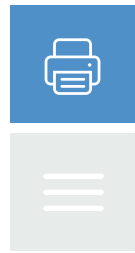


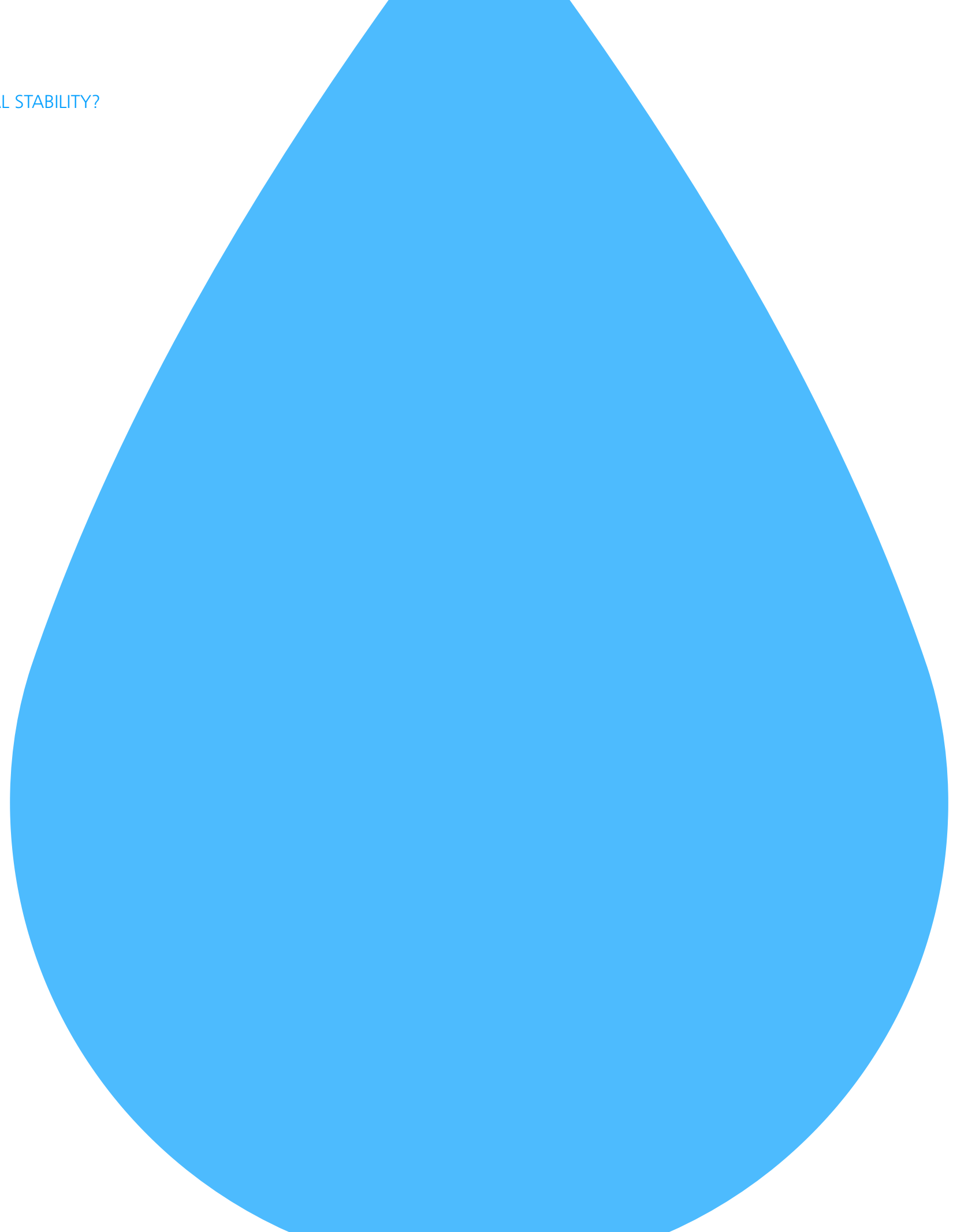
Water Scarcity

A growing risk to global sociopolitical stability





WATER SCARCITY
A GROWING RISK TO GLOBAL SOCIOPOLITICAL STABILITY?
CONTENTS.





