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first



THE CHARTIST

# BEATING THE COMING WATER SHORTAGE

An expanding world population, extreme weather patterns, and industrial pollution are making water a scarce commodity. Opportunities exist for businesses that can figure out how to keep the pipes flowing. *By Tara Moore / Graphics by Nicolas Rapp*



Upstream dams dried up the once-thriving Colorado River Delta in Mexico.

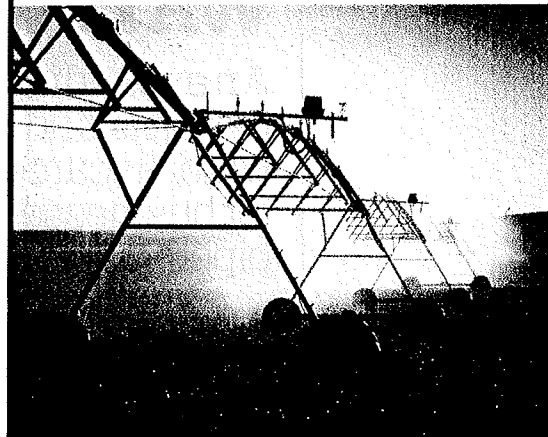




## WATER, WATER, IN EVERYTHING...

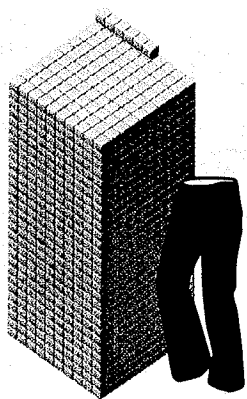
With all the bottled water we swig and showers we take, you'd think individuals consume the most water. Actually agriculture accounts for 71%, and industry 16%, of all water use globally. A pair of blue jeans requires 2,906 gallons, most of it from growing cotton. A car requires 104,000 gallons, most of it from the rubber. It takes 71 gallons of H<sub>2</sub>O to produce a tall cup of coffee. Starbucks plans to cut its in-store water usage by 25% by 2015 with, for example, espresso machines that dispense less water.

Agriculture consumes 71% of all water globally. An irrigated field in Spain.



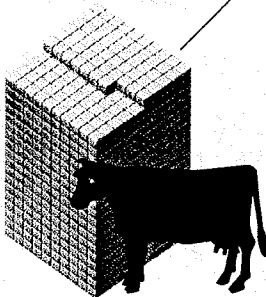
### THE WATER NEEDED TO PRODUCE EVERYDAY ITEMS

Each cube represents one gallon of water, with the total reflecting the amount used in various steps of the production chain.



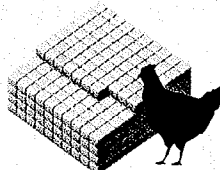
A PAIR OF  
**JEANS**

2,906 GALLONS



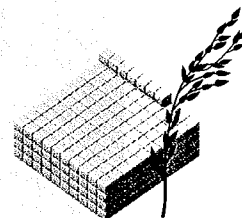
A POUND OF  
**BEEF**

1,857 GALLONS



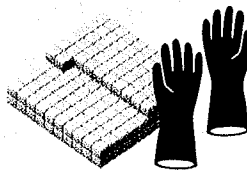
A POUND OF  
**CHICKEN**

467 GALLONS



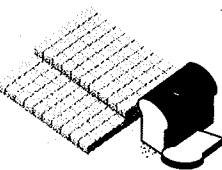
A POUND OF  
**RICE**

407 GALLONS



A PAIR OF NATURAL  
**RUBBER GLOVES**

252 GALLONS



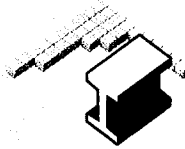
A POUND OF  
**WHEAT BREAD**

160 GALLONS



A CUP OF  
**COFFEE** (8 OZ.)

71 GALLONS



A POUND OF  
**STEEL**

31 GALLONS

PRICE OF TAP WATER (100 gallons):

Buenos Aires \$0.01 •

Mumbai \$0.04 •

St.

## TOO MANY PEOPLE, TOO LITTLE WATER

THE YELLOW AREAS ON THE MAP SHOW WHERE  
WATER DEMAND OUTSTRIPS SUPPLY.

