



When the World Runs Out of Water

The world is facing a natural resource **crisis**.

Population surges, global climate changes, and rising energy demands are all culprits in our **dwindling food and water supplies**.

Like peak oil, experts are warning of **peak ecological water**, the point at which the world is in danger of running out of sustainably managed water. While no date has been set for when we might reach peak water, the ramifications are far worse than running out of oil.

“We once assumed that water is free, air is free, and power is cheap. The latter is clearly no longer true, and we are increasingly realizing the truth about water ... Whereas oil prices are breaking all-time records, leading many families to face budget challenges, few have to drive to survive, while water is absolutely critical for personal and public health” (“After ‘peak oil,’ world now faces ‘peak water’”).

To look at a map, it would seem ludicrous to say that we are facing a global water shortage. But as Meena Palaniappan and Peter H. Gleick of Worldwater.org explain, we have to evaluate our use of **renewable and accessible** freshwater flows to truly understand our impact on freshwater reserves.

“The concept of running out of water at the global scale is of little utility. There are huge volumes of water – many thousands of times the volumes that humans appropriate for all purposes. In the early 2000s, total global withdrawals of water were approximately 3,700 km³ per year, a tiny fraction of the estimated stock of 35 million km³ of water. A more accurate, and sobering, way to evaluate human uses of water, however, would look at the total impact of human appropriations through the use of rainfall, surface and groundwater stocks, soil moisture, and so on. An early effort to evaluate these uses estimated that humans already appropriate over 50 percent of all renewable and ‘accessible’ freshwater flows ... Still, while water itself is renewable, many uses of water will degrade its quality to such an extent that this theoretically ‘available’ water is practically useless. Improving the quality of this water for reuse will require the input of energy, technology, biological treatment, or dilution with more water” (Palaniappan and Gleick, p.5).

Alarming **Facts** about **Water**



- Every **8 seconds**, a **child** dies from drinking dirty water.
- A **new desert** the size of Rhode Island is created in China because of drought **every single year**.
- In the developing world, **90 percent** of wastewater is discharged completely **untreated** into local rivers.
- By the year 2050, **1.7 billion people** will live in “**dire water poverty**” and will be forced to relocate.
- **Half** of the world’s hospital beds are occupied by people who have contracted **water-born diseases**.
- The World Health Organization says **contaminated water** is the cause of **80 percent** of all sickness and disease worldwide.
- In China, **80 percent** of the major rivers are so polluted they don’t support **aquatic life** at all.
- The **women of South Africa** collectively walk the equivalent distance to the moon and back **16 times a day** for water.



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Experts estimate that only 2.5 percent of the Earth's water is salt-free, and as we continue to deplete our freshwater resources, **desalination** will become an important industry in the near future. Advanced technologies will be required to effectively secure freshwater for future generations, and they can't be developed soon enough. As global warming continues to melt the polar ice caps, **rising seas levels** are reducing our freshwater supplies by 50 percent more than previous estimates have projected.

How can we **conserve** freshwater on a global scale?

Some experts would argue that household water conservation, while prudent, will do little to slow the approaching future of peak water. The use of water for **agricultural irrigation** far exceeds individual consumption, and as global warming continues to dry once-arable farm land, farmers are forced to consume more freshwater to sustain their crops, which are also disappearing on a global scale.

Food scarcity has long been an epidemic in developing countries, and as growing populations increasingly demand more food for survival, world food supplies are rapidly diminishing. The World Bank estimates that the demand for food will rise by 50 percent in 2030, and yet our farmers have less land on which to grow, less water with which to irrigate, and harsher climates in which to farm.

How will **food shortages** affect land use and global land planning?

One of the largest demands on the world's food supply has been the adoption of **Westernized diets** by populations in China and India. As industrialization takes hold and people migrate to the cities, urban lifestyles begin to mirror those of developed countries. Experts estimate that China has seen a 150 percent per capita increase in meat consumption since 1980.

A second important factor in understanding our global food shortage is the impact **rising oil prices** have had on sustainable agriculture.

"Modern farming is highly energy-intensive: a lot of B.T.U.'s go into producing fertilizer, running tractors and, transporting farm products to consumers ... energy costs have become a major factor driving up agricultural costs" (Krugman).

FACT: A glass of **orange juice** needs **850 liters** of fresh water to produce. A kilogram of **microchips**, which require cleaning to remove chemicals, needs about **16,000 liters** of fresh water.



FACT: To meet the **human nutritional needs** over the next 40 years, global agriculture will have to supply **as much food as has been produced during all of human history**.

