CHOKE POINT

ON THE GLOBAL FRONT LINES OF THE WATER-FOOD-ENERGY CRISIS

The water-food-energy choke point is forcing a new 21st-century reckoning.

Three colliding trends—declining freshwater reserves, uncertain grain supplies, and booming energy demand—are disrupting economies, governments, and environments around the world. Unlike food or energy, we cannot grow or easily produce more water. That is especially true in the era of climate change, when more severe droughts and floods tighten the food and energy choke points already caused by waste, pollution, and mismanagement of water.

Complex challenges demand integrated analyses and innovative solutions. Research teams from the Woodrow Wilson Center and Circle of Blue are reporting from China, Australia, the United States, India, and the other frontlines of the world's water-food-energy crisis. For instance, we were the first to report that China's coal sector consumes nearly 20 percent of the country's scarce water resources.

WATER

U.S. Energy's Water Footprint: A dramatic shift is occurring in energy production as deeper droughts and fiercer storms lash the nation. One of the most critical economic and environmental questions the U.S. must answer is how to develop new supplies of energy, like shale gas, and grain across a landscape where moisture is limited and confrontations over water are increasing.

ENERGY

China's Thirsty Coal: Coal's water footprint, which saps China's freshwater reserves and displaces agriculture, is likely to grow as coal consumption increases by 30 percent by 2020. Dwindling water supplies are the primary impediment to China's soaring coal production, forming a choke point that threatens to upend the country's impressive economic progress.

FOOD

Outsourcing Water-Intensive Industries: The confrontation over water, food, and energy produces choke points that ripple around the globe. In Australia, foreign investments in coal and liquefied natural gas are disrupting irrigation in farming communities. Water scarcity has forced Saudi Arabia to shut down its wheat farms and invest in temperate lands in Africa.

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Water uses energy. Energy uses wa

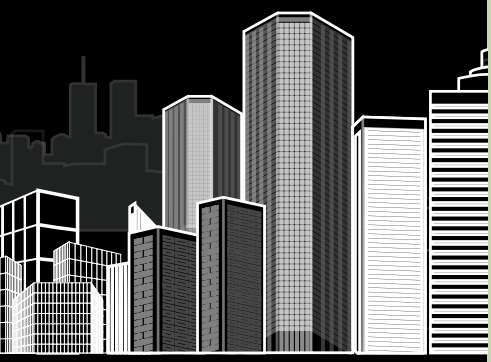
CITIES NEED AL

50%
of the world's population lives in cities

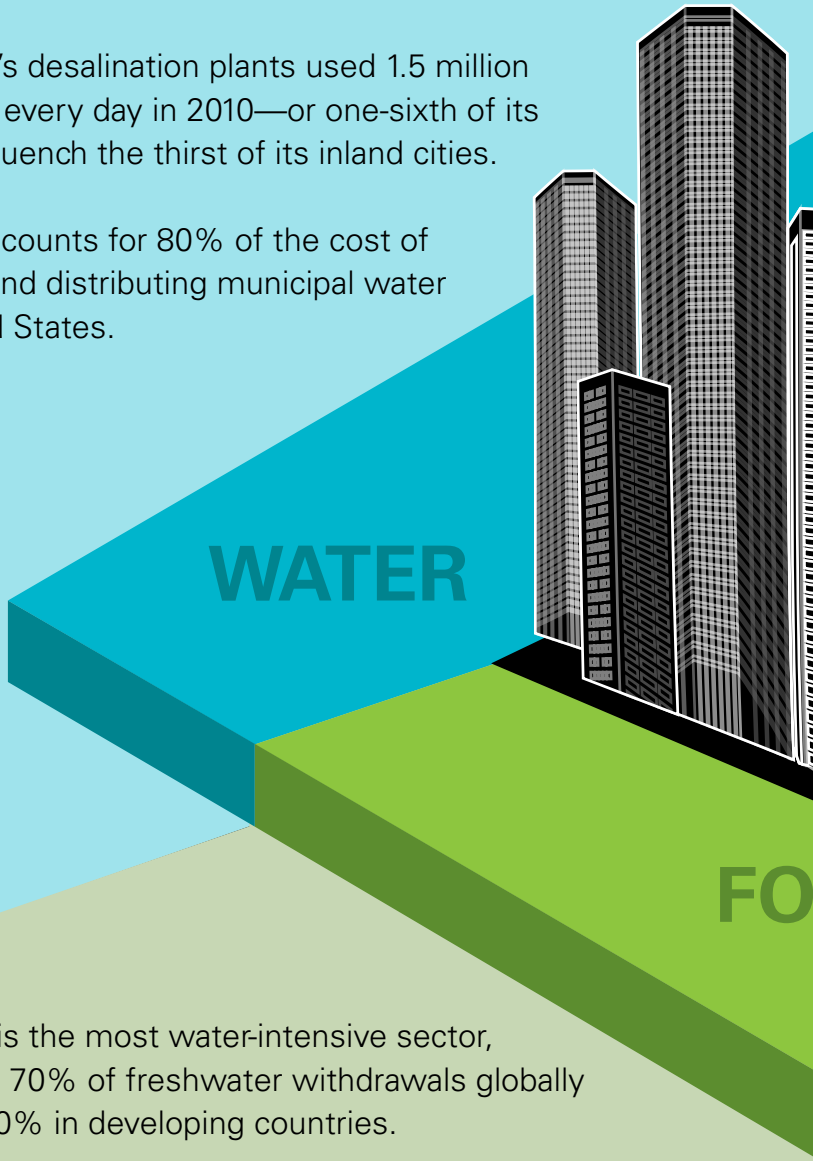
20%
increase in city dwellers by 2030, expanding global urban population to 4.9 billion

