



How To Establish Recycling and Composting Programs

In many countries, recycling occurs informally at landfills, uncontrolled dumps, and on streets. Scavengers or wastepickers often collect materials for reuse or sale without any organization, supervision, or regulation. While scavenging or wastepicking can be very effective at reducing the amount of plastic, glass, metal, and paper ultimately requiring disposal, pursuing these activities can be harmful to worker health. Incorporating scavengers or wastepickers into organized or formal recycling programs can improve the quality of their working conditions and the local environment. Composting can also improve local economies and the environment—by turning organic waste, which is a large portion of many city waste streams, into a marketable product for urban and agricultural uses. Together, recycling and composting can provide income, significantly reduce waste, and decrease greenhouse gas emissions. This fact sheet describes the benefits of formal recycling and composting activities and provides steps on how you can incorporate scavenging or wastepicking into formal recycling and composting programs. At the end of this fact sheet, a case study from Brazil shows how businesses organized scavengers and wastepickers into successful recycling cooperatives.

What Are the Benefits of Formal Recycling and Composting Programs?

Recycling and composting activities, if organized properly by the local government, can generate many environmental and economic benefits. For example, it can create jobs and income, supply valuable raw materials to industry, produce soil-enhancing compost for agriculture, reduce the need to site or build more landfills and combustors, and prevent greenhouse gas emissions. An organized approach to recycling and composting can also have many benefits for your community. Involving scavengers or wastepickers in formal recycling activities can empower them, increase their income and reputation, and improve their quality of life, health, and safety.

How Do I Start a Formal Recycling or Composting Program?

Establishing and managing formal recycling and composting programs requires significant local government time and resource investments.

However, these investments can save money in the long term by allowing governments to maximize existing recycling and composting activities before making significant investments in collecting and transporting waste. To successfully implement formal recycling or composting programs, governments will need to consider social, financial, institutional, and regulatory issues. The following steps outline one possible approach for implementing a program.

Step 1. Plan and set goals. Set flexible goals and plans for your recycling and composting programs. As you follow each of the steps and learn more about the community's needs, adjust the plans to incorporate this information.

Step 2. Study the complete waste management system.

- **Evaluate the waste stream.** What types and amounts of waste are generated and by whom?
- **Identify existing activities.** Local governments should determine all waste recycling practices, including existing informal practices such as scavenging or wastepicking, in addition to existing recycling groups such as cooperatives and micro-enterprises, which are usually formed under the supervision of nongovernmental organizations (NGOs). This information will help community planners consider the recycling sector's requirements when they design an improved solid waste management system. Academic institutions and NGOs might be able to help perform surveys or other studies to gather these critical data.
- **Determine possible markets or buyers.** Who will purchase the materials?

Step 3. Work with the community.

- **Identify and meet with informal recycling groups, NGOs, and homeowners in cities.** The local government should select a coordinator to manage and work with wastepicking groups. The coordinator should first identify the various groups or individuals active in recycling or composting, and then meet with leaders within those groups to discuss local issues. If more than one recycling or composting group serves the community, the decision-makers should coordinate these groups' activities by assigning specific service locations to each group and setting guidelines for the types of waste they can recycle (e.g., paper, metals, glass, food). Involving the local government in these activities could help provide stability for the scavengers' or wastepickers' work and improve their quality of life.
- **Incorporate scavengers and wastepickers.** The local government should discuss and determine how existing scavenging or wastepicking activities and groups, such as cooperatives and micro-enterprises, could be incorporated into a formal waste management system. Emphasis should be placed on the improved economic, health, and safety benefits scavengers and wastepickers may experience under a more organized system.

Step 4. Create a designated recycling or composting area. The local government should designate areas within a waste disposal facility where sorting, recycling, and composting can occur. These areas can be fixed or moveable to meet the scavengers' or wastepickers' needs (see text box). Any recycling or composting that is being done at the landfill should be located away from the working surface of the landfill (i.e., where waste is being compacted and covered) to protect the health and safety of scavengers or wastepickers. The local government should determine what additional equipment might be necessary for a program and how the equipment will be provided.

Step 5. Develop operation standards.

The local government should develop standard operating procedures for the scavengers or wastepickers. Standard operating procedures increase efficiency and help improve health and safety. Determining a time of day for groups to access a site is an important consideration. Requirements such as use of safety equipment (e.g., gloves or masks) and worker identification (e.g., uniforms or badges) can also be included in standard operating procedures.