Texas is hit with a record drought. Some 1 million Mexico City residents rely solely on truck deliveries for clean water. In the Horn of Africa, more than 13 million people are suffering from the worst drought in 60 years. According to the World Water Council, 1.1 billion people lack access to clean drinking water.

The good news is that long-term solutions exist for problems like these. Industry is developing superfine filters to clean even the dirtiest water—today 20% of Singapore's drinking water comes from processed sewage. In China the government has partnered with local companies to construct 1,816 miles of aqueduct to move water from rivers in the south to the parched northeast. Global water companies like Veolia, Suez, and ITT are partnering with municipalities to manage water. In Tampa, Veolia has built a new plant that brings drinking water to 2.4 million people.

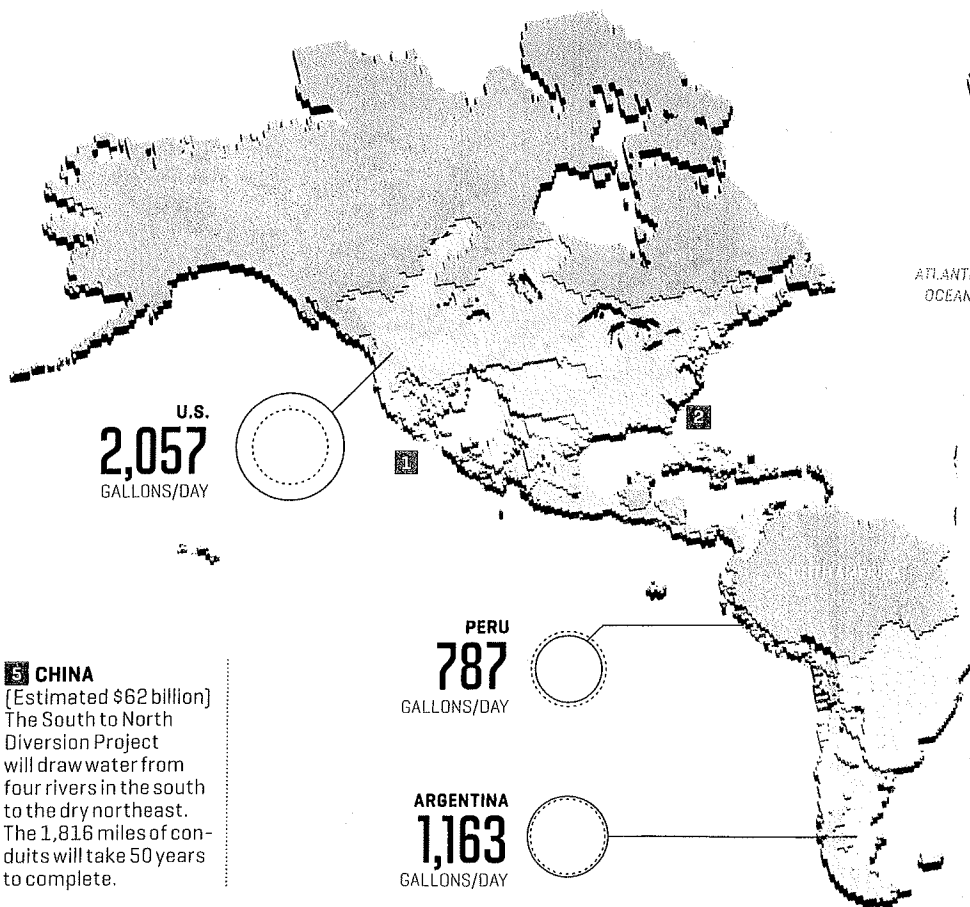
Gentlemen, start your water pumps.

**1 U.S.** (Project cost: \$700 million)  
The Carlsbad Desalination Project, still going through the approval process, will supply 8% of San Diego County's drinking water by 2014.

**2 U.S.** (\$210 million)  
The utility Tampa Bay Water hired Veolia to build a treatment plant that provides 120 million gallons per day of H<sub>2</sub>O to 2.4 million people. The just-opened facility serves a population that traditionally relied on well water.

**KAZAKHSTAN/ UZBEKISTAN** (\$86 million)  
In 2005 the government and the World Bank built a dam to raise water levels in the northern Aral Sea. Now they are working to bring back fisheries and local agriculture.