70%
of energy produced globally is used by cities

28%
of water used globally goes to cities



- Megacities lose more than 50% of their water due to mismanagement and poor infrastructure.
- Saudi Arabia's desalination plants used 1.5 million barrels of oil every day in 2010—or one-sixth of its output—to quench the thirst of its inland cities.
- Electricity accounts for 80% of the cost of processing and distributing municipal water in the United States.



- Agriculture is the most water-intensive sector, constituting 70% of freshwater withdrawals globally and up to 90% in developing countries.
- Each year, 30% to 50% of global food production is wasted. The water footprint of this waste is 550 billion cubic meters, roughly equal to what China withdraws in a year.

The water-food-energy nexus

Sources: Electric Power Research Institute, Inc.; *Harvard International Review*; IEA; Institution of Mechanical Engineers; McKinsey; *The New York Times*; UNESCO; UN-Water Decade Programme on Advocacy and Communication; Water Footprint Network

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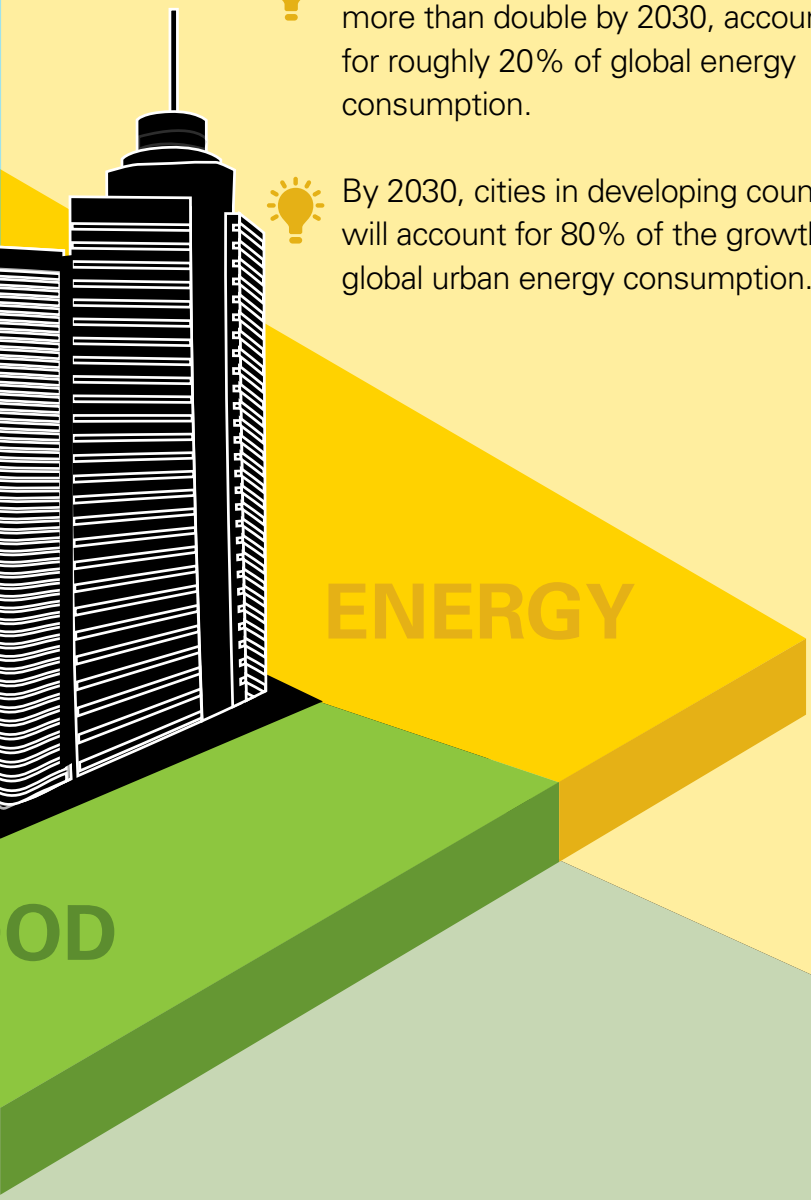
Energy demand in China's cities will more than double by 2030, accounting for roughly 20% of global energy consumption.

