

Booming Middle-Class Diet May Stress Asia's Water Needs

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for [National Geographic News](#)

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The beefed-up diets of Asia's expanding middle class could lead to chronic food shortages for the water-stressed region, scientists said at a global water conference in Sweden last week.

Asia's growing economy and appetite for meat will require a radical overhaul of farmland irrigation to feed a population expected to swell to 1.4 billion by 2050, experts warned at Stockholm's World Water Week.

The threat was highlighted in a study by the [International Water Management Institute \(IWMI\)](#) and the U.N. Food and Agriculture Organization (FAO), which estimate that Asian demand for food and livestock fodder will double in 40 years.

At current crop yields, East Asia would need 47 percent more irrigated farmland and to find 70 percent more water, the study found.

South Asia would have to expand its irrigated crop areas by 30 percent and increase water use by 57 percent. Given existing agriculture pressure on water resources and territory, that's an impossible scenario, the study authors said. In South Asia, for example, 94 percent of suitable land is already being farmed.

Instead the scientists urge modernization of existing large-scale irrigation systems, most of which were installed in the 1970s and '80s.

That would mean replacing current antiquated systems with more efficient, reliable, and flexible technologies, according to FAO irrigation expert Thierry Falcon.

Unregulated Irrigation

It's estimated that India, the world's largest consumer of underground water, has 19 million unregulated groundwater pumps.

Groundwater in northern India is receding by as much as a foot (0.3 meter) a year due to rampant water extraction, most of it for crop irrigation, according to a study published earlier this month in the journal *Nature*.

More than 26 cubic miles (109 cubic kilometres) of groundwater were drained from the region between 2002 and 2008, according to the satellite image-based study led by scientists with NASA's Goddard Space Flight Center.

"Governments' inability to regulate this practice is giving rise to scary scenarios of groundwater over-exploitation, which could lead to regional food crises and widespread social unrest," said Tushaar Shah of [IWMI](#).

Thirsty Beef

In China, the country's per capita "water footprint" for food production has almost doubled since 1985, said Junguo Liu of the Beijing Forestry University. A switch from traditional rice and noodles to a meatier diet is behind the change, Liu said.

It takes about 35 cubic feet (1 cubic meter) of water to grow a kilogram (2.2 pounds) of rice or wheat, but a kilogram of beef takes 445 cubic feet (12.6 cubic meters) of water to produce, the researcher said.

"Changes in food consumption are the major cause of worsening water scarcity in China," Lui said.

Total water requirements for food production in China are predicted to rise by 40 to 50 percent in the next 30 years,

he added.

"Where do you get such a big amount of water? It is a really big question and a big challenge"

"If other developing countries follow China toward a Western diet, the global water shortage becomes even more serious," Liu said.

Climate Change

The recent **IWMI** study didn't factor in possible climate change impacts on Asia's water supplies, so the paper's pessimistic projections may in fact prove overly optimistic, the authors stated.

Climate modelling forecasts presented in Stockholm by the Asian Development Bank suggest production of irrigated wheat and rice could drop across the region by 21 percent and 16 percent respectively by 2050.

"That's pretty troubling, as it's obviously going to have a big impact on food prices as we look into the future," said the bank's climate change specialist David McCauley.

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