



# Down the drain

Plastic water bottles should no longer be a wasted resource

Each day in the US more than 60 million plastic water bottles are thrown away. Most end up in landfills or incinerators, and millions litter America's streets, parks and waterways. How can America be spurred on to recycle more?

Bottled water can cost as much as 10,000 times more than tap water

Today, the oldest liquid on earth is the number one 'new age' drink in the United States and in many countries throughout the world. While many non-carbonated beverages have experienced incredible growth over the past decade (such as ready-to-drink tea, fruit juices and sports drinks), non-carbonated bottled water is way ahead of the pack, with sales in the US expected to exceed US\$10 billion in 2006.

Health-conscious Americans are consuming water from disposable plastic bottles at a rate of more than 70 million bottles each day. Some are spurred on in a bid to reduce the quantity of sugar in their diet. Others are concerned by the quality of municipal drinking water – a concern that public officials say is unwarranted.

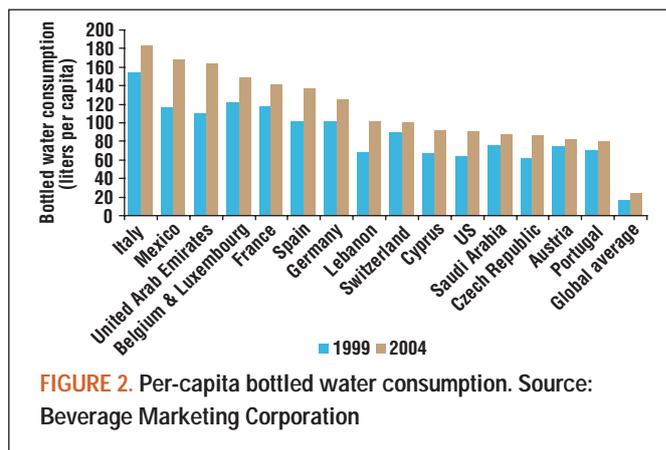
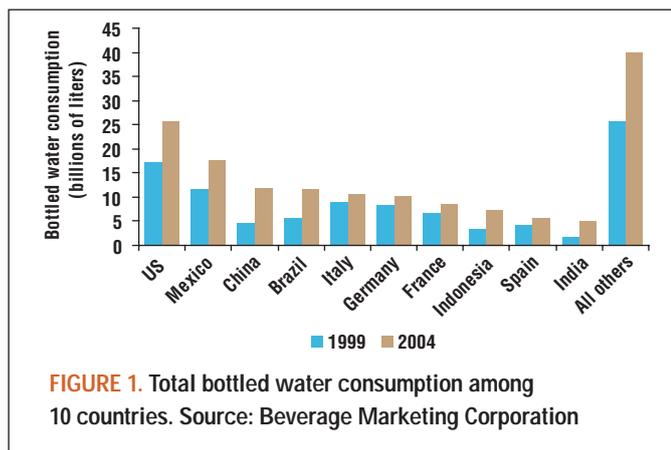
More than 60 million plastic bottles end up in landfills and incinerators every day – a total of about 22 billion last year. Six times as many plastic water bottles were thrown away in the US in 2004 as in 1997. From sea to shining sea, plastic water bottles are clogging the streams and tributaries that feed into America's rivers. The bottles that are not contained by fallen trees and other debris along our inland waterways are floating out into the Atlantic and Pacific Oceans. From there they are finding their way to the shores of island communities and coastal countries that are themselves only just beginning to experience the problems associated with plastic beverage bottle waste.

## Bottled water – a global phenomenon

Although the US leads the world in the consumption of bottled water, at 26 billion litres in 2004, the bottled water craze is a global phenomenon. According to Beverage Marketing Corporation, worldwide consumption reached 154 billion litres (41 billion gallons) in 2004, an increase of 57% in five years.

Mexico, with a population slightly more than one-third that of the US, is the second largest consumer of bottled water, at 18 billion litres annually. At 12 billion litres each, China and Brazil are not far behind. Italy and Germany rank fifth and sixth in consumption, at 10 billion plus litres each (see Figure 1).

On a per capita basis, Italians are the biggest consumers of bottled water, at nearly



184 litres in 2004 – the equivalent of more than two glasses a day. Second and third place in per capita consumption are Mexico and the United Arab Emirates, at 169 and 164 litres respectively. Belgium (including Luxembourg in the statistics) and France are close, with consumption just under 145 litres per person annually (Figure 2).

Global consumption of bottled water has been growing over the past five years despite the fact that in many places, including Europe and the US, there are more regulations governing the quality of tap water than bottled water. US water quality standards set by the Environmental Protection Agency for tap water, for example, are more stringent than the Food and Drug Administration's standards for bottled water.

### Consumers are paying a high price to hydrate

Most Americans pay a monthly water bill for municipal tap water at an average cost of US \$2.00 per 1000 gallons (\$0.5 per 1000 litres), according to the American Water Works Association (AWWA). Filtering tap water by means of a filter installed under the kitchen sink brings the cost up to about \$0.10 cents a gallon, and a tabletop filter increases the cost to \$0.25 cents a gallon.

