

# Recycling and Sustainability: A Practical and Theoretical Pairing

*Summary by Sara Smiley Smith*

## *Panelists*

**Mark Lennon**, *Founder and Principal, Institution Recycling Network*

**Robert Gogan**, *Recycling and Waste Manager, Harvard University*

## *Moderator*

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In some ways, recycling has become subjugated to sustainability on college and university campuses. The majority of funding and publicity often goes to sustainability efforts, although recycling is often the thing people think of first when they are discussing sustainability. In order to establish recycling as a key part of sustainability on all levels, we need to quantify its impacts, from greenhouse gas reductions to financial savings.

## **CONSTRUCTION AND DEMOLITION WASTE RECYCLING**

The Institution Recycling Network (IRN) is a cooperative working primarily in New England that focuses on making recycling simpler and improving the economics of recycling. One of IRN's greatest impacts IRN has been in construction and demolition (C&D) recycling, where there is traditionally a tremendous amount of waste. C&D recycling has measurable environmental benefits and is financially beneficial in most regions of the country. Yet it remains poorly understood, particularly among contractors. Contractors often believe that recycling will ruin the budget and the schedule. In fact, recycling can easily be built into any project.

There are large and measurable greenhouse gas emissions reductions associated with C&D recycling. It is important to recognize that the earth is finite and that our processes will not be sustainable until we think of them more cyclically. Everything we extract from the earth should be considered for a number of uses before it is discarded.

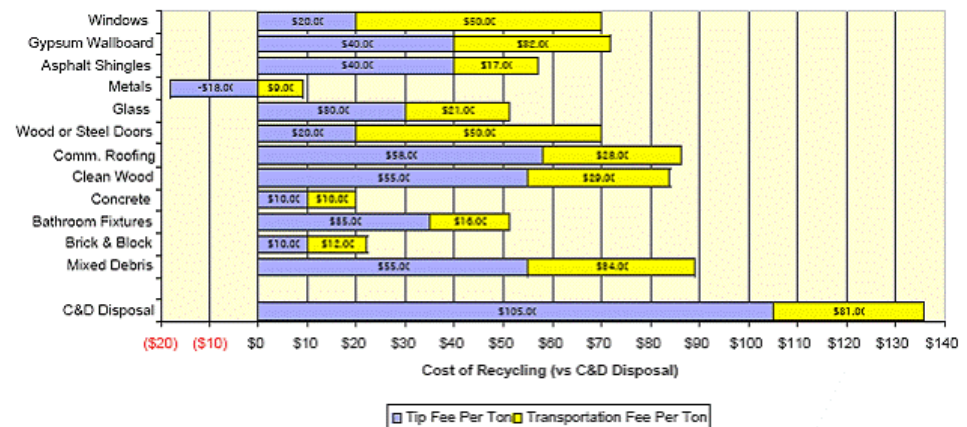
In the Northeast, the C&D debris sent to the waste stream is very recyclable due to the materials used and the construction methodology. Because of the high cost of waste disposal in the region, it is always less expensive to recycle than to throw debris away. Nearly everything that comes out of a demolition project is recyclable, including cabinets, light fixtures, metal, wall board, molding, concrete, masonry, and asphalt.

In a new construction project the majority of waste is also recyclable. Again, proper planning ahead of the project is critical to ensure that the recycling goes well. For example, if recycling is not considered from the outset, valuable materials such as asphalt or shrubs cleared from the site will be sent to a landfill rather than recycled.

Some items need special consideration for recycling. For example, treated and painted woods cannot go to traditional wood markets like mulch and boiler fuels. However, such wood can be used for some purposes, such as alternate daily cover for landfills. Any abatement that is needed, for lead or asbestos for example, must be done before recycling can begin.

