

SEXTON

Los Angeles New York

WHY RECYCLE?

When you besiege a city for a long time, making war against it in order to take it, you shall not destroy its trees. You may eat from them, but you must not cut them down. (Deuteronomy 20:19)

1. CLIMATE

The world is waking up to the enormous challenge of global warming—we all hope we have awakened in time to slow or even reverse it. With this awareness, much public attention has rightfully been directed to energy use, especially in buildings (heating, cooling, lighting), and in transportation (cars, trucks, planes) as major sources of greenhouse gases.

Less well noted is that solid waste is a major contributor of greenhouse gas emissions into the atmosphere. There has been some notice of the many truck miles traveled picking up trash and then bringing it to a landfill or incinerator. But the major greenhouse gas worry in waste management is methane emissions from landfills. **Methane is 21 times as powerful a greenhouse gas as is carbon dioxide.** The US EPA reports that **landfills are the largest human generators of methane** in the country. The UN Intergovernmental Panel on Climate Change estimates that post-consumer waste (that is, garbage) buried in landfills accounts for as much as 5% of the entire ghg emissions problem from *all* sources.

According to the USEPA's cradle-to-cradle life cycle analyses (including all steps from collection up through remanufacture), recycling shows marked advantages over landfilling for reducing ghg emissions. Typically, for example, **recycling 100 tons of newspaper will save 192 metric ton equivalents of carbon dioxide compared to landfilling** the same material. (Adjusted to give landfilling full credit for carbon sequestration.) For corrugated **cardboard** the same comparison shows **a saving of 351 metric tons of co2 equivalents per ton recycled** rather than landfilled.

As an even more dramatic example, **recycling 100 tons of aluminum compared to landfilling saves 1,361 metric ton equivalents of CO2 (MTECO2).**

Plastics are a high priority material for recycling, since they are in the first place made from petroleum (almost all common plastics). Approximately **8 percent of the**

petroleum refined in the world goes into plastic manufacture. Eight percent is one barrel in twelve. This is a great deal more petroleum than current increases in average car mileage can hope to displace for many years to come. Therefore in addition to greenhouse gas issues, recycling of plastics brings benefits to our balance of payments, petroleum dependency, and similar critical national issues.

The dimensions of the plastics issue are immense. To consider only PET—the plastic in soft drink bottles, the National Association of PET Container Resources reports that the amount of PET on our store shelves and in our refrigerators has more than doubled in the past decade to where we now use, and mostly throw away, **5.5 billion pounds of PET per year.** PET contains, due to its origin as a fossil fuel, approximately pound for pound the same energy value as natural gas. So, we can think of those 5.5 billion pounds of bottles in our local delis as five and a half billion pounds of natural gas NOT available to heat homes or drive electric turbines.

In contrast, according to the US EPA, **every 100 tons of PET plastic bottles produced from 100% recycled bottles instead of the current estimated industry average of 3% will save 224 metric tons of CO2 equivalents.** The petroleum and carbon offset equates to saving more than 52,000 gallons of gasoline, or **taking 50 cars off the road for a full year for every 100 tons of plastic bottles recycled.**

Analyzed for any typical city or region as a whole, rather than material-by-material, the EPA analysis confirms these very positive effects of recycling. For every 100,000 persons in a community, generating the US average of 4.5 lbs/day per person, raising the recycling rate from 30% to 40% saves 10,000 metric tons of carbon, or 36,600 metric tons of CO2 per year. **In a city of 500,000 a 10% improvement in recycling rate would achieve 180,000 metric tons of CO2 emissions avoided** using the EPA's figures and methods.¹

On a more personal level, a typical family of four throws out a ton of waste each year, more than half of which is recyclable. According to the EPA's website carbon calculator, a typical **family's ton of waste is responsible, on average, for more than two tons of ghg emitted in the disposing of it,** for each family, every year. According to the EPA, **recycling one family's newspaper, glass and metal cuts the waste ghg emissions by a little better than half—more than a ton per year.** Every product added to the recycling stream, say, magazines or junk mail, adds to the total ghg savings. Some additional items not now commonly recycled but often proposed for future recycling expansion—plastic bags, electronics, and carpet—also show very favorable ghg ratios for recycling rather than landfilling.

¹ To frame this figure in terms of other large-scale climate efforts, a 10 percentage point increase in the City's recycling rate would save just under a million metric tons of CO2 equivalent each year, or 1 MMTCO2e. **This almost exactly equals the total of all the direct municipal ghg reduction efforts the City hopes to achieve by 2017,**--as listed in the 2009 plan NYC Greenhouse Gas Inventory

Paper is a special case of the impact of recycling on climate. Trees and forests are critical carbon sinks. The UN estimates that 20 to 30% of all our greenhouse gas emissions are due to deforestation.² Every tree we can avoid cutting down is one contribution we can make to getting climate change under control. Every ream of recycled paper we use helps to slow this devastation.

Except for selling our cars, there are very few practical steps a consumer can take in his or her daily life to make such a significant contribution to ghg reduction. Cutting nighttime heat by 5 degrees, for example, saves a tenth as much ghg emissions, replacing ten 75 watt bulbs with compact florescent units saves half as much. Entirely replacing the furnace with an energy star model saves more ghg over a year's time, but this is obviously a huge capital expense, and not something we can do every day.

But the big opportunity to help the climate, the one thing most Americans can easily do that will make a noticeable impact on our emission of greenhouse gases is to recycle.