WATER SCARCITY
A GROWING RISK TO GLOBAL SOCIOPOLITICAL STABILITY?

**NOW A WIDER GEOGRAPHIC PROBLEM.
IT'S NOT JUST AN ISSUE FOR DRY AREAS.**

Water scarcity: a bigger problem than previously thought

Recent research shows that water scarcity is an even bigger problem than previously thought. The World Bank believes water scarcity could cost up to six percent of GDP by 2050 unless measures are taken to alleviate it.

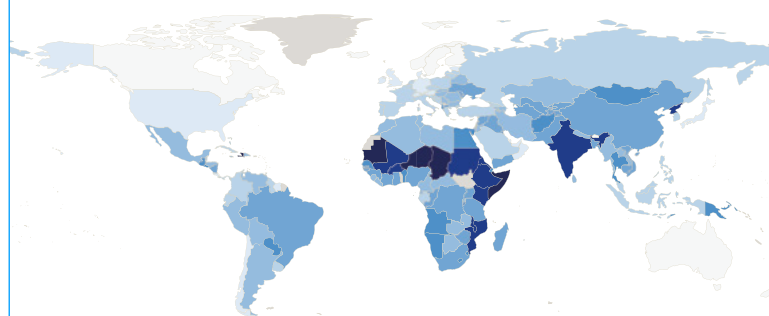
Water scarcity has proven to be a risk multiplier, raising the chances of civil conflict following periods of drought.

The World Economic Forum's Global Risks Report 2016 warns that "failure to address climate change and water crises"¹ could also trigger large-scale migrations.

Lower income countries are more vulnerable as they have less freedom to invest in infrastructure and often lack of good governance, but high income countries also face severe water stress.

Water Scarcity:

Now a wider geographic problem.
It's not just an issue in dry areas.



[Click on the water drop to enlarge the map](#)

71% of the global population (or **4.3 billion** people) live under conditions of moderate to severe water scarcity for at least one month of the year.

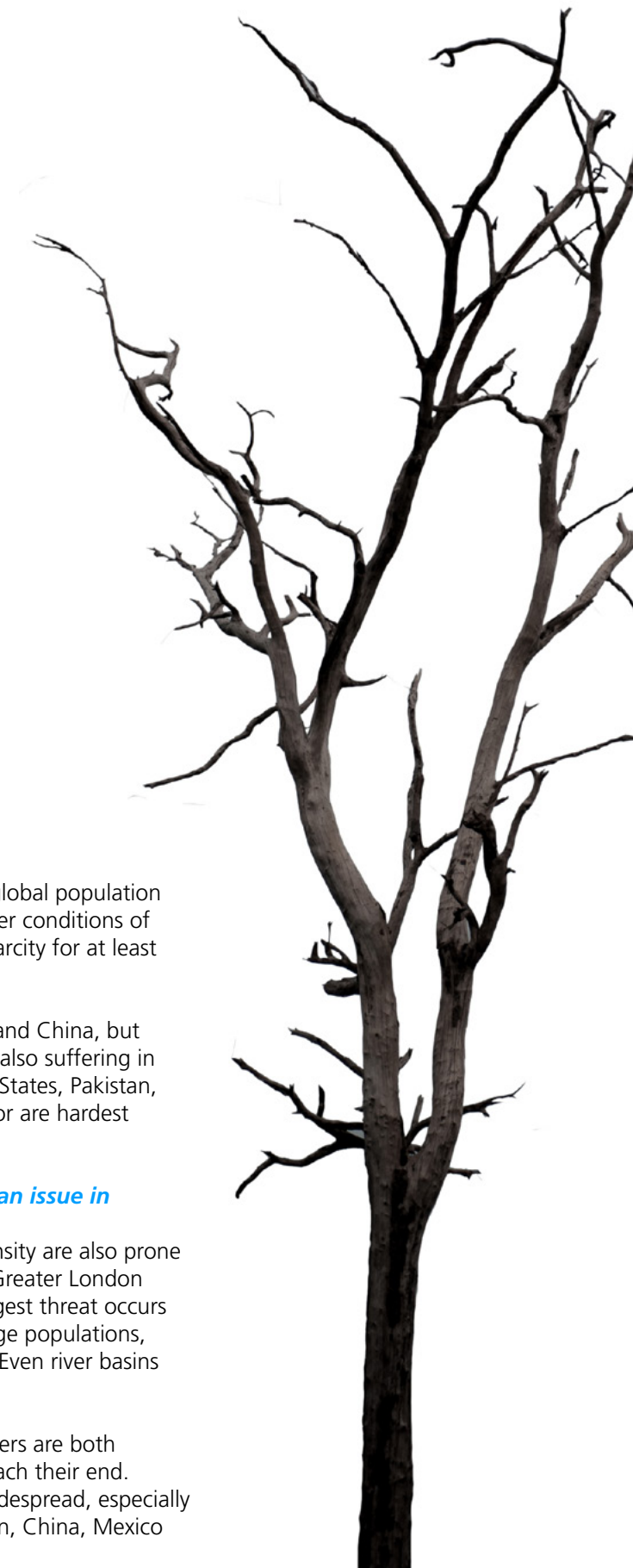
Seventy-one percent of the global population or 4.3 billion people live under conditions of moderate to severe water scarcity for at least one month of the year.

