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### Not a Square to Spare

#### Toilet paper, it turns out, grows on trees

By *Noelle Robbins*

We spent the summer riveted, consumed by the 24/7 webcam images that simultaneously attracted and repulsed. Many of us wondered which was worse: The waste itself, or the binging that brought it all on. We doubted the mess could ever be cleaned up.

Disgusting as they may be, the brownish-black plumes that belched from the bottom of the Gulf of Mexico for nearly three months (and the oil consumption behind it) are, at least, acceptable topics of conversation in polite company. The same cannot be said of another of our habits. A practice that unites people across the globe. A biological imperative that demands the use of precious resources in its aftermath.

No, it is rare to engage in lively, public discourse about the fact that, well, you know, *everyone poops*.



*Fernando Desousa*

Especially in the United States. According to Keith Sebastian and David Dudley, authors of the new book [Everybody Poops 410 Pounds a Year](#), the average American produces more than two pounds of waste per year for every pound of body weight (410 pounds for a 175-pound person). Compare that to, say, an average Chinese citizen who, at a typical weight of 135 pounds, produces about 270 pounds of human waste per year. Americans are also world champs when it comes to toilet paper consumption. According to RISI, a paper industry marketing analysis firm, Americans used an average of 23.6 rolls per person in 2008 (translation: 57 sheets per day, or 50 pounds per year). That's about three times more than most European citizens, and almost 100 times more than a typical Chinese citizen. The British are giving the United States some competition – flushing more than two-and-a-half times as much tissue down the loo as the average Western European – but no other nation wastes so much as the United States when it comes to cleaning up our bodily wastes.

With oil still choking the Gulf of Mexico, global climate change charging full-speed-ahead, and biodiversity shrinking by the week, the environmental consequences of toilet paper usage might seem a small concern. And yet. Because everyone, everywhere poops, and because an ever-growing portion of the world's population uses toilet paper, and because much of that is virgin paper from ancient forests and tree plantations – this is an issue worth paying attention to, if for no other reason than the fact that toilet paper use has such a disproportionate impact on the environment. According to the [Natural Resources Defense Council](#), toilet paper constitutes less than 10 percent of all paper production but accounts for 15 percent of deforestation. To put it bluntly: About one out of every seven trees we cut down goes straight into the toilet.

The production and use of toilet paper, from forest to flush, is yet another example of the complicated systems of resource use, manufacturing, and disposal that plague a planet caught between diminishing raw materials and a growing number of humans. Although it may not be as dramatic as the [BP oil blowout](#), our daily toilet paper consumption raises something of an existential-environmental dilemma: How can we meet the most basic of our needs without wrecking the planet? Or, in this case, how can we maintain our personal hygiene without wiping out virgin forests?

#### **A Brief History of Toilet Paper**

Of course, humanity has not always depended on long, silky tree fibers (logged from ancient forests or massive monoculture tree plantations, transported hundreds or thousands of miles, bleached with harsh chemicals, air-dried with high-octane machines, and then shipped thousands more miles again) for personal cleansing.

Across the globe, and through the ages, various means of self-cleaning have been employed, including leaves, rags, and seaweed. Straw, grass, snow, sand, feathers, and moss have all served more or less well. People in the Hawaiian Islands once used coconut shells, and in pre-Norman England sheep's wool did the trick. Though it sounds uncomfortable, some cultures have even used sticks and stones.

The elites, of course, have often found something a little softer. French royalty used lace, and in Ancient Rome rosewater-infused wool pampered Patrician butts.

Water has always played a major role in personal cleansing routines as well, and many cultures today continue to view water as the most logical way to handle personal ablutions. Middle class Indian families have hose attachments in their bathrooms, while less well-to-do people keep *lotahs*, or cups, at the ready. The Japanese have taken the concept of the bidet – a water-spouting throne – to new heights with the Washlet, which follows a pleasing spray with warm air-drying.

Like so many of the everyday items we take for granted, toilet paper originated in China. Beginning in the late 1300s, the country began manufacturing toilet paper for the royal court. The original sheets measured two feet by three feet, and the royal household, in a kind of prologue to twenty-first century profligacy, went through about 750,000 of them a year.

