosphere-Biosphere Programme (IGB)

OurWorldInData.org/water-use-stress | CC BY



Figure 1.4

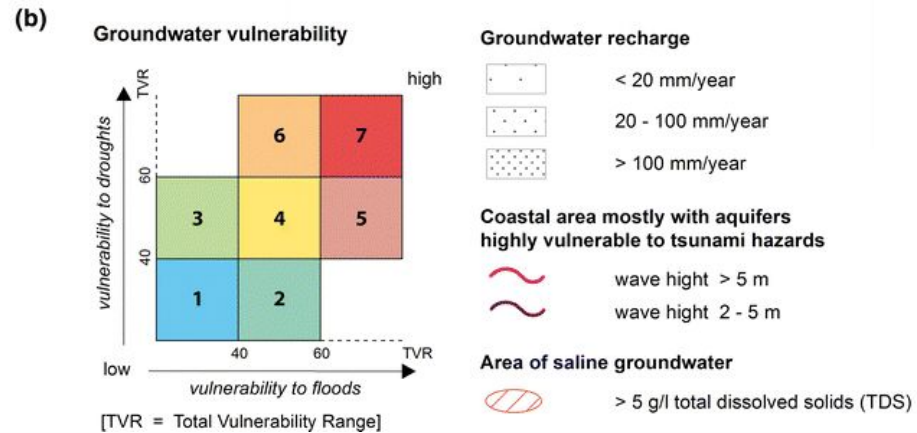
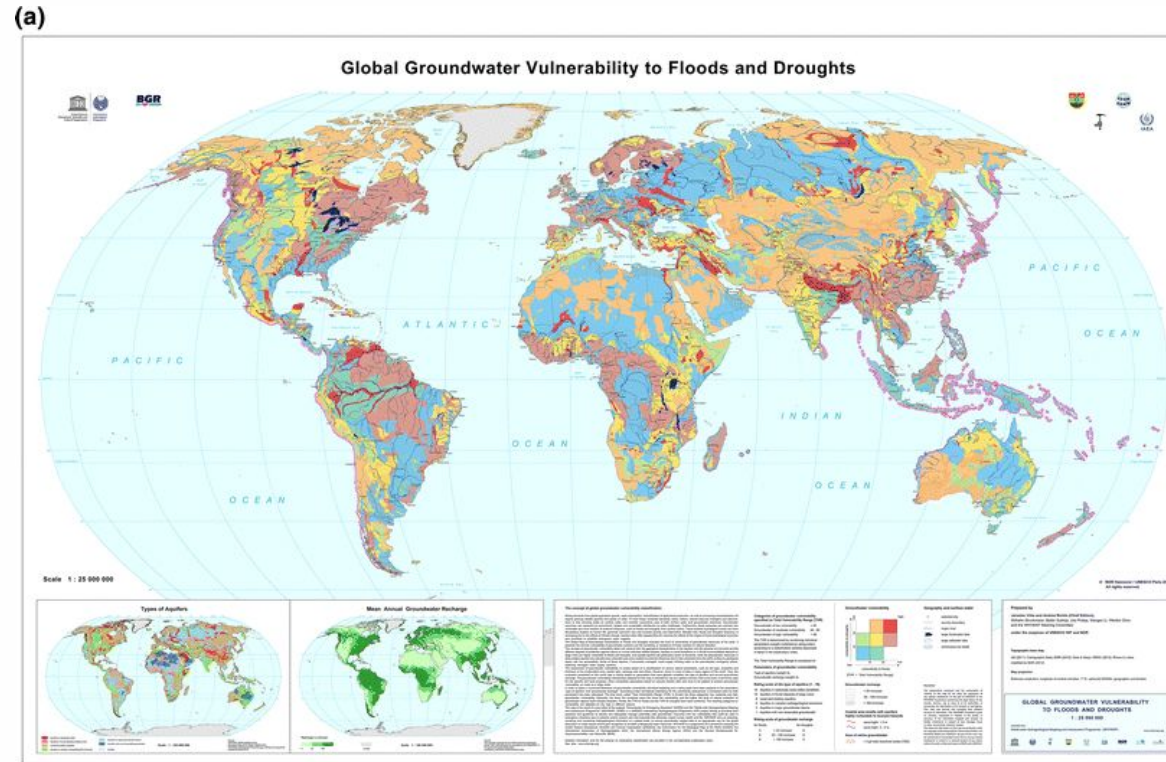




