

PAPER RECYCLING IN THE UNITED STATES AND BEYOND: AN UPDATE

DR. STEVE BRATKOVICH

DR. JIM BOWYER

KATHRYN FERNHOLZ

DR. JEFF HOWE

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DOVETAIL PARTNERS, INC.



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Introduction

In the not-too-distant past it was commonplace to landfill old newspapers, used office paper, worn-out cardboard boxes, and other paper and paperboard products. Recycling initiatives, combined with an expanding ‘recycling mindset’, have changed much of how we think about, and respond to, ‘trash.’

Today, paper and paperboard recovery (collection) and recycling (reuse) rates in the United States are approximately 56% and 37%, respectively. Both numbers represent record or near record levels for the nation. Since 1990, paper recovery in the U.S. has grown by more than 87%. The U.S. paper industry continues to establish new benchmarks and has set 60% as the target recovery rate by 2012.

While recycling is a success story by many accounts, the U.S. is not the world leader in paper recovery. As reported in an April 19, 2005, Dovetail report¹, the U.S. trails a number of other developed nations. However, one nation highlighted in the 2005 report—Japan—has recently had numerous paper producers admit to falsifying recycled paper content claims in their products. This revelation has cast a shadow on Japanese paper producers and led to difficulty in comparing paper recovery and reuse rates between the two countries.

This report provides the latest information about actual paper recycling rates in Japan and summarizes paper recycling data for the United States and Europe.

U.S. Paper Production and Consumption

The U.S. continues to hold the ranking as number one in the world in production and consumption of pulp, paper and paperboard products. China is rapidly gaining ground as the second largest producer and consumer of paper and paperboard worldwide.²

The growth of paper production and consumption in the U.S. has risen substantially since the mid-twentieth century. For example, the consumption rate in 2000 was over 103 million tons and represented a nearly five-fold increase from 1950. However, U.S. consumption has declined slightly since 2000. The total consumption of paper products in the U.S. was calculated at 101.8 million tons in 2005. This translates to per capita consumption of 687 pounds.³

Although the U.S. had long been a net exporter of paper and paperboard, this situation has changed. Net U.S. imports of paper and paperboard exceeded 10 million tons in 2005, a record figure.

¹ Bowyer, J., et al. See <http://www.dovetailinc.org/reports/pdf/DovetailRecycling0405ek.pdf>.

² UNECE 2008. See <http://www.unece.org/trade/timber/>.

³ U.S. Census Bureau 2008. See <http://www.census.gov/compendia/statab/tables/08s0857.pdf>.

Paper Recovery and Recycling

United States

According to the U.S. Environmental Protection Agency, paper and paperboard products—newspapers, food packaging, cardboard boxes, office paper, etc.—constitute the largest portion (35%) of the municipal solid waste stream (MSW). Fortunately, the large volume of paper products in the MSW stream—85 million tons in 2006—offers an excellent opportunity for recycling.⁴

In the mid 1980s the American paper industry initiated a program to increase wastepaper recovery and reuse. Thereafter, the recovery (collection) rate⁵ began to rise steadily. By 1993 the wastepaper recovery rate was 39%, and by 2007 this number reached 56.1% (54.3 million tons), the highest point thus far in the history of U.S. wastepaper collection. This equates to a paper recovery of 360 pounds for each person living in the U.S.

Table 1. Paper and Paperboard Recovery in the U.S.: 1993-2007.

Year	Supply (000 tons)	Recovered (000 tons) (Collection)	Recovery Rate (Collection %)
1993	91,538	35,460	38.7%
1994	95,718	39,691	41.5%
1995	95,971	42,189	44.0%
1996	94,529	43,076	45.6%
1997	99,557	43,989	44.2%
1998	101,183	45,076	44.6%
1999	105,316	46,818	44.5%
2000	102,810	47,311	46.0%
2001	97,395	46,996	48.3%
2002	98,949	47,645	48.2%
2003	98,016	49,255	50.3%
2004	101,882	50,287	49.3%
2005	99,613	51,272	51.5%
2006	100,665	53,314	53.0%
2007	96,751	54,323	56.1%

Source: <http://stats.paperrecycles.org/index.php?graph=pprecov&x=56&y=8>.

⁴ Paper products entering the MSW stream in 2006 is nearly a three-fold increase from 1960. Source: <http://www.epa.gov/garbage/paper/htm>.

⁵ The paper recovery rate is measured by dividing the quantity of paper collected by the quantity of paper consumed.

