Water Insecurity To Drive Geopolitical And Social Tensions Across Multiple Regions, While Desalination Will Gain Momentum

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Key View

- We expect competition over water resources originating from transboundary sources to exacerbate interstate tensions across regions over the coming years.
- At the domestic level, we expect social tensions over water supply to become increasingly frequent. Key factors contributing to the rise in countries' vulnerability to water stress include population growth and the prevalence of water-intensive industries within their economies.
- We thus expect desalination projects to climb higher on the public agenda in the coming years. As water stress intensifies globally, there will be a trend towards the relaxation of environmental regulations to facilitate the construction of desalination plants.

We expect competition over water resources originating from transboundary sources to exacerbate interstate tensions across multiple regions over the coming years (*see table below*). This tension arises from the divergent interests of

upstream countries, which typically aim to develop hydroelectric power plants, and downstream countries, which often rely on water for agriculture (the most water-intensive industry). According to the World Meteorological Organization, El Niño is projected to exacerbate global warming in 2024, which, in turn, will intensify water scarcity.

Regions With Potential Flashpoints

Region	Upstream Countries	Downstream Countries
Central Asia	Kyrgyzstan, Tajikistan	Kazakhstan, Turkmenistan, Uzbekistan
Middle East and North Africa	Turkiye, Ethiopia	Iraq, Egypt, Sudan
South and South East Asia (Mekong Delta)	India, China	Vietnam, Cambodia, Thailand, Laos
South Asia	Afghanistan	Iran, Pakistan
Latin America	Brazil	Argentina, Paraguay