Figure 1.5

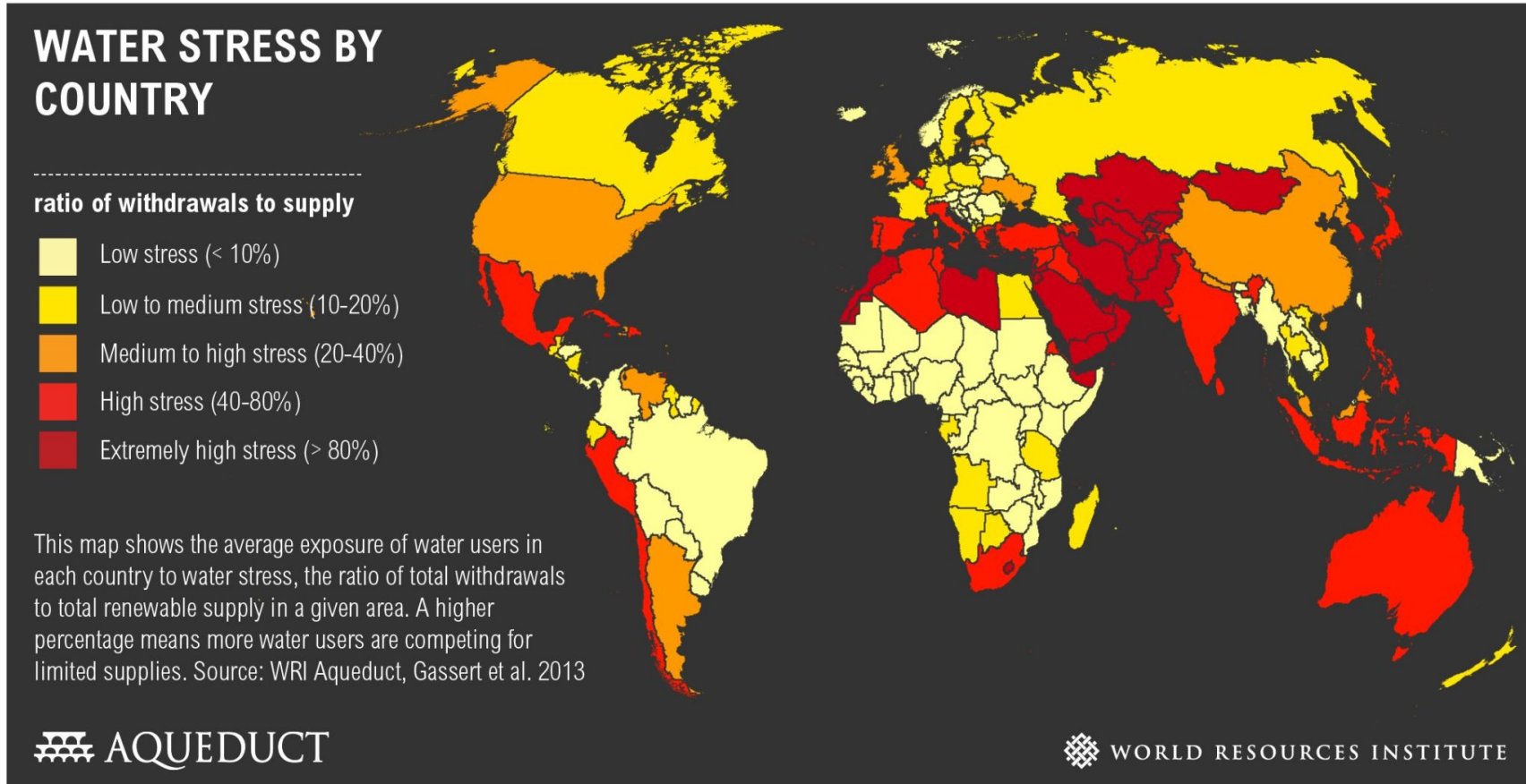




Figure 1.6

