

CHOKE POINT ON THE GLOBAL FRONTLINES OF THE WATER-FOOD-ENERGY CRISIS



Three colliding trends—rising food scarcity, booming energy demand, and declining freshwater reserves—are disrupting economies, governments, and environments around the world. Unlike food or energy, we cannot grow or easily produce more water. Overuse, pollution, and mismanagement of water will be exacerbated as climate change intensifies extreme droughts and flooding.

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

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

The Water Footprint of U.S. Energy: New sources of energy—like shale gas—must be developed without damaging U.S. freshwater reserves. Increasingly ravaged by drought, the United States must grasp how its ever-increasing demand for energy impacts its water and food supply.

China's Thirsty Coal: Coal's water footprint, which is already draining China's water supply and displacing

agriculture, is likely to grow as coal consumption increases 30 percent to 40 percent by 2020. This choke point threatens to upend the country's impressive economic progress and drive overseas investments in energy, water, and land.

Dam Tensions in Southeast Asia: The Mekong River's hydropower potential, if harnessed, could be a major source of energy. But rapid dam development is sparking regional tensions, damaging fisheries, and threatening food security.

Outsourcing Water-Intensive Industries: These choke points ripple around the globe when water-stressed countries import virtual water through investments in energy and agriculture overseas. In Australia, foreign investments in coal and liquefied natural gas are disrupting irrigation in farming communities.

50%
of the world's
population lives
in cities

urbanites will
increase by

20%
to 4.9 billion people
by 2030.

Cities account for
roughly

70%
of global energy

cities use

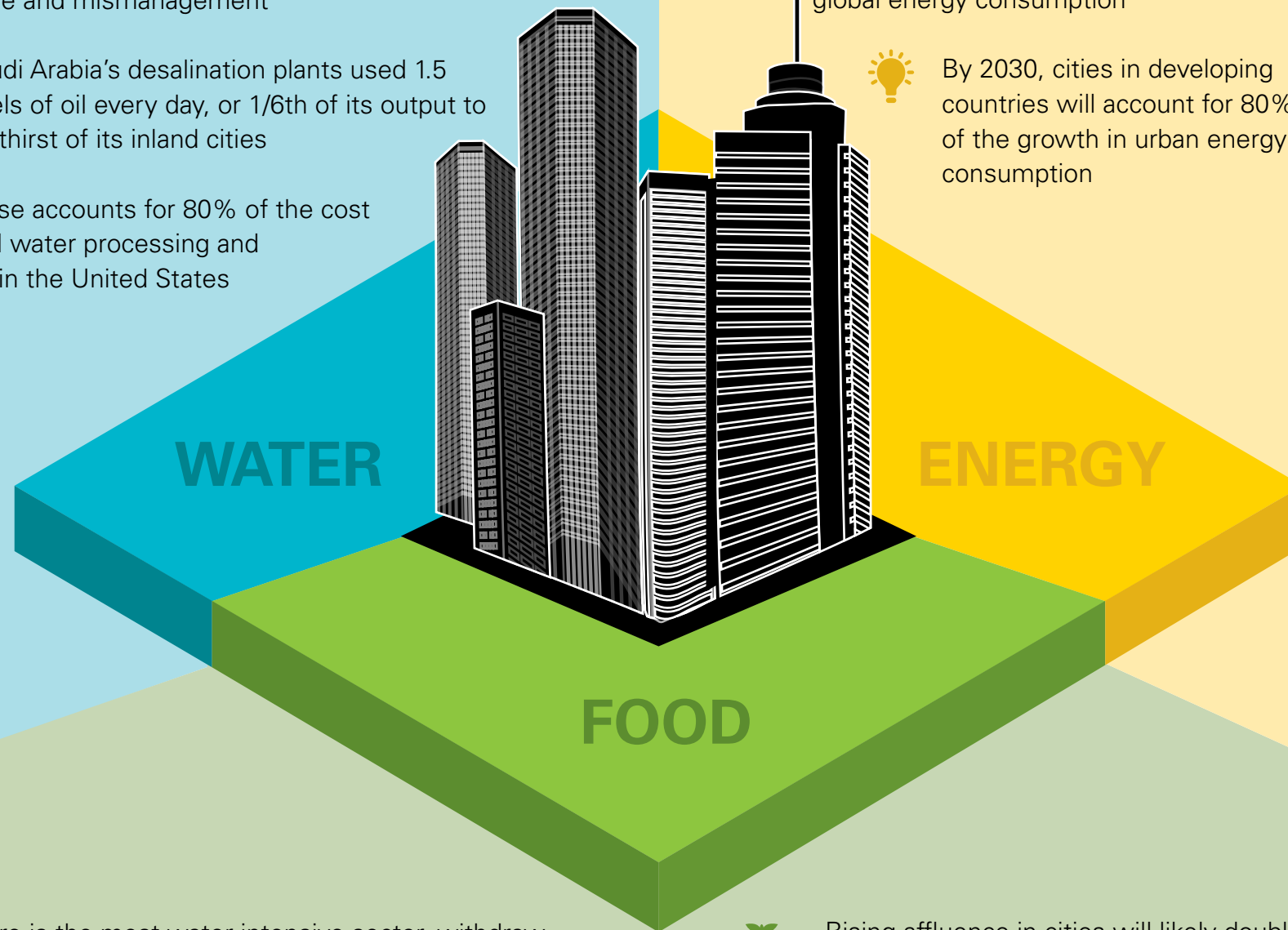
28% of
global water use.

