



UNDERSTANDING RECYCLED FIBER

Do you buy paper? Do you know that fiber choice is one of the most important decisions you can make in choosing which paper to buy? In fact, paper fiber options impact climate change, greenhouse gases, forest preservation, water and air pollution, waste management, energy use, and much more. This factsheet will help you sort out the facts surrounding the use of recycled fibers in paper production.

FIBER SOURCES

Fibers from virgin forests make up approximately two-thirds of the pulp that goes into papers made at North American paper mills. But this percentage varies considerably by type of paper. For example, many kinds of packaging include high levels of recycled content. But, even though printing and office papers make up more than a quarter of all U.S. paper production, less than 6% of their fibers come from recycling. In other words, more than 90% of printing and office paper has no recycled content at all. Instead, they are made almost entirely from “virgin” fibers, meaning those harvested for their first use. Forest fibers currently account for almost all virgin fibers in North American and European papers, though agricultural sources also provide a very small amount.

Recovered, or recycled, fibers have previously been used in paper products and then been reclaimed to be made into new products. Recovered fibers include two categories:

Preconsumer recovered fibers come from paper scraps generated during the papermaking, converting, and printing processes – paper that has not reached the end user. These are regularly reused to make new paper.

Postconsumer recovered fibers, on the other hand, come from products that have reached the consumer and then been recycled back into the papermaking process. There is approximately five times as much postconsumer material that needs recycling as preconsumer and it is much more challenging to process than the cleaner and more homogeneous preconsumer materials. North American

recycled paper specifications emphasize postconsumer content in order to create markets for the community recycling programs that collect postconsumer materials and incentives for developing the recycling mills that can handle them.

RECYCLED FIBER FACTS:

Compared to virgin paper, Recycled Paper:

- Reduces demand on forests
- Uses less total energy
- Uses less bleach
- Produces fewer toxic releases
- Saves water
- Reduces waste that otherwise must be landfilled or incinerated
- Has a fiber efficiency rate of more than 70%, compared to 23-45% for virgin papers

The bottom line:

Multiple life-cycle analyses clearly show that recycled paper is better for the environment, even when accounting for transportation.

Comparison of 100% Virgin Forest Fiber Copy Paper to 100% Postconsumer Recycled Content Copy Paper (Uncoated Freesheet) – For 1 Ton of Paper Use

	100% Virgin	100% Postconsumer	Savings (per ton)
Wood Use	3 tons	0 tons	3 tons (saves 24 trees)
Total Energy	38 million BTU's	22 million BTU's	17 million BTU's
Greenhouse Gases	5,690 lbs CO ₂	3,582 lbs CO ₂	2,108 lbs CO ₂
Wastewater	19,075 gallons	10,325 gallons	8,750 gallons
Solid Waste	2,278 lbs	1,155 lbs	1,124 lbs

Environmental impact estimates were made using the Environmental Defense Paper Calculator, www.papercalculator.org.

BENEFITS OF RECYCLED FIBER

Recovering fiber and recycling it into new paper decreases the demand for natural resources, saves energy and water, reduces pollution, and reduces waste going to landfills. Every time that a fiber is reused, that is a fiber that does not need to be logged or landfilled, and the processing to make it into new paper is much less intensive than making paper from trees. Papermaking continually needs some new fibers, which can come from well-managed forests or from agricultural crops, because fibers shorten and fray after many recyclings. But the more that paper and paper products contain high recycled contents (while maintaining some new virgin fiber sources), the more sustainable the papermaking process will be. Recycling helps build a papermaking path out of forests, preserving them for more long-lasting goals.

Resources – Our Disappearing Forests

Industrialized nations, with 20% of the world's population, consume 87% of the world's printing and writing paper. This demand contributed to the loss of much of the United

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States' original forests, where less than 5% of old growth forests remain, and now threatens endangered forests in Canada, the Southeastern U.S., and throughout the world.