One of the main challenges to including recycling in any construction project is convincing the contractors, who have established behavior patterns, to consider recycling. They often think it will cost too much to sort materials, transport them, and deal with different recyclers. In New England, it costs \$100 per ton to dispose of waste at a landfill and \$30 per ton to truck it there. To recycle waste as mixed debris, it costs between \$110 and \$120 per ton with transportation included. If a commitment is made to do source separation on site, major savings can be achieved in waste management. For example, concrete and brick can be recycled for only \$20 per ton.

**Figure 1 The Cost of Recycling vs. Disposal of Construction and Demolition Wastes**



In the Southern U.S. these cost advantages are not always available due to lower tipping fees for waste disposal.

In order to get contractors on board, it is important that recycling be included in the specifications of the project. When contractors are asked to recycle they are being

asked to do something different, which is challenging. The reality, however, is that recycling does not mean that workers have to do more. In most construction projects it is rare that more than one type of waste is generated at a time. For example, when workers are framing there will be primarily wood waste, when workers are sheet-rocking there will be primarily dry wall waste. This eases the complexity of sorting and hauling materials away.

Contractors often have a number of complaints about recycling. One main complaint from contractors is that they don't have room on site for various recycling containers. This challenge can be overcome with adequate planning. Another complaint is that recyclers provide poor service. This is really no longer a viable complaint because many big haulers recognize the growing market and have made recycling a focus. Finding correct "request for proposal" and contract language is also a challenge for some. This information is now readily available from many sources including IRN.

In summary, the key to a successful project is early planning. This allows for everyone involved in the project to get on the same page and it also ensures that no recyclable materials are lost unnecessarily. This process is not always easy. A willingness to be flexible in order to adapt to new situations is an important prerequisite.

## **LESSONS FROM HARVARD**

Recycling is the gateway to sustainability. As a society we are just beginning to address the solid waste issue appropriately. The trademark of the recycling community is the mobius symbol which carries with it unspoken messages about the importance of resource reuse. The three arrows signify manufacturing, recovery, and consumption, in mimicry of natural systems where nothing is lost and materials are constantly cycled. There are indeed economic, social, and environmental benefits to recycling. We are making some progress in maintaining the cyclical potential in our current consumer world, but we still lose an unacceptable amount to landfills and other sources.

The town-gown divide is often a barrier to comprehensive recycling efforts. To overcome this, Harvard participates in Cambridge public committees and donates a large amount of reusable materials to the community such as cosmetics donated to women in shelters on Valentine's Day. This provides great media opportunities for the university and contributes to social sustainability.

It is not always enough to simply recycle – it is also important to be aware of your impact as a recycler. One potential unexpected impact of recycling is the noise associated with recycling trucks. Harvard has attempted to decrease this negative impact through the use of compressed natural gas spark ignition dump trucks to quietly and cleanly remove items.

In building a strong recycling program, colleges should harness the competitive interactions that exist between institutions. Colleges have strong rivalries and these rivalries spark innovative ways to improve recycling efforts.

Harvard has found a number of innovative ways to recycle on campus. One effort developed a waste-oil to fuel system. In this project, used canola oil is converted to fuel which is higher performing than diesel and more environmentally friendly. In another project, Harvard Habitat for Humanity worked to make the cleanout of the dorms at the end of the year profitable. In 1987 Harvard threw away 289 tons of move-out related trash. In 2006, through improved recycling and reuse efforts, this total decreased to a mere 49 tons. Salvaged items are resold at the beginning of the subsequent academic year to returning students. This effort has grown to such a level that the Harvard bookstore offered to act as a partner in reselling some of the collected items.

It is relatively straightforward to measure institutional recycling rates. This allows institutions to benchmark their progress and compare between different parts of the campus and between campuses. This comparability has led to competitions such as “The Green Cup” and “Recyclemania,” which are great examples of the way competition can push new participation and ingenuity.

Recycling is the most visible demonstration of sustainability on a campus. It is difficult to convince people that you have a commitment to sustainability if you are not recycling well. It is an old concept, but we are far from good at it.