Many of these live in India and China, but there are significant number also suffering in Bangladesh, western United States, Pakistan, Nigeria and Mexico.² The poor are hardest hit by water shortages.

Water scarcity is not only an issue in dry areas.

Areas of high population density are also prone to water stress, such as the Greater London area. In arid regions, the biggest threat occurs where there are relatively large populations, such as the Arabian Desert.³ Even river basins can suffer water scarcity.

The Colorado and Yellow Rivers are both depleted by the time they reach their end. Groundwater depletion is widespread, especially in India, Pakistan, the US, Iran, China, Mexico and Saudi Arabia.⁴



¹ Global Risks Report 2016, World Economic Forum, p.14, http://www3.weforum.org/docs/GRR/WEF_GRR16.pdf.

² Mesfin M Mekonnen and Arjeu Y Hoekstra, "Four billion people facing severe water scarcity," Science Advances, February 12, 2016, Vol 2, No 2., <http://advances.sciencemag.org/content/2/2/e1500323.full>

³ Ibid.

⁴ Ibid.



WATER SCARCITY
A GROWING RISK TO GLOBAL SOCIOPOLITICAL STABILITY?

WATER AS A RISK MULTIPLIER.

Nearly 78% of the world's poor live in rural areas

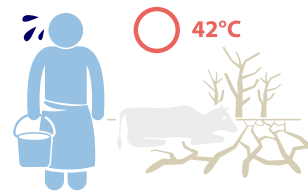
It is unlikely that the UN's sustainable development goals for reducing poverty will be reached without better water management.⁵

Nearly 78% of the world's poor live in rural areas; they are on the frontlines of efforts to manage increased water scarcity and variability, oftentimes suffering significant income losses. These income "shocks" prevent rural families from investing in their children. "Children in Vietnam who experienced these shocks were shown to have delayed school entry, slowed progress in school, and lower height than their peers that did not experience this shock."⁶

Children in rural India and Mexico were similarly harmed by their parents' loss of income due to water scarcity.⁷



A severe drought increases the risk of conflict



Syria

Click on the water drop to read about the Syrian case

Decreasing water availability directly impacts food production

Food price spikes helped trigger political instability in Egypt and Tunisia in the lead up to the 2011 Arab uprising. There's also a direct correlation between increased water scarcity and the spread of disease because of increased exposure to contaminated water and less water for hygiene.⁹

70% of global freshwater resources are used in agriculture, a disproportionate part of this for raising livestock.⁸



In the South Asia region, the World Bank projected that "farm-related income could drop by 25 percent with the likely lower crop yields from water scarcity."¹²



There's growing concern that water scarcity has longer term effects, including causing nutritional deficits in young children which can permanently affect their learning capabilities.