What a waste: Toilet paper constitutes less than 10 percent of all paper products but accounts for 15 percent of deforestation. We're literally flushing trees down the toilet.

The first roll of plebian toilet paper was produced in the United States by the Scott Paper Company in 1879. It was far from comfortable. Initially, manufacturing techniques left wood splinters embedded in the toilet paper. It was more than 50 years later, in 1935, that Northern Tissue began advertising "splinter-free" toilet paper.

Since that modest achievement, paper product companies have been relentless in their drive to produce ever more soft, fluffy, absorbent, and attractive toilet paper. As with so many other consumer products, the United States has led the way in bringing new and improved toilet paper products to the international marketplace.

Kimberly-Clark (K-C), headquartered in Texas, is the largest tissue maker in the world. K-C products are sold in 150 countries and the company estimates that 1.3 billion people use their tissues every day. K-C maintains a position of either number one or two in market share in at least 80 countries.

But China has set its sights on the global toilet paper market, aiming to become both the biggest consumer and producer of fine toilet tissue within the next decade. In March 2008, Yuan Xiang Paper Products Factory published a report alluding to the next ten years as a "golden period" of development in the Chinese tissue paper industry – and correlating toilet paper consumption with economic development and improvement in the quality of life.

### **Waste Management**

A Japanese company, Oriental Co. Ltd, won top prize at the Monozukuri Nippon awards, with the "White Goat," which turns 40 sheets of paper into one roll of toilet paper in 30 minutes!

Here's how it works: When you feed the hungry machine 40 sheets of A4 office paper, the "White Goat" acts as a mini paper-recycling and processing factory. In 30 minutes the machine shreds and dissolves the waste paper into a liquid, spreads the liquid thin, dries it, and rolls it up neatly into toilet paper – without a tube in the

middle. In a large business operation the “White Goat” can convert 1,800 hundred shredded sheets into about 48 rolls of toilet paper in 24 hours. It uses between two and a half and four gallons of water per day to accomplish this feat.

The final product is cheap: It costs a mere 11 cents per roll. The biggest downside of the White Goat, which will be commercially available in late 2010, is the initial cost per machine: about \$100,000. Its size may also be a problem for some: It weighs in at over 1,300 pounds and is almost six feet tall. But like all technology, once the “White Goat” becomes established in the market, it may shrink in both cost and size. – *NR*

Many other nations are thinking similarly. TP manufacturers from Brazil to the Middle East are seeking to expand tissue markets by tying toilet paper use to a “civilized,” healthy way of life. Manufacturer Fine Dubai, for example, sees big market potential in Iran, where the population of 67 million people still mostly uses water for self-cleaning; the company has a production plant dedicated to tissue that is then shipped across the narrow Persian Gulf.

Globally, toilet paper sales are growing at a steady average of four percent annually. That might not seem like much – until you recall that much of the world has been at an economic standstill for the last two years. Toilet paper, it seems, is one industry that’s recession-proof.

#### **Do You Think TP Grows on Trees?**

The increasing use of toilet paper in every corner of the world isn’t necessarily an environmental problem – at least as long as most people are willing to use recycled-fiber content toilet paper. If new toilet paper users decide to copy the example of people in the United States, however, there could be a tissue issue. According to K-C’s 2007 Sustainability Report, North America ranks the lowest for purchases of recycled-fiber-content – about 20 percent – for all K-C tissue products. By comparison, Europe’s recycled-content TP use is about 36 percent of total market share, and Latin America’s is 67 percent.

In the United States, recycled-content toilet paper is viewed as a lower-end product (pardon the pun) sold in discount stores like Walmart and Target. Millions of Americans use rougher, high recycled-content toilet paper when they venture into office buildings, sports venues, movie theaters, and restaurants – the so-called “away-from-home” market – and are none the worse for the experience. Still, US manufacturers every year spend millions of dollars (K-C committed \$25 million to its promotions in 2008) to convince consumers that ultra-softness is a characteristic worth paying for, and that more expensive, virgin fiber toilet paper is what delivers that benefit.