**4 INDIA** (\$128 million)  
The Karnataka Watershed Development Project helps raise water tables, bring degraded lands under cultivation, and enable farmers to diversify into higher-value crops and raise agricultural productivity.



**3 CHINA**  
(Estimated \$62 billion)  
The South to North Diversion Project will draw water from four rivers in the south to the dry northeast. The 1,816 miles of conduits will take 50 years to complete.

Shanghai \$0.07 •

Mexico City \$0.13 •

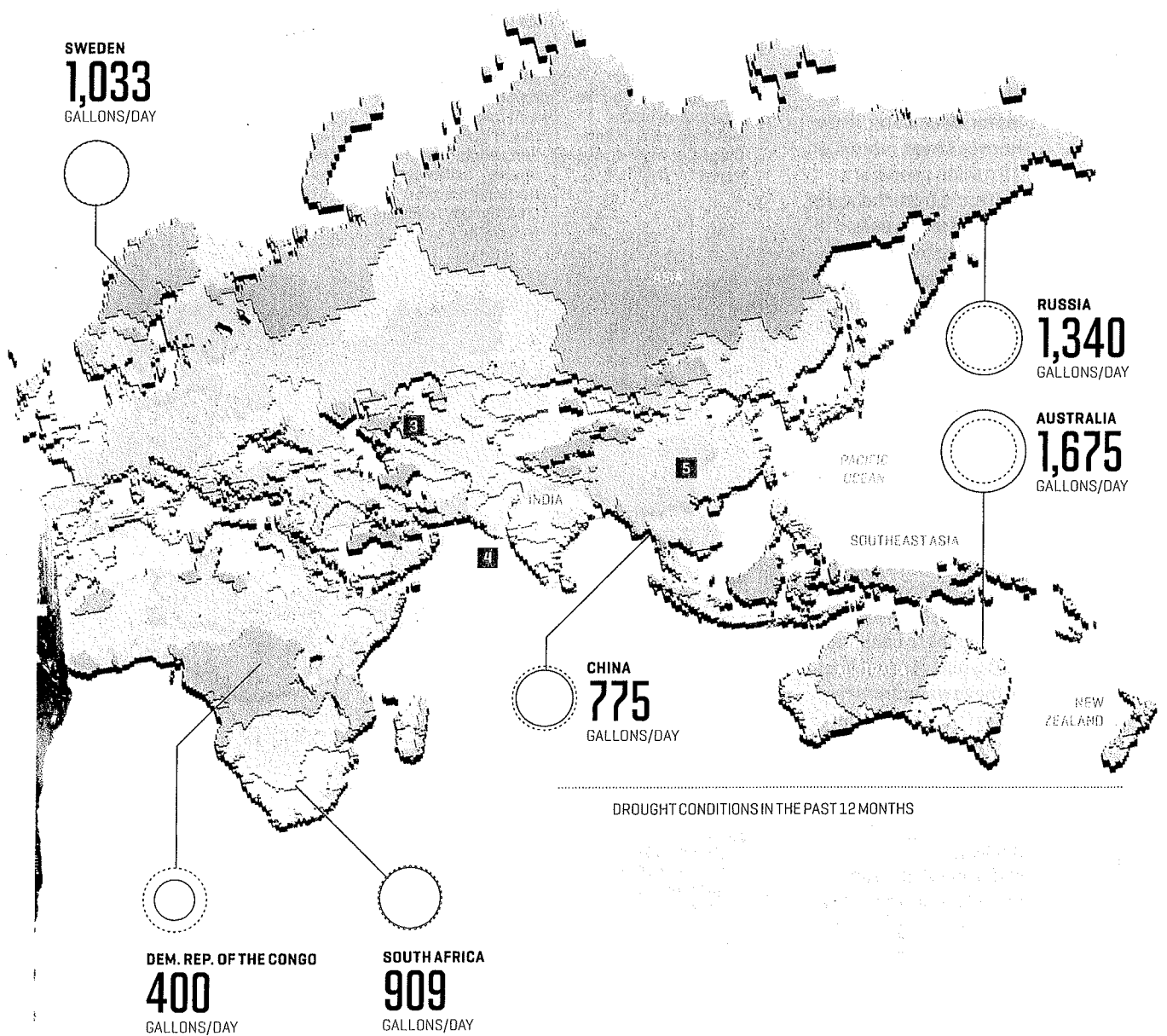
Hong Kong \$0.17 •

Moscow \$0.24 •

Las Vegas \$0.32 •

LOW WATER STRESS    MEDIUM WATER STRESS    HIGH WATER STRESS

AGRICULTURAL, INDUSTRIAL, AND DOMESTIC DAILY WATER CONSUMPTION, PER CAPITA  
WORLD AVERAGE [1,003 GALLONS]