Research in sub-Saharan Africa has shown that civil wars tend to follow periods of low rainfall.¹⁰

In India, a 4 percent drop in average rainfall typically leads to a 4 percent increase in property-related violence and more frequent communal riots.¹¹ Drought is also a push factor towards more migration to cities.

A 1 percent drop in precipitation leads on average to a 0.59 percent increase in urbanization.¹³ A feedback loop also operates. The more conflict there is, the less investment is made to improve drought-resistant agricultural production.

⁵ High and Dry, pp. vi-vii.

⁶ Ibid, p. 18.

⁷ Ibid.

⁸ "Global Trends 2030: Alternative Worlds," The National Intelligence Council, 2012, p.33, <https://www.dni.gov/index.php/about/organization/global-trends-2030>.

⁹ High and Dry, pp. 16-17.

¹⁰ Ibid, p.20.

¹¹ Ibid.

¹² Ibid, p.16.

¹³ Ibid, p.20.



WATER SCARCITY A GROWING RISK TO GLOBAL SOCIOPOLITICAL STABILITY?

IMPLICATIONS FOR RISK MANAGEMENT.

The five factors which we saw influencing resilience to water scarcities included access to utilities; the extent of droughts and climate extremes; level of environment protection; quality of national environment and water dependency.

The Zurich Risk Room can help countries assess their weaknesses, strengths and gaps on resilience and compare their preparedness with other countries.

On the other side are the countervailing sociopolitical factors whose absence or presence would decrease or increase governments' ability to manage water stress.

These 10 sociopolitical factors¹⁷ include:

- 01 Rising Food Prices
- 02 Armed Conflict Risk
- 03 Corruption
- 04 Income Inequality
- 05 Outbound Refugees
- 06 Political Violence
- 07 State Failure
- 08 Government Effectiveness
- 09 Wastefulness of Government Spending
- 10 Overall Health Risk

Mapping the Sociopolitical factors against the Water Stress Risks ones shows which countries are best positioned to deal with their water scarcity problems.

Click the water drop to see the five factors which we saw influencing resilience to water scarcities

Not surprising, the countries which appear high on the state fragility list are also most vulnerable to water scarcity. They live in bad neighborhoods where sociopolitical instability is high and lack the means to build resilience for water stress. The five riskiest countries are Somalia, Sudan, Chad, Afghanistan and Haiti. Emerging countries, such as Brazil, China, India and Russia are also at risk because they are prone to water scarcity and vulnerable to sociopolitical instability. The least risky are high income countries which have taken measures to increase resilience and also live in relatively peaceful areas.

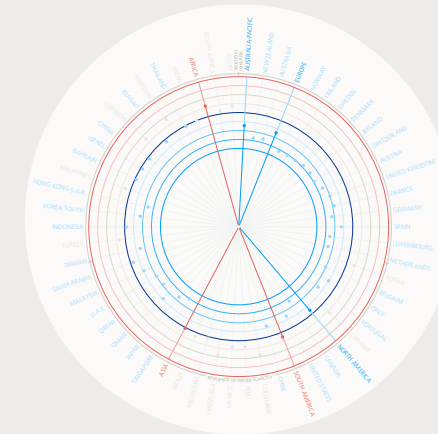
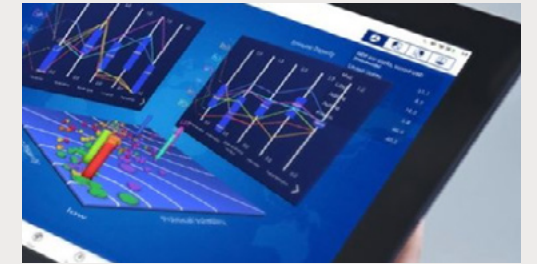
They include: New Zealand, Norway, Finland, Iceland and Sweden.

Understanding the wide array of linkages from sociopolitical to climate change and environmental governance is a first step towards promoting effective risk management. Companies investing almost anywhere – given the growing geographic spread of water scarcity – need to be aware of the many factors contributing towards and related to water stress as they develop their mitigation strategies.