GET INVOLVED

WaterAid

From WaterAid.org: "WaterAid is an international charity. Our mission is to overcome poverty by enabling the world's poorest people to gain access to **safe water, sanitation, and hygiene education.**"



From WorldWaterCouncil.org: "The WWC's mission is to promote awareness, **build political commitment and trigger action** on critical water issues at all levels, including the highest decision-making level, to facilitate the efficient conservation, protection, development, planning, management, and use of water in all its dimensions on an environmentally sustainable basis for the benefit of all life on Earth."



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Despite a brief decline in oil prices last year, we are starting to see prices on the rise again. But in order to address the global energy crisis, some of the land once used for farming has been subsidized to develop **biofuel technologies**, further limiting our ability to replenish depleted food supplies.

How can we promote the development and use of alternative fuel sources *without* destroying agricultural production?

As freshwater and food supplies continue to shrink, experts fear that **violence** will erupt across the globe in an attempt to secure dwindling resources. In a recent study of the causes of 8,000 wars over the past 500 years, the US National Academy of Sciences concluded that **water shortage** has played “a far greater role as a catalyst than previously supported.”

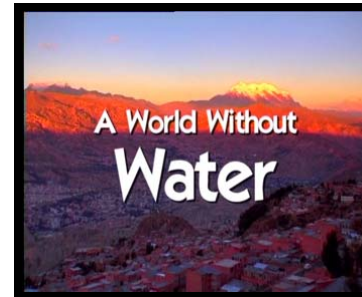
“Water is a basic condition for life. Its availability and quality is fundamental for all societies, especially in relation to agriculture and health. There are places – West Africa today, the Ganges-Bahmaputra river system in Nepal, Bangladesh and India, and Peru within ten years – where major changes in the rivers generate a significant risk of violent conflict” (Lewis).

One of the solutions agricultural producers have proposed to help replenish global food supplies is to spur a **second Green Revolution** in Sub-Saharan Africa.

“India and China, along with the US and EU partners, are likely to work to launch a second Green Revolution, this time in Sub-Saharan Africa, which could help dampen price volatility in worldwide grain markets. By 2025, increases in African grain yields probably will be substantial, but the increases will be confined principally to states in the southern and eastern regions of the continent, which will have deepened trade and security relations with East and South Asian states” (Global Trends 2025, p.52).

But a complete agricultural overhaul in Africa will require investment in **infrastructure** and **government intervention**, which will likely necessitate resources from developed countries.

WATCH: A World Without Water



From video.google.com: “The world is running out of its most precious resource. True Vision’s timely film tells of the personal tragedies behind the mounting privatization of water supplies.”

FACT: It takes about **700 calories** worth of animal feed to produce a **100-calorie** piece of beef.



FACT: Today, experts consider **21 countries**, with a combined population of about **600 million**, to be either **cropland or freshwater scarce**. Owing to continuing population growth, **36 countries**, with about **1.4 billion** people, are projected to fall into this category by **2025**.





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Should developed countries **invest** in Africa to improve the world's grain markets, or should that money be **allocated** to domestic issues?

Thomas Friedman, author of *Hot, Flat, and Crowded*, argues we must globally address issues of **over-consumption** if we can ever hope to sustain our planet.

"If the currently developing world locks in American-style consumption, building, and transportation patterns, we will be living with, and limited by, the energy and climate implications for decades. We have been limited before in history by the logic of disease or hunger of war, but never by 'the ecological logic of capitalism' ... 'We have to fix the foundation before we can live in the house again ... we have reached the physical limits of building on this foundation. It has to be a different foundation.' The problem is that we have not invented that new foundation yet" (Friedman p.57).

What can you do to help invent a new global foundation?

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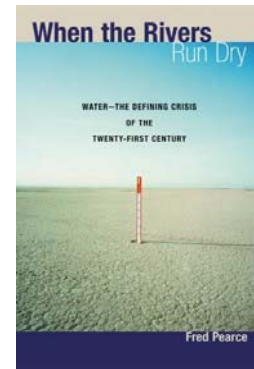
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FOOD FOR YOUR BRAIN:
Suggested Reading



From **Amazon.com**: "Veteran science writer Pearce makes a strong – and scary – case that a worldwide water shortage is the most fearful looming environmental crisis. With a drumbeat of facts both horrific (thousands of wells in India and Bangladesh are poisoned by fluoride and arsenic) and fascinating (it takes 20 tons of water to make one pound of coffee), the former *New Scientist* news editor documents a 'kind of cataclysm' already affecting many of the world's great rivers. The Rio Grande is drying up before it reaches the Gulf of Mexico; the Nile has been dammed to a trickle; reservoirs behind ill-conceived dams sacrifice millions of gallons of water to evaporation ... The news, recounted with a scientist's relentless accumulation of observable fact, is grim."

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