Domestic paper reuse (recycling)⁶ rates also climbed over this same period, rising from about 32% in 1993 to 37% in 2006. Viewed from a global perspective, the reuse or recycling rate for wastepaper collected in the U.S. is actually 56%. This higher rate mirrors the recovery rate and includes the fact that virtually all recovered paper not used in production of new paper in domestic mills goes into paper made in other countries. For example, of the 54.3 million tons of paper recovered in the U.S. in 2007, a record 19.8 million tons were exported, an increase of 14%. This rate jumped to 26% in the first quarter of 2008 relative to the first quarter of 2007, primarily driven by booming exports to China.⁷

Raising the Bar

In 2003, the U.S. paper industry set a goal to recover (collect) 55% of the paper used in the country by 2012. This target was reached (and exceeded) in 2007, five years ahead of schedule. The new target set by industry is 60% recovery by 2012. This new goal is significant since each percentage point, according to the American Forest and Paper Association, represents one million additional tons of recovered paper—enough to fill more than 14,000 railroad cars.

The continued growth in curbside recycling programs is one reason the U.S. paper industry is optimistic on achieving the 60% paper recovery rate by 2012. For example, it is estimated that 62% of the U.S. population had access to a curbside recycling program in 2007, up from 56% in 2005. Also, drop-off recycling programs continue to grow in communities across the country. In 2007 approximately 87% of Americans had access to at least one category of paper or paperboard recycling (examples of paper categories include newspapers, corrugated cardboard, magazines, catalogs, telephone directories, direct mail, office paper, and kraft paper). The curbside and drop-off recycling programs, coupled with the fact that nearly 80% of America's paper mills use recovered fiber for some or all of their products, makes the 60% recovery target by 2012 a realistic and attainable goal.

Different Rates for Different Products

Recovery rates (and consequently reuse) vary by paper product. For many years the primary source of recovered paper was newsprint, and the primary organization involved in wastepaper collection was the Boy Scouts of America. The tradition of newspaper collection continues to this day, with recovery rates over 70%, up from 35% in 1990. Interestingly, the volume of recovered newsprint has actually dropped in recent years reflecting a national drop in the production of newsprint. For example, newsprint production in 1990 (15.8 million tons) is over 30% greater than production (consumption) in 2007 (12.0 million tons).

⁶ The paper reuse rate is the percentage of recovered paper used in domestic papermaking. (% Reuse Rate = [Quantity of Recovered Paper (tons)/Domestic Paper Production (tons)] x 100).

⁷ UNECE 2008. See <http://www.unece.org/trade/timber/>.

Europe

Although many observers would agree that the U.S. has made great strides in recent years on paper recovery and recycling, it is not the world leader in this area. European countries have posted impressive paper recycling and reuse rates, and continue to “raise the bar” for wastepaper utilization.

In 2006, 13 different sectors in the paper value chain pledged support for the new ‘European Declaration on Paper Recycling’. The goal of the Declaration is to achieve a European paper recovery rate of 66% by 2010 (as compared to the current U.S. rate of 56%).⁸

The table below compares current paper and paperboard recovery and reuse rates with the United Kingdom countries (England, Scotland, Wales, and Northern Ireland) as well as Europe.

Table 2. Paper Recovery and Reuse Rates for U.S., U.K. and Europe

Country	Recovery Rate	Reuse Rate
U.S.	56%	37%
U.K.	64%	77%
Europe	65%	49%

(Source: AF&PA and CPI Fact Sheet)
(U.S. and U.K. data for 2007; Europe data for 2006)

It is important to note that in attempting to evaluate recycling performance, the reuse rate numbers for a single country or region cannot be taken at face value. As noted above, paper reuse rates are calculated by dividing the quantity of recovered (collected) paper by *domestic* paper production. The large differences between countries or regions can partially be explained by the fact that reuse rates are a function of paper production. For example, a country or region with a large population but little domestic paper production is likely to have a high reuse rate (in 1997 Hong Kong had a reuse rate of 100%). Conversely, a country or region with a large paper industry and a small population is likely to have a low reuse rate (in 1999 Sweden had a reuse rate of 18%). Also, countries that are net exporters of waste paper may have reuse rates markedly lower than recovery rates; this scenario characterizes the U.S.

Regardless of how European numbers are compared to the U.S., the bottom line is that paper recovery and recycling in Europe is increasing. For 2007, the increase was nearly 4%. Exports of European recovered paper are also up, with over 91% of non-European exports going to Asian markets.

⁸ The European Declaration has a *recycling rate* goal of 66% by 2010. However, the definition of *recycling rate* in the European Declaration is comparable to the term *recovery rate* as defined, and used, in the U.S. (i.e., the ratio between paper recovered [collected] and paper consumption).