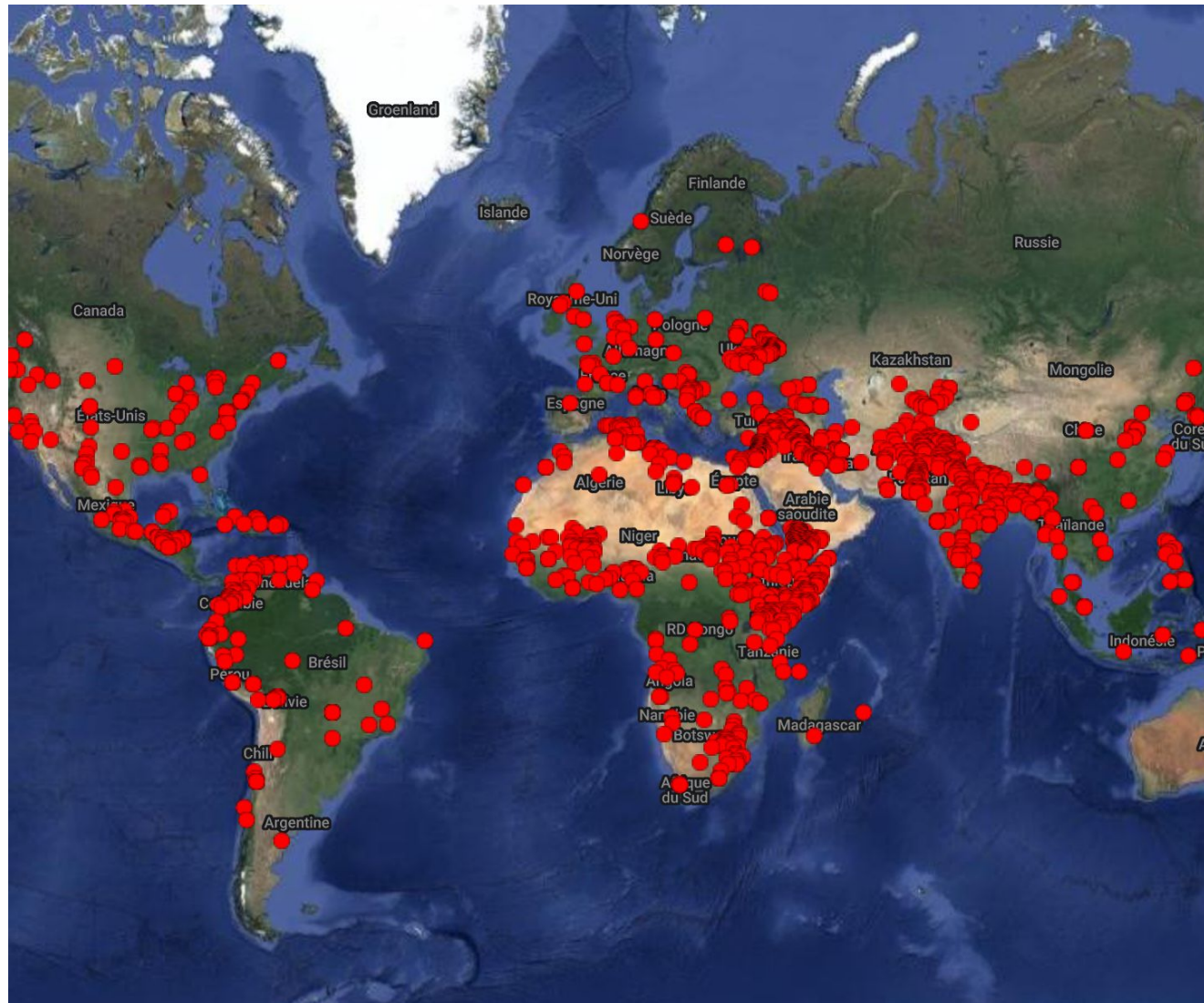




Figure 1.7

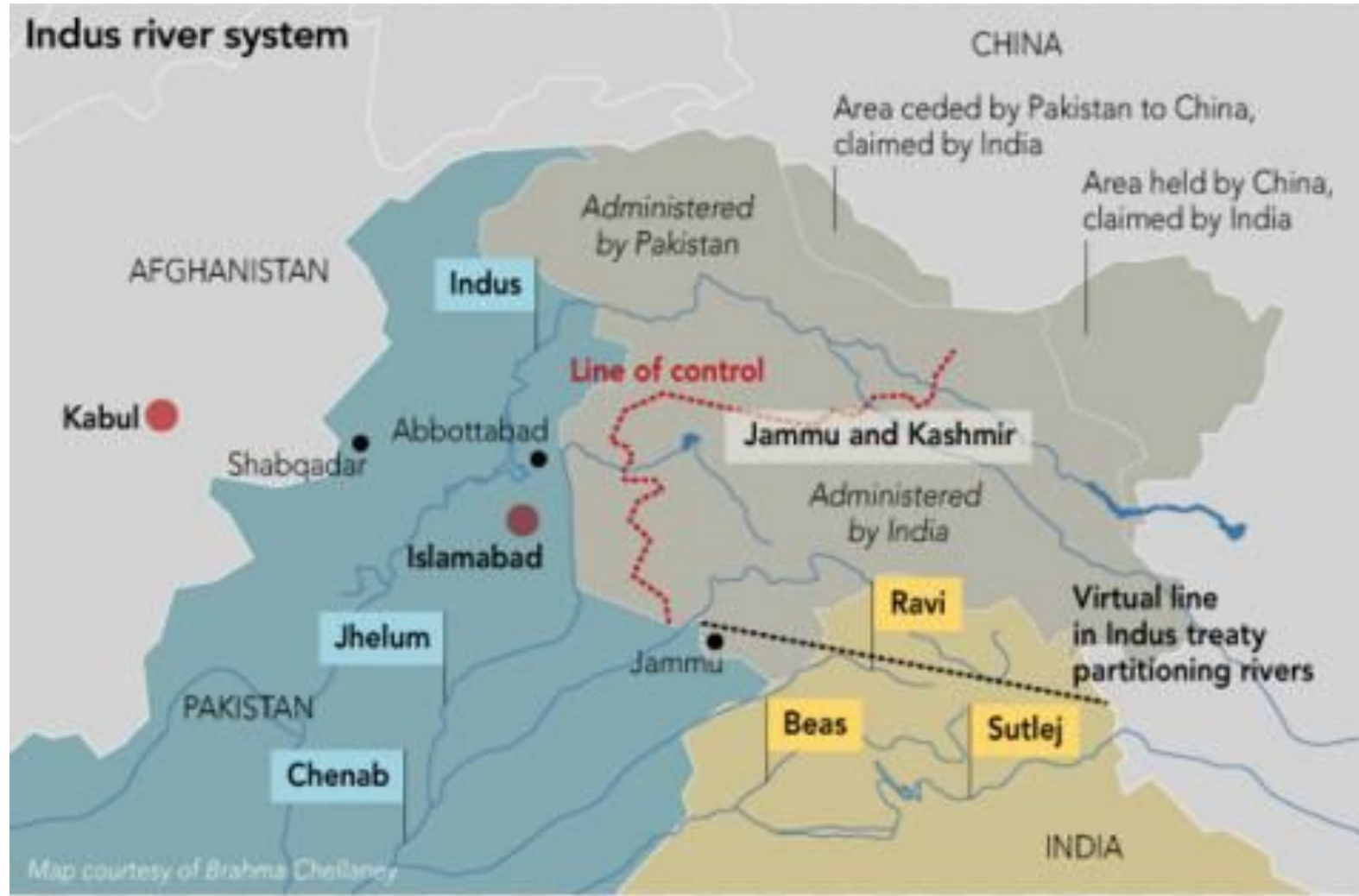