Water uses energy, energy uses water, and agriculture needs both. CITIES NEED ALL THREE.

- Megacities lose over 50% of their water due to poor infrastructure and mismanagement
- In 2010, Saudi Arabia's desalination plants used 1.5 million barrels of oil every day, or 1/6th of its output to quench the thirst of its inland cities
- Electricity use accounts for 80% of the cost of municipal water processing and distribution in the United States

• 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 urban energy consumption



• Agriculture is the most water intensive sector, withdrawing 70% of freshwater globally, and up to 90% in developing countries

• 30% to 50% of global food production, up to 2 billion tons, is wasted each year; the water footprint of this waste is 550 billion cubic meters

• Rising affluence in cities will likely double meat consumption by 2050, driving up water demand — beef production requires 13 times more water per pound than wheat

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

The water-food-energy nexus is a city's foundation.



photo: Anita Khemka/PhotoInk/Contact Press Images for Circle of Blue

Delhi, India: Women and children wait for a trickle to fill their buckets with water in a slum area. In some parts of the city, tap water — often salty, yellow and smelly — only comes between 5:30 and 8:30 a.m.



photo: Aaron Jaffe / Circle of Blue

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



photo: J. Carl Ganter/Circle of Blue

Chengdu, China: A worker at the Anlong Organic Farm, one of China's first organic farms, near Chengdu.
photo: J. Carl Ganter / Circle of Blue

ABOUT US

Circle of Blue and the Woodrow Wilson Center 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. Circle of Blue's founder, J. Carl Ganter, won the 2012 Rockefeller Foundation 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. The Wilson Center's Jennifer Turner has established the China Environment Forum as one of the most reliable sources for China-environment information. She has testified before Congress, led trainings for Chinese officials, and assisted international and Chinese NGOs and researchers in developing projects of impact.

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 on this seminal resource confrontation. Choke Point: China is significantly influencing the work of the World Economic Forum, China's Ministry of Environmental Protection, and Greenpeace China, among others.

For more information visit:

www.wilsoncenter.org/cef

www.circleofblue.org



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

photo: J. Carl Ganter / Circle of Blue

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** is investigating the overlooked water-food-energy nexus that threatens the stability of one of the world's most populous, yet most resource-challenged, countries.
- **Choke Point: Cities** will examine the recklessly expanding water and energy footprints of growing urban areas around the world and identify innovative solutions.
- **Choke Point: Index** will use the latest "big data" tools, co-developed with Google Research, to analyze data across sectors, spot early trends, and inform further Global Choke Point projects.
- **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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