2. CONSERVATION OF RESOURCES

Natural Resources:

All recycling substitutes re-used material for the use of naturally occurring raw materials. Some natural resources, such as oil, are being used so quickly that actual depletion—near-elimination of the recoverable stores—is now discussed as possible in our lifetime or our children's. Other resources, such as coal, are more plentiful but their recovery reduces millions of acres of the Earth to rubble heaps, and produces water and air pollution on a massive scale. For these reasons, for national security, and for simple air quality protection, conservation of fossil fuel resources was a social and cultural priority even before climate change made the issue much sharper.

To conserve these fossil fuels, and to protect the land from the devastation their extraction often causes, energy efficiency and consumption reduction have long been a keystone in any comprehensive environmental improvement program. But it is less well known that **recycling is an additional means of fossil fuel conservation**. After much intensive research by government, academic and industry experts it can now be confidently stated that **all commonly recycled materials save energy compared to virgin resources** (see Section 1., above), **and recycling plastics directly reduces petroleum use**. Petroleum (and to a lesser extent, natural gas) is the feedstock of almost all plastics in common use today. And as mentioned, plastic production consumes about 8%—one gallon in twelve—of all the oil the world uses. We are consuming this precious resource not

² <http://www.fao.org/newsroom/EN/news/2006/1000385/index.html>

just to get to work, or heat our homes, but to get our diet and sugared drinks in convenient packaging.

Paper-- A Special Case:

One natural resource that is under increasing stress, but which has gotten much less attention than oil, is forested land. In addition to being beautiful, immensely important as habitat, and the *only* effective means of fresh water conservation, flood control, and erosion prevention over huge sections of this and every country, **forests are natural carbon sinks**. Cutting down trees by definition cuts into a natural and important carbon reservoir—every healthy tree takes co2 out of the air as it grows. Every woodlot or forest oxygenates and ‘decarbonizes’ the air passing through it.

There is almost no way to overstate the importance of this relationship of trees and forests to global warming. The UN states that 20 to 30% of all our greenhouse gas emissions are directly attributable to deforestation.³

Few consumers have been told what an enormous fraction of the world’s trees have already been eliminated, or what huge swaths are cut each day, and certainly we are not told how much of this cutting—even of old-growth, virgin forest—is done to produce paper. Of the global wood harvest for all uses other than fuel, 42% goes to paper production, a proportion expected to grow to more than 50 percent in the next 50 years. More of the same is in store, as global production in the pulp, paper and publishing sector is expected to increase by 77% from 1995 to 2020. To cite one ecologically critical example, pulp exports from Latin America from forests converted into plantations and from the harvesting and conversion of tropical and subtropical forests are projected to grow 70 percent just in this decade.

Of course we are often told that paper is made from softwood grown on ‘plantations’ and that these re-planted plantations are remediation for forest destruction. But most of the world’s paper supply—over 70 percent—is not made from timber harvested at tree farms but from forest-harvested timber, from regions with ecologically valuable, biologically diverse habitat. As hard as it may be to believe, millions of tons of old growth virgin trees are harvested every year in North America to make, for example, toilet paper.

The Canadian Boreal is being logged at a rate of two acres a minute, 24 hours a day. In the Southern US, which contains the most biologically diverse forests in North America, the paper industry—not lumber or furniture—is the largest consumer of forests, currently logging an estimated 5 million acres each year. This is an area the size of New Jersey.

³ *Ibid*

Even when pulpwood comes from plantations, we are not often told that these mono-cultural plantations host about 90 percent fewer species than the forests they replace. In addition, the conversion of forests to plantations is named by the US Fish and Wildlife Service as *the* leading cause of wetlands loss in the Southeast.

Just as icing on this cake of ecological mayhem, it is worth noting that the pulp and paper industry is the single largest industrial consumer of fresh water in OECD countries and is the third greatest industrial greenhouse gas emitter.

We do not have to stand idly by as witnesses to this disaster. As consumers we can make a huge difference just by reducing consumption and waste, and of course by purchasing recycled products. For one simple example, every ton of office paper (about 40 cases) made of 100% post-consumer recycled fiber saves 24 trees (7 inch diameter), 7,000 gallons of water and 1,200 kilowatts of electricity compared to the same purchase if made of trees. We can make a huge difference by recycling our waste and again a huge difference by refusing to buy virgin materials when recycled can be had—as is certainly the case for all common grades of paper. Increasingly, materials of all kinds with recycled content are coming on the market (about 60 percent of all steel products in America are made from recycled scrap). More and more recycled products will come on the market as we demand them, or as we refuse to accept traditional, wasteful, polluting, climate-damaging products.

It is up to us.

Brendan Sexton
© The Sexton Company, 2009

With grateful acknowledgement of and enthusiastic borrowings from the NYC Recycling Roundtable, NRDC, US Forest Service, USEPA, ScienceLine.org, OECD Economic Outlook, UN Environment Program, Forest Ethics, Conservatree, and others whose original research was deeply mined for this work.

About The Sexton Company:

The Sexton Company (<http://www.sextonco.com>) offers strategy, content, and implementation services to brands interested in doing well by doing good®. The Sexton Company develops and implements policies and on-the-ground programs grounded in sustainability and corporate social responsibility. The award-winning work of The Sexton Company puts authenticity into stories that grow reputations and build businesses based on real deeds and actions, resulting in compelling relationships and increased stakeholder value. The Sexton Company has achieved worldwide recognition and award winning results for its clients (past and present) including Philadelphia Eagles, NRDC, NY Jets, National Grid, PG&E, stopglobalwarming.org, PA Dept of Conservation & Natural Resources, Ogilvy, Earth Day, Durst Organization, Live 8, American Idol Gives Back and others.