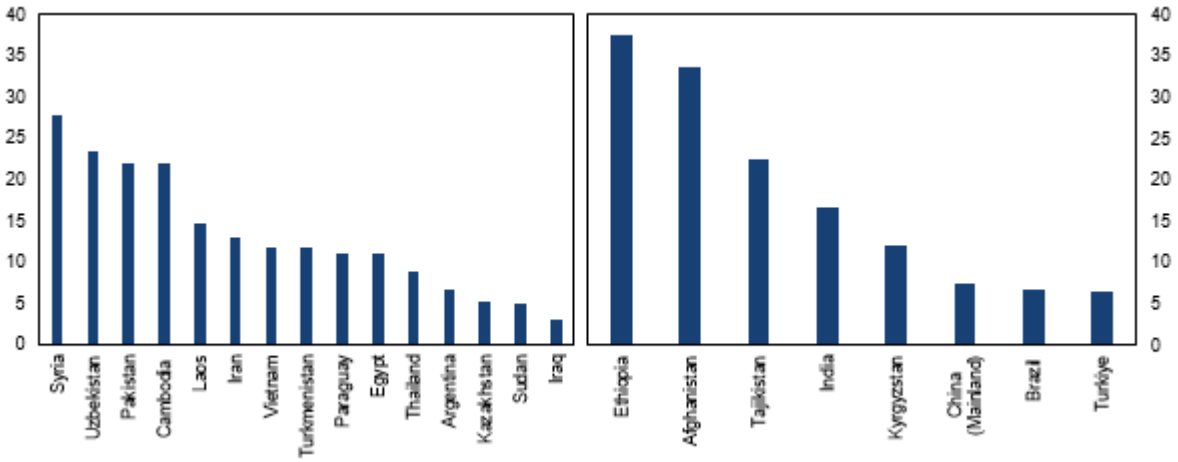
Source: BMI

An insufficient water supply will have adverse effects for both upstream and downstream countries. **For upstream nations, the intensification and increased frequency of droughts will expose vulnerabilities in energy systems reliant on hydropower**. For example, our Power & Renewables Team notes that in Latin America, although hydropower will continue to be the predominant power source over the next decade, its share in the regional power mix is expected to decrease by 3.5%, dropping to 42.5% by 2032. This decline is attributed to challenges faced by the hydropower sector, such as recent drought conditions. For instance, Ecuador declared an energy emergency on April 16 due to drought conditions exacerbated by El Niño, which have affected production at hydroelectric dams. Similarly, Ethiopia's significant dependence on hydropower – which accounts for more than 96% of its electricity generation – heightens the risk of disruptions to its electricity supply due to climate change and drought risks. This situation is also likely to harden the Ethiopian government's stance in water-sharing negotiations, particularly regarding the Grand Ethiopian Renaissance Dam (GERD), which is causing major concerns about water flow in Egypt. In December 2023, Egypt reaffirmed its right to defend its water supplies following an inconclusive fourth round of talks over the GERD, with water-sharing agreements still pending. Similarly,

Iraq has made repeated appeals to Turkiye – in 2018, 2022, and 2023 – to release more water due to drought conditions, highlighting its dependence on an upstream country and the impact of existing dams. Indeed, major hydropower-producing markets in MENA will focus on non-hydropower renewables to diversify their power markets. In Asia, hydropower projects have encountered obstacles stemming from environmental and social opposition, as well as financial challenges.

Economic Significance Fuels Tensions Over Water Resources

Selected Countries - Downstream Countries (LHS) & Upstream Countries (RHS), Agriculture, % of GDP



Note: The latest data available for Turkmenistan is from 2022, and for Syria, it is from 2021. Source: World Bank, BMI

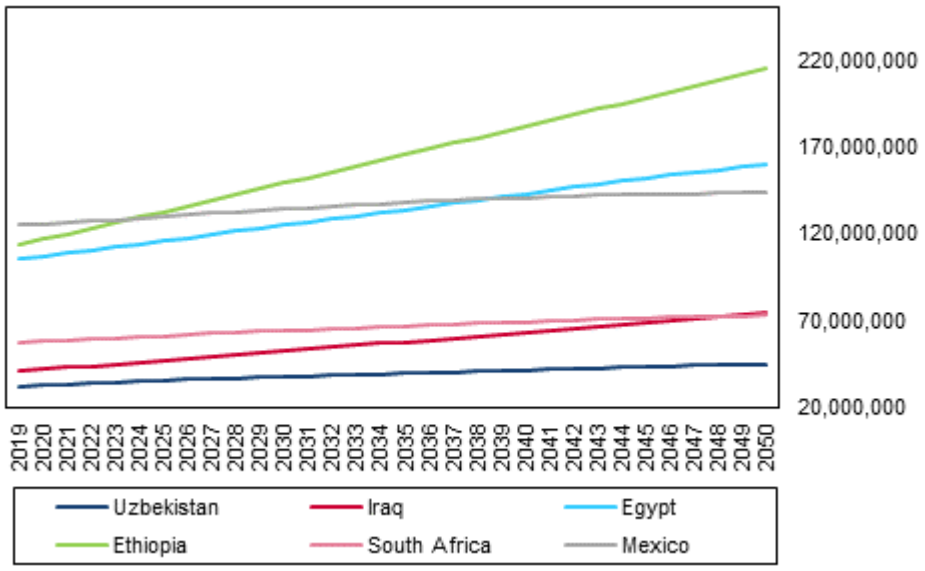
Meanwhile, reduced water flow will significantly impact the economies of downstream countries, particularly in the agricultural sector. This issue is especially acute in Central Asia and South East Asia, where agriculture contributes substantially to real GDP growth (*see left-hand chart above*). A decline in agricultural production threatens food security by driving up food prices. We anticipate that such risks will become more pronounced in other regions and countries as well.