Figure 1.8





Figure 1.9





Figure 1.10

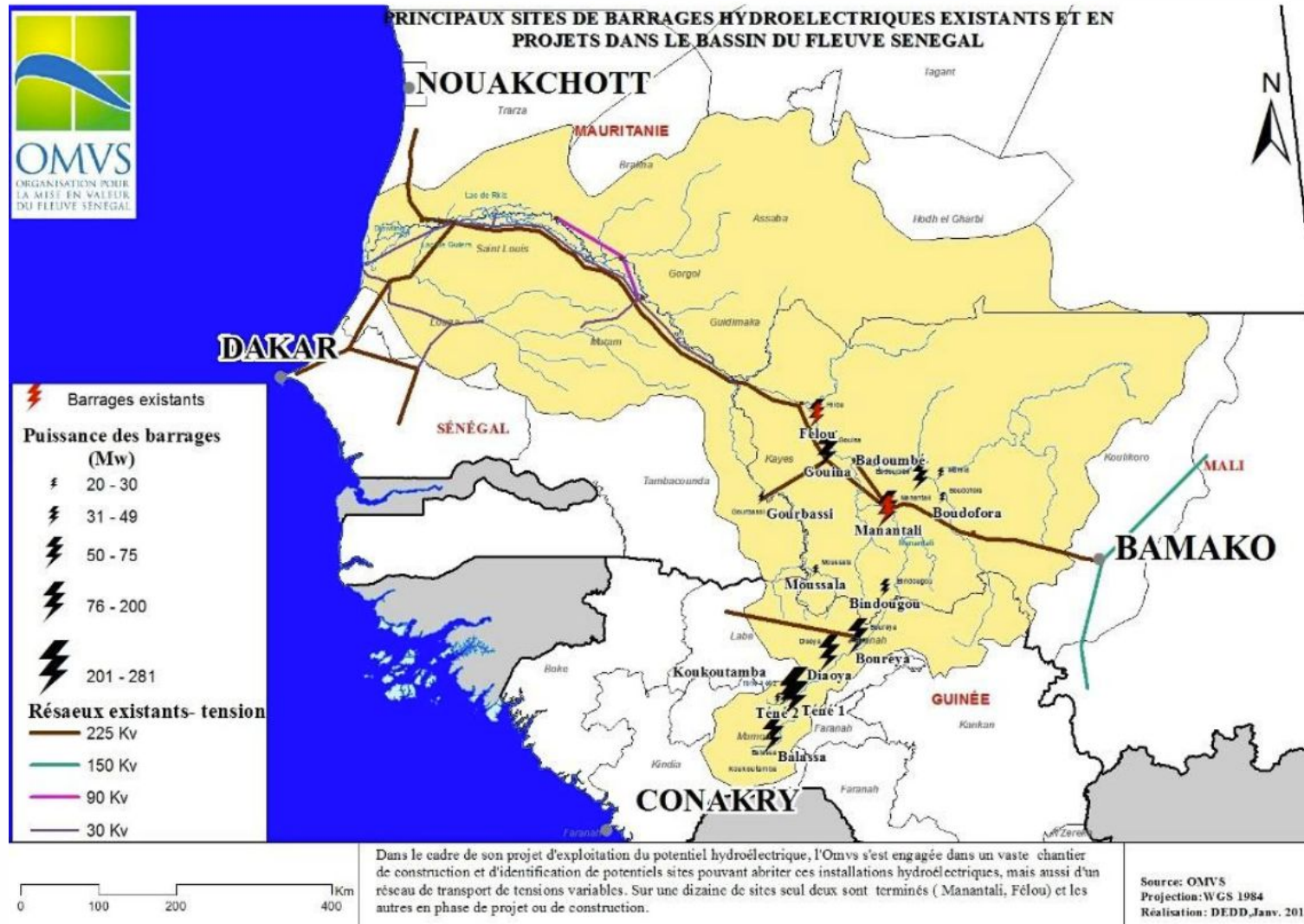




Figure 1.11





Figure 3.1





Figure 3.2

