SAN FRANCISCO — From the cotton field in rural India to the local rag bin, a typical pair of blue jeans consumes 919 gallons of water during its life cycle, Levi Strauss & Company says, or enough to fill about 15 spa-size bathtubs. That includes the water that goes into irrigating the cotton crop, stitching the jeans together and washing them scores of times at home.

The company wants to reduce that number any way it can, and not just to project environmental responsibility. It fears that water shortages caused by climate change may jeopardize the company’s very existence in the coming decades by making cotton too expensive or scarce.

So to protect its bottom line, Levi Strauss has helped underwrite and champion a nonprofit program that teaches farmers in India, Pakistan, Brazil and West and Central Africa the latest irrigation and rainwater-capture techniques. It has introduced a brand featuring stone-washed denim smoothed with rocks but no water. It is...
Levi Strauss Tries to Minimize Water Use - NYTimes.com

A blog about energy and the environment.  
[Go to Blog »](#)  

Go to Blog »

Levi Strauss is sewing tags into all of its jeans urging customers to wash less and use only cold water.

To customers seeking further advice, Levi Strauss suggests washing jeans rarely, if at all — the theory being that putting them in the freezer will kill germs that cause them to smell.

Conservation worries are not limited to the clothing giants: food and beverage conglomerates, tobacco companies and metal and mining companies are all starting to reckon with their heavy dependence on water. PepsiCo, for example, has embraced a method of sanitizing plastic bottles with purified air instead of water at a plant in Georgia. For its Frito-Lay brands, it has identified drought-resistant potato strains that it provides to farmers along with a soil-monitoring method so that crops are watered only when necessary.

The Carbon Disclosure Project, a group that monitors corporations’ greenhouse gas emissions, recently added water security to its priorities. Of the 150 companies that responded last year to a questionnaire that it sent to the world’s largest corporations, nearly 40 percent reported that water problems had already resulted in “detrimental impacts” to their businesses.

The threat of water shortages was brought home to Levi Strauss last year when floods in Pakistan and parched fields in China destroyed cotton crops and sent prices soaring. Roughly two pounds of cotton go into every pair of jeans that the company manufactures. Although scientists are wary of linking specific extreme weather events to climate change, recent increases in floods and droughts are in line with patterns that experts have long projected would result from global warming. The general rule of thumb is that wet regions will get wetter and dry regions will become even more arid.

Upmanu Lall, director of the Columbia Water Center at Columbia University’s Earth Institute, said that the local implications of those changes were still being sorted out but that “agriculture, which does best with a relatively consistent supply of water, will be impacted the most.”

That is particularly the case for cotton, the world’s biggest nonfood crop. Many big cotton-producing countries like India, which has tens of thousands of small cotton farmers, lack the reservoirs to store water, heightening the risk of shortages.

Companies doing business overseas are also contending with rising water costs or water that is not clean enough. Then there is the threat of bad publicity if a corporation is perceived to be squandering precious local water.

“The total volume of water used by a single beverage business, for example, may not be much,” Dr. Lall said. “But they are often the most visible users in a locality, depleting groundwater much more quickly than, say, a small farmer.”

It is not lost on American and European manufacturers that cotton already competes with grain for what arable land exists in some regions, a tension that will only grow as the world seeks to feed its growing population in coming decades.

**Making ‘Better Cotton’**
Because cotton is mostly grown by a diffuse network of very small farmers in more than 70 countries, encouraging water-efficient practices is a formidable challenge. Cotton cultivation accounts for more than 3 percent of the world’s agricultural water use and 6 percent of all pesticide purchases. Outmoded practices like field flooding contribute to overconsumption.

In 2005, nongovernmental and cotton industry organizations and some giant retailers, including Ikea, the Gap and Adidas, founded the international nonprofit Better Cotton Initiative to promote water conservation and reduce pesticide use and child-labor practices in the industry.

Levi Strauss joined in 2009. Partners include groups like Cotton Inc., an American industry association that has provided technical know-how. A three-year independent study of Indian farms found those adopting the new techniques reduced water and pesticide use by an average of 32 percent, the initiative says. The profit was 20 percent higher than that of a control group using traditional methods.

_Sruthi Gottipati contributed reporting from Shelu, India._
A teacher in Homer, N.Y., changed the way students learn grammar with the invention of sentence diagrams.