New York \$0.39   Tokyo \$0.46   Los Angeles \$0.50   Boston \$0.52   Phoenix

SOURCES: WATER FOOTPRINT NETWORK, PACIFIC INSTITUTE, VEOLIA WATER AMERICAS, WATER TECHNOLOGY, DRINKING-WATER.ORG, POSEIDON RESOURCES, WORLD BANK, GLOBAL WATER INTELLIGENCE, UCL GLOBAL DROUGHT MONITOR, THE 2030 WATER RESOURCES GROUP, UN POPULATION DIVISION, CENTER FOR ENVIRONMENTAL SYSTEMS RESEARCH (CESR), WORLD WATER COUNCIL, UN OFFICE FOR THE COORDINATION OF HUMANITARIAN AFFAIRS, CITI WATER SECTOR HANDBOOK



After the town's water system broke down, a young girl collects well water in Aralsk, Kazakhstan.

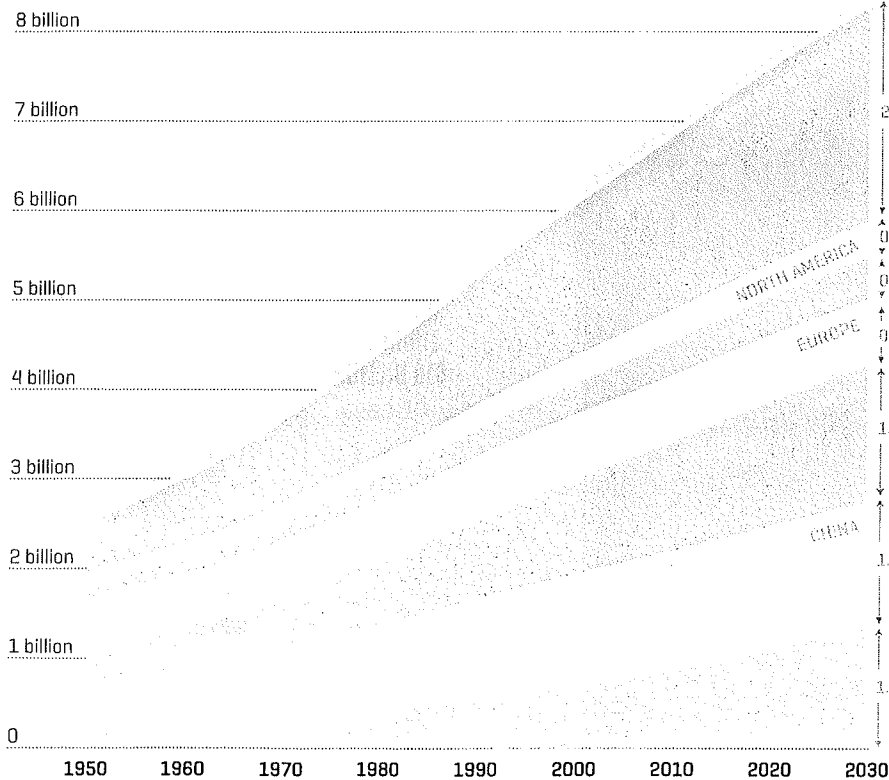
## QUENCHING THE THIRST OF A GROWING WORLD

The typical American uses 150 gallons of water a day, vs. 23 gallons for someone in China. Consider the impact on the water supply when more people in developing nations begin living Western lifestyles. In India alone, water usage is expected to rise by nearly 100% over the next 20 years. Expanding populations will also swell demand for agricultural water some 42% by 2030. The hope? Grow more with less water by applying genetically modified seeds, drip irrigation, and other technologies.