At the domestic level, we expect social tensions over water supply to become increasingly frequent, as the provision of basic utilities often falls under the purview of governments. Key factors contributing to the rise in countries' vulnerability to water stress include population growth and the prevalence of water-intensive industries within their economies, such as agriculture and textile manufacturing, among others. Many emerging markets are forecast to experience rapid population growth in the coming decades, which will exert additional pressure

on water resources. Several of the above-named countries have already witnessed protests due to water scarcity, particularly among farmers. Examples include Iran, Iraq, and India. For instance, in September 2023, India saw farmers in the state of Karnataka, which is home to several dams, protesting over the allocation of flows from the Cauvery (Kaveri) River to the neighbouring state of Tamil Nadu amid drought conditions. The protests erupted because the government was reluctant to release water despite a court order. Government policies, such as minimum support prices (a government-set minimum price for certain agricultural products), encourage agricultural production, which, in turn, increases the demand for water. In the US, similar tensions exist between California and other agriculturally dependent states such as Arizona. These disputes often centre on the allocation and usage of shared water resources, which are critical for sustaining agricultural outputs.

Population Growth Intensifies Pressure on Water Supply

Selected Countries - Projected Population



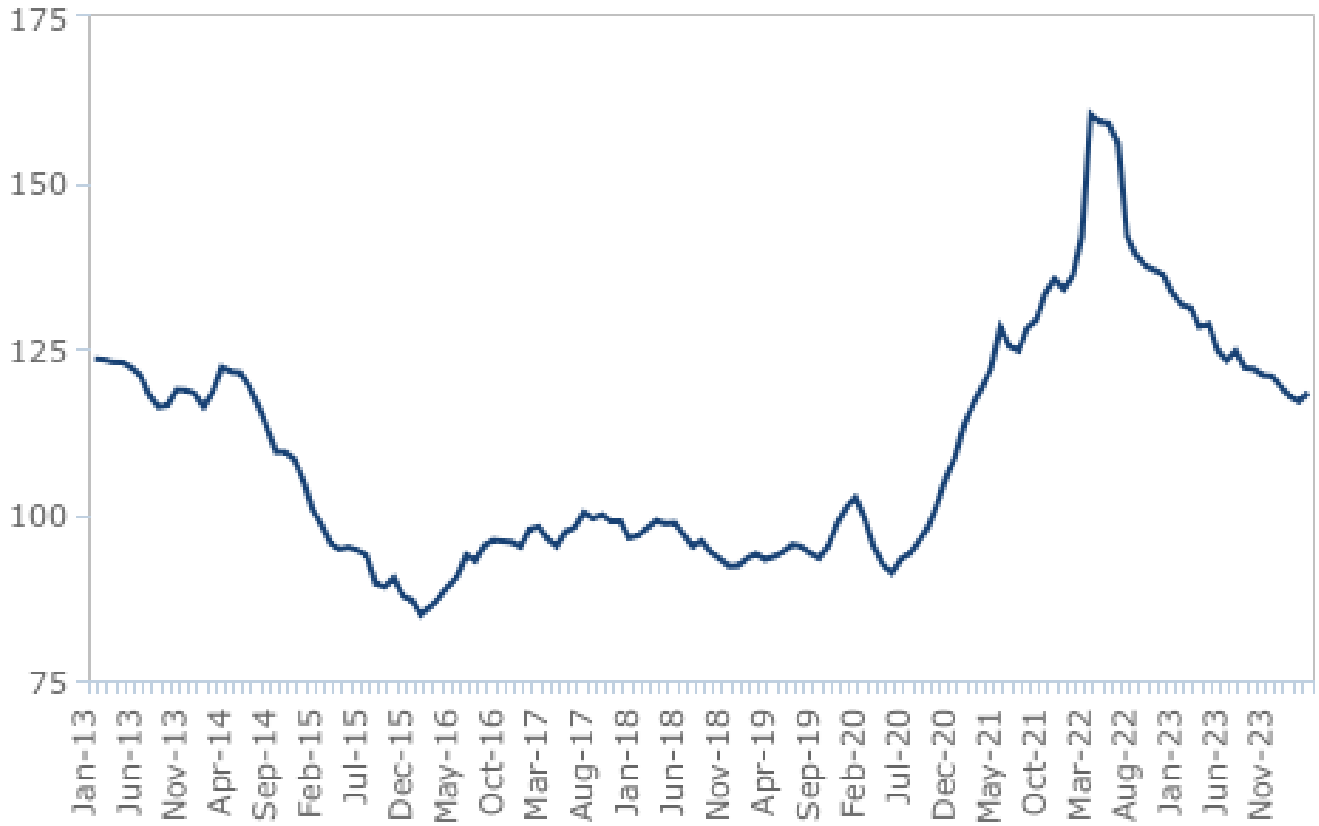
Source: BMI

Frequent water disruptions would impact investment decisions, potentially constraining the growth prospects of several markets. For example, in South Africa, water shortages have not only sparked protests in 2023 but have also had a negative impact on several industries, including mining. If investment in infrastructure remains insufficient in 2024, the incidence of water shortages would

be expected to rise, further affecting the overall economy. Mexico faces similar challenges, with several states highly exposed to water stress. This would limit the long-term potential for nearshoring benefits, particularly in water-intensive industries such as automotive manufacturing. **The tension between the needs of society and industry is set to intensify**. In the state of Nuevo León, for example, while residents have had to ration their water use, businesses appear to be unaffected, allowing for the economic expansion of the Mexican state as a manufacturing hub. In December 2023, the government of Nuevo León approved USD153mn in incentives for Tesla to build a new factory, despite these concerns. In the US, as the government seeks to reduce reliance on China for certain products, the development of semiconductor manufacturing capabilities may be hindered by water shortages in Arizona. The construction of a new factory by Taiwan Semiconductor Manufacturing Company (TSMC) is being delayed due to organisational challenges. Once operational by 2025, this factory will potentially exacerbate water scarcity issues in the state, leading to social tensions. The issue exemplifies the complex balance between industrial development and resource sustainability, which is becoming increasingly difficult to manage in water-stressed regions.