These forests are the lungs of the planet. They regulate climate, protect watersheds, and serve as nurseries for billions of birds that migrate to all parts of the world. Replanting trees cannot replace forest ecosystems, and monoculture tree plantations cannot provide comprehensive wildlife habitat or preserve biodiversity. Increasing the use of recycled content in paper reduces the need for tree fiber, whether from forests or plantations. Making one ton of pulp for office and most printing papers requires 4.4 tons of wood to be cut and transported to the mill. One ton of pulp for newsprint and magazine papers requires 2.2 tons of wood. But one ton of recycled pulp requires only 1.4 tons of recovered paper – providing far greater fiber efficiency than trees. Given the short-lived and often disposable use of most paper – 90% of paper products are discarded within a year, many almost immediately – including recycled content makes far more sense than cutting down forests.

Climate Change – Our Rapidly Warming Planet

Cutting down trees to make paper contributes to climate change by destroying forests, which trap and store carbon in trees and root systems. In fact, according to the UN Food and Agriculture Organization, deforestation accounts for 25 percent of the annual carbon emissions caused by human activity. Not only is carbon that was once absorbed released, but there is no longer a forest to absorb more carbon. While replanted trees will absorb some carbon, the increasingly rapid harvesting of plantation trees simply releases it again. The best way to trap carbon is to keep forests intact. Using recycled paper helps protect forests and also keeps paper out of landfills. Paper is still more than one-third of municipal landfill waste and the methane released by its decomposition, with 23 times the heat trapping power of CO₂, is a huge contributor to greenhouse gases.



Water – Total Use and Toxic Emissions

Making paper pulp from recycled fibers requires less water than pulping wood fibers. It also results in less pollution discharged in wastewater. One source of toxic emissions comes from the use of chlorine-based chemistries in the pulping and bleaching processes. But making paper from recycled fiber requires considerably less bleaching than making virgin paper. Currently, the only printing and writing papers with processed chlorine free (PCF) fibers in North America come from recycled paper mills.

Waste – Our Overflowing Landfills

Without recycling, paper's life-cycle is a one-way trip to the landfill or incinerator. Landfilling paper truly is a waste – not only does it waste recycling's potential to conserve

resources many times over, but the decomposition of paper and other organic materials in landfills releases air emissions, including methane, a major contributor to global climate change. Incinerators, including waste-to-energy facilities, release toxic air emissions and generate toxic ash that must be landfilled.

Energy – Total Energy Savings

Some think that recycling paper uses more energy than making paper from virgin fiber sources. This is not true! The total energy consumption when making pulp from recycled fibers is significantly lower than that of virgin pulping. For example, every ton of 100% recycled fiber copy paper saves 17 million BTU's over virgin paper, enough to power the average home for more than two months.

The source of this misconception may be that, in certain cases, recycled paper uses more purchased energy from the power grid. Mills that produce considerable amounts of tree waste in their virgin pulping processes often burn it to generate electricity on-site, which offsets the amount of energy they must purchase. But burning wood waste has many of the same environmental impacts, such as toxic air emissions, as other forms of energy production. Therefore it is total energy that is the important feature to measure, and here recycled paper is a clear winner – even when transportation is included in the equation.

QUALITY

The quality and reliability of recycled paper is outstanding. Paper manufacturers make recycled paper to the same specifications as virgin paper, with many great quality recycled papers in every grade. Did you know...

The Canadian run of Harry Potter and the Order of the Phoenix was published on 100% postconsumer recycled paper. In fact, over 10 million books were printed on recycled paper in North America in 2005.

National Geographic, considered by many the gold standard for magazine photography, prints its cover on paper with 10% postconsumer content.

Buyers Laboratory, Inc., an independent office equipment testing laboratory, uses both recycled and virgin paper to test different brands of copiers and printers. It reports “no noticeable difference in the runnability of recycled paper versus virgin paper.”