Environmental Laws in Japan

Despite the fact that Japanese paper makers are reeling from the recycled-paper content controversy, there continues to be a rich recycling tradition in the country. For example, a 2001 Home Appliance Recycling Law in Japan covers four major types of appliances (televisions, washing machines, refrigerators, and air conditioners) and requires (1) consumers to pay a recycling fee when disposing of home appliances, (2) retailers to take back, and (3) manufacturers to recycle, the discarded appliances.

Another Japanese recycling law passed in the early 21st century is the Green Purchasing Law. This law encourages the public sector, including the government, to promote the procurement of eco-friendly goods, and to provide information on such goods. Dozens of procurement goods are included in this law including paper products. This law is a primary incentive for companies in Japan to produce recycled paper products.

Japan

As noted above, comparing paper reuse rates between countries can lead to misleading conclusions. However, the technologically advanced country of Japan is an interesting case study. Japan has high paper quality standards, a long history of recycling, and it is a country that is not a significant net importer or net exporter of paper products or waste paper. Because of these characteristics, Japan is viewed as providing the most realistic standard for comparison of recycling performance to the U.S.

In a 2005 Dovetail report, U.S. paper reuse rates were estimated to be 25% lower than those of Japan. Also, recent data made available since then listed Japan's 2007 paper recovery rate at nearly 74%⁹ as compared to 56% for the U.S. Based on these numbers, the U.S. is viewed as significantly lagging behind Japan in paper recovery and reuse. Although a gap likely exists between the countries, revelations in January 2008 cast serious doubt on some of the Japanese claims on recycled content in selected lines of paper products.

A Black Eye for Japanese Paper Recycling

In January 2008, the Japan Paper Association admitted that 17 of its 38 member companies had falsely reported the ratios of used paper contained in their recycled paper products. Two of the companies admitting to the falsified information were industry leaders Oji Paper Co. and Nippon Paper Group Inc. These two firms plus four others' also admitting guilt dominate the domestic paper market in Japan, accounting for 80% of overall production in 2006.

According to *The Japan Times* and other sources, Oji Paper admitted it had lied for more than a decade about the amount of recycled paper it used in at least one product line (New Year's greeting cards). Industry leader Nippon announced its president's resignation shortly after the recycling story was made public. In light of these revelations, a fair question to ask is, "What are the actual or 'adjusted' Japanese paper recovery and reuse rates?" To date, scant information is available.

⁹ Personal communication with AF&PA Washington, DC, office, August 7, 2008.

One Company Publishes Adjusted Rates

One company—Oji Paper—has published adjusted recovery and recycling rates. The report *Investigation Result Regarding Content Ratio of Recovered Paper* issued by Oji Paper on January 18, 2008, highlights the various paper products produced by Oji including claimed and actual content ratios of recovered paper and production quantity. Although the deviation between claimed and actual recovered content is large in some cases, based on this self-reported data the production total of the misrepresented product is relatively small. For example, Oji's 2008 New Year's greeting cards claimed a 40% recycled content but Oji now acknowledges that the actual recycled content was between 0% and 20%, on a production volume of 408 tons. This volume is quite small compared to Oji's overall annual volume of product containing recycled content (estimated at over 1.2 million tons). An examination of all of Oji's product types with recycled content reveals that during the last quarter of 2007 (October through December), 1.4% of production was falsely labeled as to the actual percentage of recycled content.

What About the Other 16 Companies?

It is unclear whether Oji represents the best or the worst (or somewhere in-between) of the 17 Japanese companies admitting to falsifying recycled content on product labels. In the big picture, the falsification issue might be more of a public relations nightmare than anything else. However, with so many of the major Japanese paper producers admitting fraud, the "true" paper recycling rate in the country could be much lower than previously reported. Regardless, the fact remains that the scandal has cast doubt on past Japanese levels of paper recovery and reuse. It could be some time before accurate "adjusted" rates are both published and recognized as legitimate indicators of recycling in Japan.

The Bottom Line

Waste paper recovery (collection) and reuse (recycling) in the U.S. continues to increase, with the 2007 recovery rate calculated at over 56%. However, the U.S. recovery rate continues to lag European countries (and probably) Japan as well. This shortcoming reflects the potential for further improvement in U.S. performance, and justifies the new recovery target of 60% by 2012.

The revelation in early 2008 that a large number of Japanese paper companies falsified stated recovery content in different paper products casts a shadow on their actual recovery and reuse rates. Until adjusted rates are published in Japan, it will remain unclear how U.S. rates compare to the heretofore "leader" in paper recovery and reuse.

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612-333-0430

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DOVETAIL PARTNERS, INC.

528 Hennepin Ave, Suite 202

Minneapolis, MN 55403

Phone: 612-333-0430

Fax: 612-333-0432

www.dovetailinc.org