For years K-C and other toilet paper manufacturers around the world relied on old growth forests for the pulp used to manufacture paper products. Seven years ago, [Greenpeace](#) decided to draw attention to that fact and launched the Kleercut campaign aimed at K-C’s logging practices, which were razing Canada’s ancient boreal forests. In May 2010, Greenpeace and other environmental organizations declared victory with the signing of The Canadian Boreal Forest Agreement, which set aside for conservation a Texas-sized chunk of forest (see [“Forests Forever,”](#)). A year earlier, K-C, in an effort to address environmental concerns, announced a “progressive forest policy.” Better late than never. Other big Northern American tissue makers made the move some time ago. Proctor & Gamble (P&G) committed to sustainable forestry practices back in 1993, and Georgia-Pacific (GP) passed its first Sustainable Forestry Initiative certification audit in March 2001.



*Istock photo.com*

As they shift away from virgin forests for their pulp, one solution TP makers have pursued is tree plantations. In Latin America, Indonesia, China, South Africa, Russia, Australia, and the United States, millions of acres of fast-growing, monoculture eucalyptus and pine plantations help meet the insatiable demand for paper products. While harvesting from these “tree farms” is better than clear cutting ancient stands, the plantations have their own drawbacks: Displacing biodiverse animal, plant, and human ecosystems and replacing them with fertilizer-, pesticide-, and herbicide-dependent tree crops isn’t exactly a model of ecological sustainability.

The logging that goes toward disposable paper products is especially frustrating given how much paper continues to be wasted. Each year, US consumers dump about 35 to 40 percent of all the paper they use into dumps and landfills. According to University of Colorado’s Environmental Center, “in this decade Americans will throw away over 4.5 million tons of office paper and nearly 10 million tons of newspaper ... almost all of which could be recycled.” Some paper recycling efforts are missing the boat – because they are literally taking the boat. According to recent reports in *The New York Times* and *Consumers Digest*, the majority of America’s “recycled” paper is shipped to China, traveling thousands of miles before it’s actually recycled. When the global demand for recycled paper goods goes down, those shipments are typically just dumped.

It doesn’t have to be this way. Tim Spring, CEO of [Marcal](#), a US company that has been making recycled toilet paper – using nothing but recovered fiber – for more than 50 years, knows that customers are picky when it comes to soft tissue. He says he can deliver the desired softness using recycled materials. “Sixty percent of all paper manufactured ends up in landfills; only 40 percent is recaptured for further use,” he says. “Most paper products can go through four cycles of recycling, with each cycle resulting in shorter fibers. Then various grades of recycled fiber can be blended in the toilet paper.”

Marcal relies on locally sourced office waste and magazines and newspapers deposited in residential recycling bins. Located in New Jersey, Marcal utilizes the recoverable paper from more than 600 municipalities in New Jersey, New York, Pennsylvania, and New England to run its production plant. There is, Spring says, more than enough paper already out in the world to keep ourselves clean: “We throw away enough paper to make toilet paper for a lifetime.”

### **A Brave New TP-Free World?**

Can we go TP-free and still meet the needs of a world population clamoring for modern, flushing porcelain thrones, or at least somewhere clean and off the ground to squat?

The Japanese Washlet sounds appealing with its rinse and dry cycles and, according to painstaking analysis by Bill Worrell of San Luis Obispo County Integrated Waste Management (who fell in love with the Washlet while traveling in Japan and had several installed in the county offices), actually uses less water and energy per toilet

visit than is required to produce a comparable amount of TP. But cultural biases and entrenched economics mean that the bidet is unlikely to save the world's forests; all signs point to continuing use of TP.

The bottom line is drawing a line at our bottoms. Just as the Slow Food movement attempts to connect us – using a farm to fork approach – to the source of our food, perhaps the time has come to launch a Slow Toilet movement that can highlight the forest-to-flush chain of production and waste. By revealing the source of this seemingly indispensable product, we might get people to understand the environmental cost of the paper they use every day.

It's not too much to ask: Can you spare a square?

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