### PROJECTED POPULATION GROWTH

PROJECTED WORLD TOTAL POPULATION: 8.3 billion in 2030



### INCREASE IN ANNUAL WATER DEMAND 2005-30

NORTH AMERICA

SOUTH AMERICA

EUROPE

INDIA

CHINA

SUB-SAHARAN AFRICA

CHLOE DEWE MATTHEWS—PANOS PICTURES

59

London \$0.73

Oslo \$1.35

Paris \$1.48

Copenhagen \$3.03

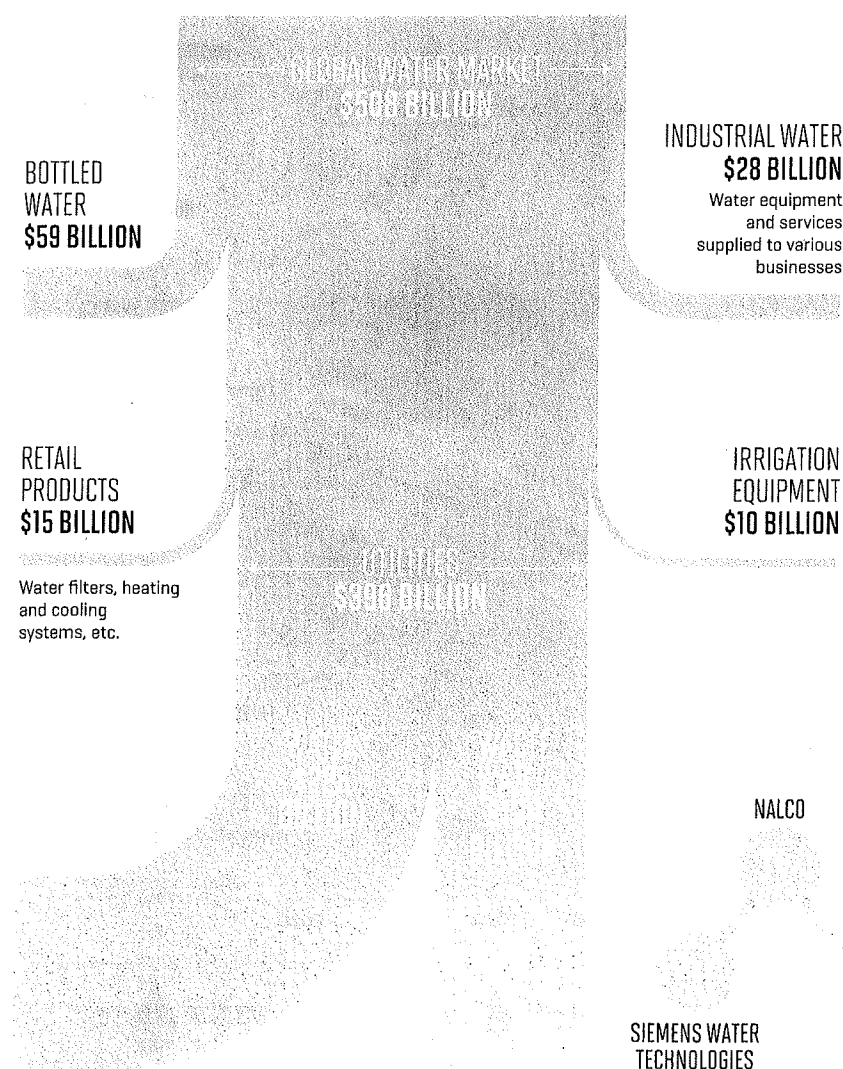


## IS WATER THE GOLD OF THE 21ST CENTURY?

For most of history, water was considered a basic human right—wherever it was plentiful, that is. When drought hit or populations outstripped the local supply, water became a valuable resource that was fought over or exploited, as the movie *Chinatown* made all too clear. A growing number of corporations now are betting that those who can save water, clean it, and manage it will prosper. The global water market

had revenues of \$508 billion last year and is growing at 6.4%. Veolia and Suez, which have been in the water business for over 100 years, dominate the market for providing services for municipal water systems. More recently, companies such as ITT [water treatment tech] and Siemens [services and water-purification membranes] have entered the sector. Here's how the market breaks down.

### TOTAL WATER MARKET, 2010



### MAJOR INTERNATIONAL PLAYERS (RANKED BY WATER-BASED REVENUES)