COST

Some recycled paper is very cost competitive, especially papers used for letterhead and envelopes, business cards, and graphic design. Sometimes recycled paper does cost more, although the price differential has been dramatically reduced over the past decade. Some factors contributing to high prices include economies of scale, the lack of integration of recycled pulp mills into papermaking mills, the distance of some pulp mills from recovered fiber sources, and the exclusion of many external costs from the price of virgin papers. The way to bring prices down is to increase demand and convince the paper industry to invest in more recycling.

BALANCING ENVIRONMENTAL CHARACTERISTICS

How do you choose between papers that have different environmental characteristics? Which should be the priority? There are many different combinations available and few, if any, are yet perfect. Each is important in creating incentives for establishing and sustaining systems – for certified sustainable fiber, clean production, and for reliable and ongoing recycling systems.

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EPN recommends that purchasers require some recycled content as a bottom line, since almost all paper, no matter what its composition, will need to be recycled after use. Meeting at least the U.S. EPA federal agency minimums of 30% postconsumer content for uncoated papers and 10% for coated papers is important. Then ensure to the greatest extent possible that any forest fiber in the paper is from FSC-certified sustainable forest fibers or from nonwood sources. Give preference to papers within these specifications that are processed chlorine free (PCF) or that use as little chlorine-chemistry bleaching as possible. (See the EPN Common Vision for a hierarchy of bleaching applications.)

THE PATH TO RESPONSIBLE PAPERS

How much used paper is available to be recovered for recycling, how that paper is collected, and what grades of paper are produced are logistical issues that are crucial to building a successful paper recycling system.

Different types of paper have different fiber characteristics and need different types of recovered fiber. Many municipalities collect mixed paper - newspapers, office and printing papers, and packaging mixed together. While this can increase the volume of recovered paper, these mixed fibers can only be used to make limited types of products such as more packaging. Other products such as newsprint, printing and office papers, and tissue need sorted papers to achieve their quality. Mixed papers that are not subsequently sorted, then, reduce the potential for recycled content in these grades and for repeated recycling.

A more sustainable approach to fiber recovery is to separate fibers based on type. Then high-grade printing and office paper, for example, can be made back into new printing and office paper. If separated out, these fibers can be recycled many times more than products that are made from mixed paper. Each additional use of the fiber conserves forests, saves energy and water, and reduces toxic emissions. Increasing recycled content in printing and office papers also makes the biggest environmental impact because their production is the most environmentally demanding of all the grades of paper. With more than half the paper in office buildings not yet collected for recycling, there is plenty of room for expanding recovered paper collection and production of recycled papers.

THE FUTURE OF PAPER

Using recovered fiber in paper makes good environmental sense. As global demand for paper rises and developing countries emulate the paper use of developed countries, it is increasingly ever more important to use paper wisely and increase the use of recycled fiber in order to protect the world's forests and waters and to reduce toxic emissions and climate change.

Recovered paper collections, even with exports to Asia, can support significant increases in domestic use. Office paper collections, in particular, have plenty of room to grow. However, in order for manufacturers to invest in recovered fiber, there must be demand for recycled products. To identify and find sources for recycled papers available in North America,



see the environmental paper listings at www.conservatree.org. Make sure your vendors and printers supply it. Increased demand can leverage new and expanded production.

The paper industry has been a major factor in the disappearance of forests and the pollution of the earth's air and water. Increasing the use of recovered fiber in paper can help alleviate these burdens, but consumers must show the industry that they demand recycled fiber. It is possible to shift the industry, maintain beneficial paper uses, and enable developing nations to gain the advantages of paper while still protecting global resources. But it will take the voices and leverage of all paper purchasers and consumers, both large and small, speaking together to get the industry to change.



The Environmental Paper Network (EPN) links environmental organizations that collaborate to support the conversion of the pulp and paper industry to socially and environmentally sustainable processes. The EPN's Common Vision outlines four key

criteria for environmental paper purchasing policies: 1) Reduce paper consumption, 2) Clean production, 3) Responsible fiber sourcing, and 4) Maximize recycled content. Recycled content, also called recovered fiber, is the focus of this factsheet. For more information please see www.environmentalpaper.org.