By 2030, cities in developing countries will account for 80% of the growth in global urban energy consumption.



Beef production requires 13 times more water than wheat. By 2050, global meat consumption is likely to double, due in large part to rising affluence in cities.

is a city's foundation.

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Delhi, India: Water and the electricity to pump and move it are heavily subsidized for industry and agriculture in India, but the urban poor wait hours for a trickle of salty, smelly water to fill their buckets.

New South Wales, Australia: A coal loader eats away at a mountain of black coal. In 2011, the coal mines, trains, and loading terminals here shipped about 114 million metric tons of coal.

Chengdu, China: Water-intensive coal-to-chemical factories supply China's huge fertilizer demand. Organic farms, such as this one near Chengdu, help reduce the country's severe agricultural runoff problem.

ABOUT US

The Wilson Center and Circle of Blue combine in-depth environmental research expertise, unparalleled networks, and first-rate multimedia reporting skills to generate strategic insights into the complex water-food-energy choke points.

The Wilson Center's Jennifer Turner has established the China Environment Forum as one of the most reliable sources for information on China's environment. She has testified before the U.S. Congress, led trainings for Chinese officials, and assisted international and Chinese NGOs and researchers in developing projects.

In 2012, Circle of Blue's founder, J. Carl Ganter, won the Rockefeller Foundation's Centennial Innovation Award in recognition of his innovative work on the water-food-energy crisis. He also serves as vice chairman of the World Economic Forum Global Agenda Council on Water Security.

In its first two years, Choke Point has informed policy, shifted business practices, catalyzed new governmental research, and convened thought leaders and the global media around the water-food-energy nexus. *Choke Point: China* is significantly influencing the work of Greenpeace China, China's Ministry of Environmental Protection, and the World Economic Forum, among others.

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India's common practice of pump-and-flood irrigation is draining aquifers and increasing electricity usage.

UPCOMING GLOBAL CHOKE POINT INITIATIVES

- **The China Water-Energy Team** will map the policy, technical, and governance steps China must take to meet its pressing water-energy needs.
- **Choke Point: India** investigates the water-food-energy nexus where resource mismanagement threatens stability, from Himilayan glaciers to Rajasthan's deserts to Mumbai's slums.
- **Choke Point: Cities** examines the recklessly expanding water and energy footprints of growing urban areas around the world and identifies innovative solutions.
- **Choke Point: Index** captures and analyzes "big data" across sectors, spots early trends, and informs further Global Choke Point projects, in partnership with Lawrence Berkeley National Laboratory's Institute for Globally Transformative Technologies, using the latest open source tools and scientific modeling.
- **Choke Point: Conflict Zones** will tap aid agencies, journalists, and others working in conflict zones to better understand the relationships between resource scarcity, geopolitical conflict, and peacemaking.

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