The Container Recycling Institute conducted an informal survey of prices for bottled water in Pittsfield, Massachusetts. This revealed that prices for 12-packs of Coca-Cola's Dasani bottled water ranged from \$1.57 to \$8.26 per gallon, or as much as 4000 times more than tap water. Dasani is filtered tap water.

A comparison of identically sized 12-packs of bottled water linked with different brands and stores revealed prices ranging from \$2.99 to \$4.99 per gallon. Bottled water can cost as much as 10,000 times more than tap water, according to the AWWA.

But the price that consumers are paying for the bottled water itself pales in comparison to the price they're paying for the environmental consequences of manufacturing, transport, and disposal of the bottles. The Earth Policy Institute estimates that making bottles to meet the US demand for bottled water requires more than 1.5 million barrels of oil annually, enough to fuel 100,000 cars for a year. Transport and disposal of the bottles adds to the resources

used, and water extraction – which is concentrated in communities where bottling plants are located – adds to the strains bottled water puts on our ecosystem.

### What happens to plastic single-serving water bottles after they're drained?

Only about one in six plastic water bottles sold in the US in 2004 was recycled, leading to a national recycling rate of about 17%. According to the National Association for PET Container Resources (NAPCOR) 4637 million pounds (2103 million kg) of PET beverage, food, and non-food bottles were sold in 2004. Of the 803 million pounds (364 million kg) that were converted to clean flake:

- 298 million pounds (135 million kg) were exported, primarily to Asia
- 505 million pounds (229 million kg) were used domestically to make new products such as polyester jackets, carpet, film, strapping and new PET bottles.

Only a small percentage of PET bottles sold are used to make new plastic bottles – approximately 4%. The paucity of closed-loop recycling means that new water bottles must be manufactured almost entirely from virgin petroleum resin, consuming vast amounts of energy and resources. Increasing the quantity of bottles containing recycled content would greatly reduce energy usage, greenhouse gas emissions and pollution.

The Coca-Cola Company has committed to using recycled content in 10% of all their plastic beverage bottles sold in North America. PepsiCo has committed to using 10% recycled content in their plastic soft drink and water bottles sold in the US. Other bottled water producers are silent on the issue. Although both Coca-Cola and Pepsi met their recycled content goals in 2005, plastics recycling experts doubt they will reach them in 2006 due to the lack of supply of collected scrap bottles.

### Demand for PET bottles far exceeds supply

The growing national consumption of single-serving water bottles made from raw materials is an unnecessary waste of resources, as dozens of recycling businesses have the capacity

to recycle these and other PET bottles. They have an economic interest in recycling. Scrap bottles provide a cost-saving alternative to virgin resin both for processors and end-users, who manufacture new bottles and other plastic products. NAPCOR's '2004 Report on Post-Consumer PET Recycling Activity' stated that 'Even with the increases posted in 2004, supply remains inadequate [for] all end-use applications at their desired levels.'

### Why are scrap PET bottles in short supply?

Why, when Americans are throwing away 22 billion plastic water bottles a year, are there not enough scrap bottles for plastics recyclers? One problem is China's seemingly insatiable appetite for PET, and the inability of domestic recyclers to compete with the prices China is willing to pay. According to NAPCOR, US exports of scrap PET bottles increased from 143 million pounds (65 million kg) in 1998 to 298 million pounds (135 million kg) in 2004. Exports aside, there were more than 3633 million pounds (1648 million kg) of domestic scrap PET bottles that could have been recycled, but were not.

The broken link between post-consumer PET bottles and plastics processors is the lack of an adequate collection infrastructure. First, nearly one-half of the US population does not have access to kerbside recycling and probably never will. These include individuals and families who live in very rural areas or in high-rise apartment buildings. Even in communities that are served by a kerbside programme, not everyone participates due to apathy, bad weather, confusion about what can and can't be recycled, or just plain laziness.

But even if every family in America had access to kerbside recycling, water bottles are much more likely to be consumed in hotels, offices, schools, and during sporting events and outdoor activities than most beverages, and would not likely make it into the kerbside recycling bin. Recycling in commercial buildings is scarce, and recycling at sports, entertainment venues, parks and beach areas has proven extremely challenging.

Another problem is that only two of the 10 states (Maine and California) that implemented container deposit laws prior to 2002 have updated their laws to include bottled water and other non-carbonated beverages (which didn't exist when these programmes were enacted more than 20 years ago).

### What is needed to stem the growing tide of plastic water bottle waste?

Consumers need to appreciate the fact that their municipal water is not only safe to drink, but it may even be safer than bottled water. They also need to appreciate the multiplicity of environmental problems created by their consumption of bottled water. But even if consumption were to be reduced dramatically, there would still be billions of post-consumer

plastic water bottles that would need to be managed. Financial incentives, in the form of refundable deposits, provide a collection infrastructure that works both at home and away from home.

In South America and Europe, many beverage companies, including global beverage giant Coca-Cola, still offer their products in refillable bottles. (Most have switched from glass to PET plastic refillables to reduce transportation costs.) In the US, beer and soft drinks were packaged exclusively in refillable glass bottles until one-way bottles and cans were introduced in the 1940s and 1950s. Today, refillable bottles are just a memory for older American consumers. Younger consumers have no memory of refillables at all.