Step 6. Determine who is responsible for selling the recyclables or composted material.

The government should determine whether it will be involved in the sale of recyclables and compost, or if the landfill owner, workers, or cooperatives will interact with the buyers. The governing agency also should establish an agreement with the recycling groups that clearly states how the profits from selling recyclable or composted materials will be shared. Governments also need to determine if the compost will be available for free or packaged for sale to farmers and other groups.

DEFINITIONS

Composting: The controlled aerobic biological decomposition of organic material in the presence of air and water to form humus.

Humus: A soil-like material resulting from the partial decomposition of plant and animal matter.

Landfill: Disposal site for nonhazardous solid wastes. The waste is spread into layers, compacted to reduce its volume, and covered by clay or soil, which is applied at the end of each operating day.

Recycling: Collecting, reprocessing, and/or recovering certain waste materials to make new materials or products.

Establishing Efficient Work Areas

When designating a recycling or composting area, the government will need to consider the availability of space and financial resources. Fixed recycling sites may include buildings and mechanized equipment for separating out recyclables. These help to make recycling operations safer and cleaner. They do, however, require a higher capital investment and have increased operational costs because the recyclable materials must be transported from the active area of the landfill to the recycling site. Mobile stations, comprised of compartmentalized push carts, allow recycling groups to move from one disposal site to another. They are a cheaper option, but might decrease the efficiency and safety of the recycling process.

A composting area might simply involve neat piles of organic wastes that are turned over by machine or rotated manually and watered frequently to help speed up the natural breakdown of food and plant waste into a nutrient-rich compost. Watering also reduces the potential for material to be moved by wind. Formal composting activities might include the use of "windrows," organized rows of organic material that can be rotated manually or with machines. Some governments may also find it useful to purchase a machine to shred fallen trees and landscape trimmings. Regardless of how complex the composting activities are, it is important to monitor the organic breakdown of materials in order to control odors, keep rodents out, and ensure a useful end product.

The success of these recycling and composting activities may affect other components of the integrated solid waste management (ISWM) system. Keeping track of materials diverted from disposal will be useful to local governments considering new recycling programs or construction of transfer stations, combustors, and landfills to manage solid waste.

CASE STUDY

COOPERATIVE RECYCLING IN BRAZIL

Businesses in Brazil are taking a lead role in organizing recycling collection in the country's major cities. In 1992, private companies from various sectors established the Brazilian Business Commitment for Recycling (CEMPRE), a nonprofit organization dedicated to the promotion of recycling within the scope of integrated waste management. CEMPRE tries to increase the community's awareness of recycling and other solid waste issues through publications, technical research, seminars, and databases. The outreach programs are aimed at those who influence public opinion, such as mayors, directors of companies, academics, and nongovernmental organizations (NGOs). The training programs support the development of recycling cooperatives.

Organizing scavenging or wastepicking activities into recycling cooperatives has been one of CEMPRE's main activities. The official curbside recycling program in the city of Curitiba, for example, collects 800 tons of recyclables a month at a cost of \$180 per ton, while local catadores (scavengers or wastepickers) collect over 3,000 tons a month at no direct cost to the city. In organizing informal recycling activities, CEMPRE hopes to better the catadores' position in Brazilian society, increase the national recycling rate, and create economies of scale. According to CEMPRE, the catadores' free market approach is more economical than Brazil's government-run curbside collection programs, and cooperatives enable members to sell to larger dealers at higher prices. The few cooperatives that already exist have demonstrated great success. In São Paulo, for example, members of a cooperative receive 40 percent more money than they would have earned on their own. To inform the catadores about the benefits and logistics of organizing into recycling cooperatives, CEMPRE distributes educational material throughout Brazil and holds courses on the materials. Catadores attended 10 classes, learning about topics from health care for workers to the basics of running a cooperative. In addition, the class visited Belo Horizonte's composting plant and properly designed, constructed, and managed landfill to learn more about the city's solid waste services. CEMPRE has completed many other projects to promote recycling in Brazil, including developing a series of recycling handbooks. CEMPRE also has sponsored a database of solid waste documents, worked to standardize packaging symbols, and conducted studies of local recycling programs. The organization also developed a decision-makers' guide to solid waste management in Brazil and distributed it to every mayor in the country. For more information on CEMPRE, visit the organization's Web site at: <www.cempre.org.br>.

United States Environmental Protection Agency
EPA530-F-02-026b
(5306W)
Solid Waste and Emergency Response
May 2002
www.epa.gov/globalwarming