In areas prone to water stress, companies need to work with local or national governments to build resilience. This might include helping governments think, for example, about environmental protection and governance. Firms will have to plan against worst case scenarios. Scenario-rich planning can help decision makers understand the spectrum of possible risks and the usefulness of specific remedies across all scenarios.



The Zurich Risk Room is a global risk analysis tool, designed to help illustrate the impact of multivariate risks on individual countries and regions. The tool has the ability to look at risks in single dimensions as well as show the complex interactions between many different types of risks.



Sociopolitical instability and resilience to water scarcity

Click on the water drop to view the diagram in more detail.



¹⁷Zurich Risk Room.



WATER SCARCITY A GROWING RISK TO GLOBAL SOCIOPOLITICAL STABILITY?

RISK MITIGATION STRATEGIES.

The introduction of **water pricing** in countries, where water is relatively cheap can have an immediate impact in lessening scarcity.

Available water supplies are particularly apt to be depleted if farmers have no **incentive to conserve**.

The needs of the **poor have to be protected** so that water pricing does not deprive them of vital access. This is where governments can play a vital role, making sure the allocation of water maximizes its use as well as being equitable.

NGOs can **instruct poor farmers in ways to conserve water**, including helping them invest in low cost water-saving technologies.

There are **many opportunities for companies to develop low-cost technologies** that increase food production using less water, including under variable weather patterns.

Better early warning systems providing actionable intelligence about droughts, storm surges and flooding are a must.

Urban areas are better positioned so long as they **integrate the available water supply with recycled waste water** and storm water.

Infrastructure is however decaying badly in many cities. According to the US Environmental Protection Agency, trillions of gallons of drinking water are lost annually due to the US's aging infrastructure.¹⁸

Impact: up to
6%
of Global
GDP
by 2050

Water scarcity poses a growing global challenge to business

The World Bank reckons that water scarcity will shave up to 6% off global GDP by 2050 unless urgent action is taken to address the problem.

Even today, 4.3 billion people suffer moderate to severe water scarcity for at least one month a year, making access to water and water rights increasingly sensitive social issues.

As a result, all businesses are likely to be adversely affected to some extent by physical, regulatory, reputational or litigation risks.

Since water shortage is not a named peril for time element insurance coverage, with the exception of crop insurance, this exposure is largely uninsured.

Risk managers and business leaders, who have long relied on a continued supply of water, need to revise their risk management and long-term planning processes to include the reality of water shortage.



4.3bn

people live under conditions of moderate to severe water scarcity at least one month of the year.



Trillions of gallons of drinking water are lost annually due to the US's aging infrastructure.¹⁸

¹⁸ "Water-Wasting Leaks Plague Many Cities," The Wall Street Journal, June 21, 2016, <http://www.wsj.com/articles/water-wasting-leaks-plague-many-cities-1466531064>.



STRATEGIES FOR WATER MANAGEMENT.

Are you prepared?

What are the potential risks?

- Rising costs, reduced supply
- Business interruptions
- Mandatory restrictions
- Possible need to relocate
- Lost jobs and lost customers
- Reputational damage

What can you do about potential risks?



ASSESS

total water usage across facilities and processes.



EXPLORE

alternative water sources.



IMPLEMENT

a water management and conservation plan.



APPOINT

water stewardship champions on management teams.



IDENTIFY

water-intensive processes critical to maintaining productivity.



COLLABORATE

with other regional water stakeholders to arrive at collective solutions.

Conclusion

Although conservation strategies for dealing with water shortage will be different for each industrial, commercial and institutional business, experts recommend the following best practices for water management:

01.

Make a commitment to water stewardship and appoint a champion from senior management, both on-site and company-wide.

02.

Build alliances with all regional stakeholders to coordinate, collaborate and share good water governance practices and sustainable water balance plans for the region.

03.

Identify your critical water-intensive processes and assess your on-site water utilization. Consider a water accounting program, including installation of water meters.

04.

Implement a water management and conservation plan.

In addition to these overarching best practices, each type of business may have more specific opportunities to recycle, reclaim, reuse and reduce water consumption.



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