



Puzzled About Recycling's Value? Look Beyond the Bin





Seeing the Full Picture

IT'S NO PUZZLE—recycling makes sense. The concept is simple: recycling turns materials that would otherwise become waste into valuable resources. Collecting used bottles, cans, and newspapers and taking them to the curb or to a collection facility is just the first in a chain of events that generates a host of financial, environmental, and social returns (see below). Some of these benefits accrue locally as well as globally. As this booklet explains, when all the pieces of recycling are put together, the overwhelming conclusion is that recycling boosts the economy, conserves natural resources, and reduces solid waste.

THE BENEFITS OF RECYCLING

- Recycling protects and expands U.S. manufacturing jobs and increases U.S. competitiveness.
- Recycling reduces the need for landfilling and incineration.
- Recycling prevents pollution caused by the manufacturing of products from virgin materials.
- Recycling saves energy.
- Recycling decreases emissions of greenhouse gases that contribute to global climate change.
- Recycling conserves natural resources such as timber, water, and minerals.
- Recycling helps sustain the environment for future generations.

Broadening the Financial Focus

COST SAVINGS

IN SOME COMMUNITIES across the United States, recycling is a cost-effective way to manage municipal solid waste. The experience of Madison, Wisconsin (population 201,000), for example, illustrates the economic benefits curbside recycling can provide mid-sized U.S. cities. In 8 years, the city more than tripled its diversion of residential solid waste while also decreasing the net annual cost of solid waste services from \$158 per household to \$139. A recycling rate (including composting) of 49 percent reduced the number of garbage routes needed and helped hold land-fill tipping fees in check.¹

As solid waste managers take advantage of various cost-saving methods for collecting residential solid waste and recyclables, the business of municipal solid waste collection will become even more cost-effective. Successful strategies include changing collection fr

RECYCLING INDUSTRIES

Industries that use recovered materials are a vital and growing sector of our economy. Today's recycling programs provide manufacturers with many of the raw materials they need to operate more efficiently. Our growing supply of recyclables keeps manufacturing industries more competitive and more sustainable.

The increased use in recent years of "minimills" by steel producers illustrates the importance recovered materials hold for some industries. Steel minimills utilize a manufacturing process that requires virtually 100 percent recovered scrap steel as the raw material. Indeed, all steel products manufactured in the United States, including bridge components, road signs, and construction materials, are made from some recycled steel. Steel can recycling, in conjunction with the recycling of scrap automobiles and appliances, feeds these mills.⁷

The paper industry is another sector of the economy that depends on recovered materials. Currently, the supply of commercial timber in the United States cannot satisfy the current and projected fiber demands of paper mills.

Consequently, the use of recovered paper at domestic mills is growing more than twice as fast as the use of virgin wood fiber.⁸ In this decade alone, the U.S. paper industry will spend more than \$10 billion on new or expanded recycled paper mills.⁹ The industry will need recovered paper from both commercial and municipal recycling programs to supply these mills with raw materials. According to one industry expert, recovered paper will account for 47 percent of global papermaking fiber by 2010.¹⁰

lion.¹² As shown in the graph on the right, aluminum cans and corrugated boxes have the highest market values, at \$1 billion and \$940 million, respectively. As these numbers show, the materials collected in recycling programs are not “garbage” or “waste”—they are valuable commodities that represent an essential component of today's marketplace.

As with any business, recycling is sub-

ject to the cyclical highs and lows of free market supply and demand. While there have been periods when prices for recyclables were relatively low, they have been consistent with historical trends for both virgin and recovered materials. In fact, for all markets, prices are normally unstable during the early stages of development. Some recovered material markets, such as plastics, are relatively young and will continue to mature and stabilize with the expanded use of recovered materials in manufacturing and increased purchases of products with recycled content.

An innovative mechanism for buying and selling recovered materials that is intended to stabilize markets is the Chicago Board of Trade Recyclables Exchange <www.cbot-recycle.com>. Recycling made headlines and moved into the league of soybeans and porkbellies with the launch of this Internet-based system in 1995. EPA helped establish the Recyclables Exchange in conjunction with a group of partners from around the country. This centralized marketplace is designed to bring the same level of price stability and quality standards to recovered materials that has occurred with other long-standing commodities traded every day on the floor of other Chicago Board of Trade exchanges.

Estimated Market Value of Major Municipal Solid Waste Materials

The background features a soft-focus photograph of a forest with tall evergreen trees. Overlaid on this is a large, light-colored puzzle piece graphic. The title text is in a teal color. In the top right corner, there is a small graphic of a flag with a black bar below it.

Expanding the Environmental View

IN ADDITION to providing economic benefits, recycling offers environmental benefits. By reducing our reliance on virgin materials, recycling reduces pollution, saves energy, mitigates global climate change, and reduces pressures on biodiversity. Recycling's environmental benefits are found at every stage of the life cycle of a consumer product, from the mining of the raw materials through use and final disposal.

REDUCING POLLUTION

By decreasing the need to extract and process virgin materials, recycling helps reduce or eliminate the pollution associated with the first two stages of a product's development: material extraction and processing. Mineral extracting and processing often pollute air, land, and water with toxic

MITIGATING GLOBAL CLIMATE CHANGE

In reducing air and water pollution and saving energy, rln r

gas emissions in the United States, and (3) slowing the harvest of trees, thereby maintaining the carbon dioxide storage benefit provided by forests.

PROTECTING BIODIVERSITY

Extracting fewer virgin materials not only decreases greenhouse gas emissions, it also prevents the disruption of land areas that are home to a wide variety of plant and animal species. As a result of human activities, including the acquisition of virgin materials, species of plants and animals are now vanishing 100 to 1,000 times faster than would be expected in the absence of such activities.¹⁸ Such diminution of the earth's biodiversity has a substantial human cost because wild species and natural ecosystems provide numerous benefits to people. Some economists, for example, estimate that the lost pharmaceutical value from plant species extinctions in the United States alone is almost \$12 billion.¹⁹ By reducing the land disturbance and pollution associated with virgin materials extraction, recycling helps stop the degradation of the earth's ecosystems.

VALUING NATURAL RESOURCES (Virgin materials)

The background of the page features a soft-focus photograph of two children on a beach. One child is in the foreground on the left, and another is in the middle ground on the right, both looking towards the ocean. Overlaid on this image are several white puzzle pieces of various shapes and sizes, some of which are partially cut off by the edges of the page. The overall color palette is light and airy, with a mix of blues, greens, and whites.

Sketching the Social Landscape

THE ECONOMIC AND ENVIRONMENTAL BENEFITS of recycling have positive societal impacts both today and in the future. Job creation, pollution reduction, and energy conservation all serve to improve the quality of life in our communities. If we do not recycle, the repercussions will fall on future generations. Our children and grandchildren will inherit the legacy of virgin production and throw-away consumption. Instead of leaving future generations a depleted natural resource base and more waste in landfills—landfills that incur ongoing costs for monitoring and maintenance—we can leave a stronger economy, greater biodiversity, and less global warming by recognizing the value of recycling and passing this knowledge on to our children.

PUTTING THESE PRINCIPLES INTO PRACTICE

Given that recycling has numerous economic, environmental, and social benefits, is there a way to factor in all these benefits when making decisions about solid waste management? The province of Alberta, Canada, recently developed a methodology that goes beyond monetary costs and allows communities to take into account the environmental, health, and social costs associated with solid waste man-

Notes

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