

Quality Unknown: The Invisible Water Crisis

The world faces an invisible crisis of water quality. Its impacts are wider, deeper, and more uncertain than previously thought and require urgent attention.

While much attention has focused on water *quantity* – too much water, in the case of floods; too little water, in the case of droughts – water quality has attracted significantly less consideration. *Quality Unknown* shows that urgent attention must be given to the hidden dangers that lie beneath the water's surface:

- **Water quality challenges are not unique to developing countries but universal across rich and poor countries alike.** High-income status does not confer immunity - challenges with pollutants grow alongside GDP. And as countries develop, the cocktail of chemicals and vectors they contend with change – from fecal bacteria to nitrogen to pharmaceuticals and plastics, for example.
- **What we think of as safe may be far from it.** Water quality is complex and its impacts on health and other

sectors are still largely uncertain. Worse, regulations and safety guiding standards are often fragmented across countries and agencies, thus adding to this uncertainty. This report shows that some pollutants in water have impacts that were previously unknown and occur at levels below established safe norms.

- **The forces driving these challenges are accelerating.** Intensification of agriculture, land use changes, more variable rainfall patterns due to climate change and growing industrialization due to countries' development all continue to grow. This means increasing number of algal blooms in water which are deadly for humans and ecosystems alike.

[Press Release: Worsening Water Quality Reducing Economic Growth by a Third in Some Countries: World Bank](#)



Poor water quality threatens growth, harms public health and imperils food security.

Using new data, this report demonstrates the importance of water quality across a range of sectors and how its impacts cut across nearly all of the Sustainable Development Goals (SDGs). Poor water quality stalls economic progress, stymies human potential and reduces food production:

- **Water pollution endangers economic growth.** The release of pollution upstream acts as a headwind that lowers economic growth downstream.

- When Biological Oxygen Demand (BOD) – a measure of how much organic pollution is in water and a proxy measure of overall water quality – passes a certain threshold, GDP growth in downstream regions is lowered by a third.
- In middle-income countries – where BOD is a growing problem because of increased industrial activity - GDP growth downstream of highly polluted areas drops by half. There are a number of reasons for this, including:

- **Nitrogen in water shortens people and shortens their lives.** Much of the nitrogen applied as fertilizer eventually enters rivers, lakes and oceans where it transforms into nitrates. Nitrates in water are responsible for fatally inflicting Blue Baby Syndrome, which starves infants' bodies of oxygen. This report finds that those who survive the consequences of early exposure to nitrates can be condemned to long-term damages throughout their lives – they grow up shorter and earn less than they would have otherwise. Stunting is a red flag indicator for the risk of physical and cognitive deficits.

- Nitrate exposure in infancy: wipes out much of the gain in height seen over the past half-century in some regions and harms children even in areas where nitrate levels are deemed safe.

- While an additional kilogram of nitrogen fertilizer per hectare increases agricultural yields by as much as 5%, the accompanying run-off and releases into water can increase childhood stunting by as much as 19% and decrease adult earnings by as much as 2%. This suggests a stark trade-off between using nitrogen to boost agricultural output and reducing its use to protect children's health.

- **Salinity diminishes agricultural productivity.** Saline waters and soils are spreading throughout much of the world because of increasing rates of water extraction, droughts and rainfall shocks, sea-level rise, and poorly managed irrigation systems. This report shows that agricultural yields

fall almost exactly in line with increased salt concentrations in water. That is to say – more salt in the water means less food for the world.

- This report also reveals that enough food is lost due to saline waters each year to feed 170 million people every day – that's equivalent to a country the size of Bangladesh. Such a sizable loss of food production to saline waters means food security will continue to be jeopardized unless action is taken.

- Even as these impacts are being felt, emerging pollutants are entering the world's waters – their impacts are still unknown but present a hazard that may further exacerbate existing problems.

The outlook is stark - but change is possible. Increased awareness, strengthened prevention and smart investments using new technology are needed to turn back the tide of water pollution.

The challenge is daunting, but it is not insurmountable. Solutions exist for countries at all stages of development. The way forward requires a mix of approaches that focus on information, prevention and investment:

- **Information is both a resource and a rallying cry.** The first step to tackling the water quality challenge is recognizing the scale of it. The world needs reliable, accurate and comprehensive information so that new insights can be discovered, decision-making can be evidence-based and citizens can call for action. Encouraging and enabling this information and its sharing is critical to getting water pollution under control.

- **Prevention is better than cure.** While sunlight may be the best disinfectant, legislation, implementation and enforcement are also crucial to scrub the world's waterways of pollution. Information and transparency must be coupled with well-designed, effectively implemented and scrupulously enforced regulations for firms and individuals to adhere to water quality guidelines.

- **Invest in what works.** Pollution that cannot be prevented must be treated. Wastewater treatment has a vital role to play – it is crucial for a country's health, food security and economy by helping remove pollution and debris. Investments in wastewater treatment are a down payment on a cleaner future.

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