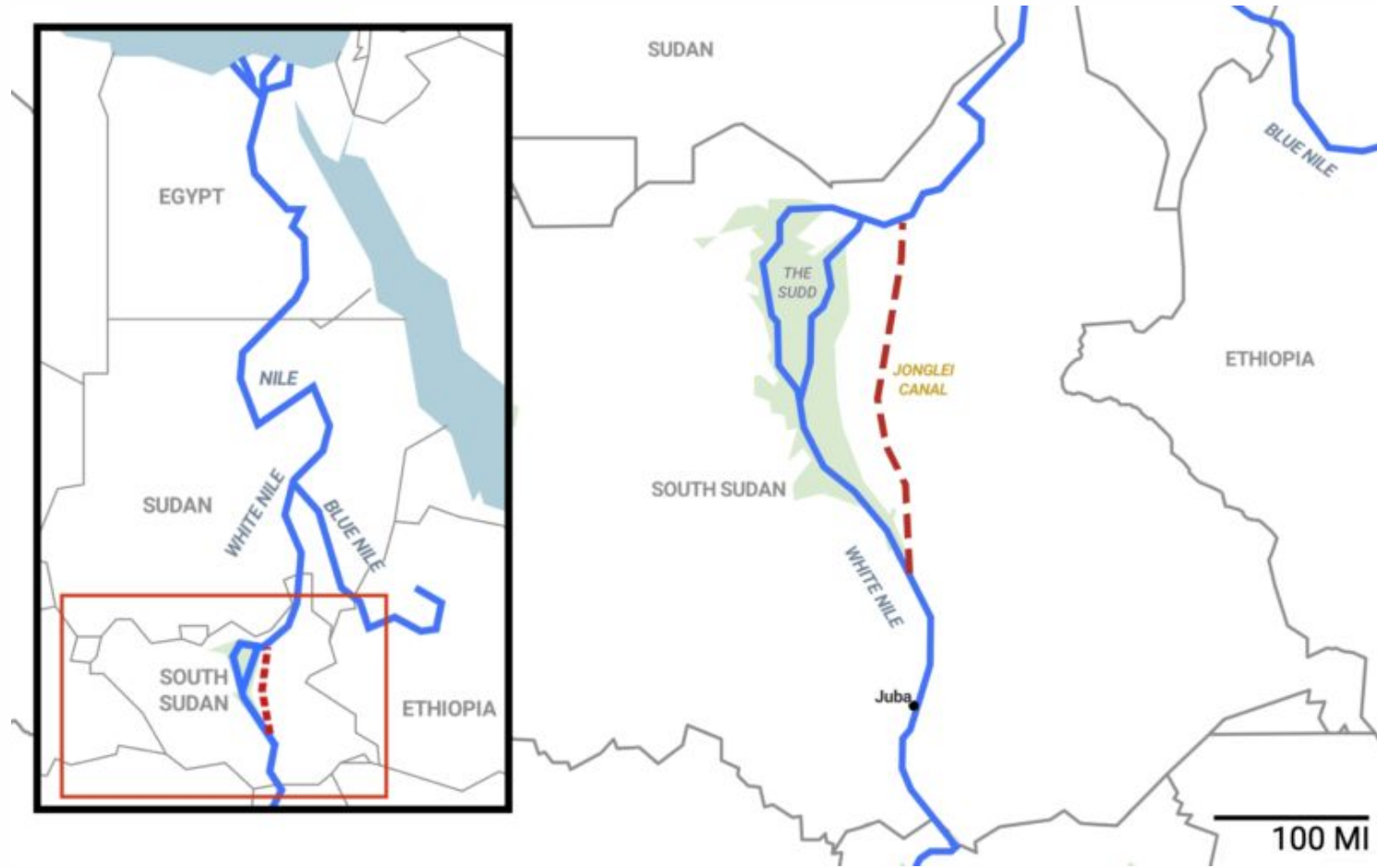




Figure 3.3





Figure 3.4