Refundable deposits in eleven states provide a financial incentive to return beverage containers for recycling and a collection infrastructure. In 1999, a report by Businesses and Environmentalists Allied for Recycling (BEAR) found that approximately 28% of the US population lived in the

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10 states with a container deposit law, and consumers in those states recycled 490 containers per capita, as opposed to consumers in the 40 non-deposit states who recycled only 191 containers per capita. (In 2002, Hawaii became the 11th state to implement a container deposit law. The law covers water and other non-carbonated beverages.)

One only has to look at the difference between the national recycling rates for PET soda bottles and the rates for PET water bottles to see what a difference a deposit makes. In 2004, the recycling rate for US custom PET bottles, which include food and non-food bottles and jars, and all beverage bottles except carbonated drinks, was only about 17%, while the PET soda bottle recycling rate was 34%. The higher rate for PET soda bottles is due to the fact that consumers in the 11 container deposit states are recycling their plastic soda bottles at rates above 75% on average. This high recycling rate raises the national rate for these bottles.

Recycling rates for plastic PET bottles and other containers are higher in many other countries than in the US. For example, in 2004 the PET bottle recycling in the US was 15% compared with a rate of 80% in Sweden, where deposits are required on all aluminium cans and one-way PET bottles. Aluminium cans were also recycled at far higher rates in Sweden – 85% as opposed to 45% in the US.

### Why aren't there more container deposit laws in the US?

Several states that require deposits on carbonated beverages are currently seeking to update their laws. Meanwhile, other



LEFT TO RIGHT Global consumption of bottled water has increased by more than 50% over the past five years ● Millions of bottles clog up streams and waterways all across America ● Despite the large amount of water bottles used, the US is facing a lack of supply of recycled plastic bottles. This has a lot to do with the lack of an adequate collection infrastructure and the consumption of bottled water away from home

states are trying to pass new container deposit laws, but the beverage and retail industries and their trade associations, including the International Bottled Water Association, are a powerful force in state legislatures and the US Congress. Through campaign contributions, high-powered lobbyists, and expensive public relations firms, they are able to keep proposed container deposit legislation bottled up in committees at both the state and national levels.

There have been several attempts at national dialogues on the growing beverage container waste problem involving BEAR, an organization that no longer exists, and the Beverage Producers Environmental Council (BPEC), a group beverage producers formed three years ago to address the issue of falling beverage container recycling rates. Finally, the US EPA has attempted to bring stakeholders together to address the beverage container waste problem. But so far nothing in the way of a solution has come from these efforts. As the publisher of a US recycling magazine

stated: 'In terms of beverage container stewardship, the industry, along with the National Recycling Coalition, continues to talk, talk and talk, and study, study and study. Critics, however, say enough with all this; they want to see action, action and action.' (*Resource Recycling*)

The number of plastic water bottles sold in the US grew from 4 billion in 1997 to an estimated 26 billion in 2005 (Figure 3) while the number thrown away increased from 3.4 billion to 22 billion. Plastic bottle waste is not just a national problem in the US, it's a national disgrace. Without a nationwide system of deposits, expansion of existing deposit laws or some other dramatic new collection infrastructure, America faces a growing mountain of plastic bottle waste with all of the resulting social and environmental consequences.

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## Further information

- Bottled Water: Pure Drink or Pure Hype, Natural Resources Defense Council  
<http://www.nrdc.org/water/drinking/bw/bwinx.asp>
- Water Rights Project  
[http://www.polarisinstitute.org/polaris\\_project/water\\_lords/water\\_lords\\_index.html](http://www.polarisinstitute.org/polaris_project/water_lords/water_lords_index.html)
- Plastic Water Bottle Waste  
<http://www.container-recycling.org/plasfact/drinkingwater.htm>
- Sierra Club's Bottled Water Campaign  
[http://www.sierraclub.org/cac/water/bottled\\_water/](http://www.sierraclub.org/cac/water/bottled_water/)

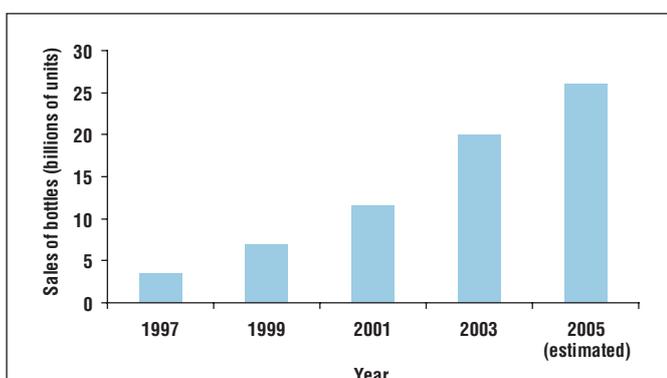


FIGURE 3. Sales of bottle water in the US, 1997–2005. Source: Beverage Marketing Corporation and CRI estimate for 2005

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