Climate Change Conditions To Drive Food Price Inflation

Global - Food Price Index



Source: FAO, BMI

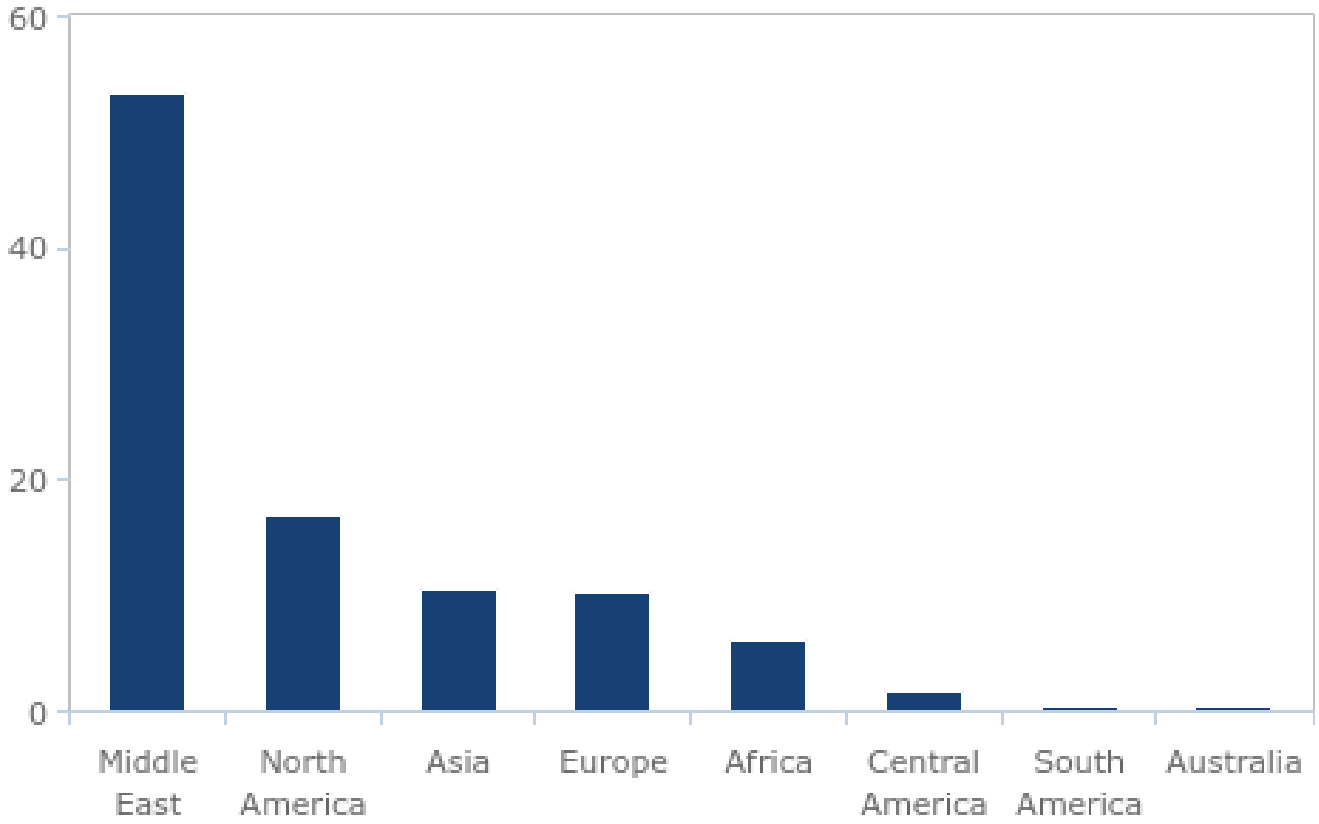
We thus anticipate that desalination projects, which involve the process of removing salt from seawater, will climb higher on the public agenda in the coming years, gaining political relevance. For instance, in the Middle East, where 70% of the world's desalinated water is produced – led by countries such as Israel, Saudi Arabia, and the UAE – the Israel-Hamas conflict has disrupted the Prosperity Blue desalination project, designed to produce and export potable water to Jordan, one of the most water-scarce countries in the world. This disruption will likely elevate the significance of the Red Sea desalination plan, while potentially prompting Gulf states to support the project. In November 2023, the UAE and Jordan agreed to expand investment cooperation, which includes infrastructure development. In Asia, India has announced plans to build the region's largest desalination plant, which is set to be completed by 2026. Kazakhstan and Iraq are also planning to construct desalination plants.

However, not all countries have the financial and operational capacity to invest in desalination infrastructure, as it is an energy-intensive process. An article published by Environmental Science and Pollution Research in 2022 suggests

that many renewable energy-based desalination techniques have not reached the market due to the intermittent nature of renewable energy sources and the high costs associated with energy storage and capital investment. For example, in Egypt, despite plans to construct several new desalination plants, the government is likely to face financial hurdles within its water sector. The high cost of desalination, coupled with the need for significant energy resources, presents a substantial challenge for emerging markets attempting to alleviate water scarcity through desalination.

Increase Of Desalination Capacity Will Require Significant Investments

Selected Regions - Desalination Capacity By Region In 2022, %



Source: Mordor Intelligence, BMI

As water stress intensifies globally, there will be a trend towards the relaxation of environmental regulations to facilitate the construction of desalination plants, despite opposition from environmental groups concerned about their ecological impact. Desalination plants can have various environmental

effects, such as the discharge of highly saline brine into the seas and oceans, which can harm marine ecosystems, and the high energy consumption, which contributes to greenhouse gas emissions unless renewable energy sources are used.

In the US, the approval of a desalination plant in California in 2022 is an example of how demand for water can override environmental concerns. Similarly, in 2023, Italy eased environmental standards to boost desalination capacity. In January 2024, Chile's government presented permitting reforms, which include reducing permitting times for desalination plants from eight years to two. This could significantly benefit the mining sector, which is a major economic driver in Chile but also heavily reliant on water for operations. These examples illustrate the complex balancing act governments face between environmental protection and securing adequate water supplies for their populations and industries. As water scarcity becomes more acute, similar decisions will potentially be made in other regions, leading to more expedited approval processes for desalination projects.

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