

# FLANDERS, BELGIUM

## Europe's Best Recycling and Prevention Program

By Cecilia Allen



Buy clever, buy less waste. (photo: OVAM)

**The Flemish region of Belgium,** Flanders, has become the vanguard of waste management in Europe. It boasts the highest waste diversion rate in Europe—almost three-fourths of the residential waste produced in the region is reused, recycled, or composted, and it has managed to stabilize waste generation. Thanks to far-reaching regional policies that are highly coordinated with local programs, waste management has remained decentralized, efficient, and highly effective.



### FLANDERS

Population: 6.2 million  
 Area: 13,522 km<sup>2</sup>  
 Population density: 456/km<sup>2</sup>  
 Average annual rainfall: 850 mm  
 Average temperature range: 3°C to 18°C  
 Altitude: 5 to 288 meters above sea level  
 Waste diversion rate: 73%  
 Waste generation: 1.5 kg/capita/day  
 Spending on waste management per capita: US \$116.33 per year

**Figure 1.** Per Capita Targets to Reduce Residual Waste in Flanders

**1997 - 2001 Waste Plan**

Target year	kg of residuals per person
1998	225
2001	220
2006	200
2010	150

**2003 - 2007 Waste Plan**

Target year	kg of residuals per person
2003	180
2005	165
2007	150

**2008 - 2015 Waste Plan**

Target year	kg of residuals per person
2015	150

Notes:

- The figures correspond to average Flemish levels. Different targets are set for different municipalities.
- The targets include residential waste, bulky waste, and waste from government activities; commercial waste is excluded.

Source: ARCADIS and Eunomia, 2008 and EIONET, 2009.

In Belgium, environmental issues are the responsibility of the regions, which establish policies independently from each other. The Flanders Public Waste Agency (OVAM) develops and monitors legislation and policies regarding waste management and soil remediation for the region. The 308 Flemish municipalities, in turn, handle municipal solid waste; almost all of them have grouped themselves into associations to provide these services collectively. There are currently 27 inter-municipal waste management associations in Flanders.

**Regional Waste Diversion and Prevention Strategies**

Regional waste management policies in Flanders go back to 1981, when the first Waste Decree, regulating the development of regional waste plans, was approved. Since then, every four or five years, new plans have been developed that outline waste policies and targets for municipalities to implement with OVAM’s support. These waste plans set goals for the region, and include targets (for overall residential waste generation, separate collection, and residual waste after source separation and home composting) to be met by both the municipalities and the overall region. Over time, goals were met and then exceeded, allowing more ambitious goals to be set in subsequent waste

plans. **With these successes, the emphasis of waste management policies transitioned from disposal to source separation and recycling, and finally to waste prevention.**

OVAM's initial measures included promoting source separation, subsidizing the construction of recycling and composting facilities, and discouraging waste. As the program matured, the region developed a well-coordinated system of municipal, regional, and national policies that support decentralized waste management with a focus on prevention.

**Collection and Treatment**

**Collection.** Most cities belong to inter-municipal partnerships and run these services cooperatively, some employ a combination of inter-municipal associations and private or public companies, and a few operate independently, with no association. The means of collection varies from association to association, but generally includes a combination of door-to-door collection, drop-off centers, street containers, and retailer product take-backs. All but three municipalities in the region had collection of source separated materials by 2009.

Door-to-door collection systems usually take paper and cardboard, organic materials (including yard trimmings

and food scraps, but not cooked food), plastic bottles and cups, metal packaging and Tetra Paks, residuals, and bulky waste. There are also 337 “recycling parks,” or drop-off centers, in the region that handle about 50 percent of the residential waste. People must deliver the discarded materials separated and place them in the proper containers. Some products can be taken back to retailers.

In 2008, the municipalities spent €91.60 (US \$116.33)<sup>3</sup> per capita on residential waste management. Collection and treatment systems are financed through a fixed annual tax and the Pay As You Throw (PAYT) tax.

**Treatment of Organic Materials.** The first plan for vegetable, fruit, and garden (VFG) waste was developed in the period 1991 - 1995 and led to the creation of the Flemish compost organization, VLACO. A non-profit organization constituted cooperatively by OVAM, the inter-municipal waste associations, private compost producers, and some independent municipalities, VLACO encourages organic waste prevention, promotes composting at all levels, certifies compost, and operates as a reference and assistance entity on organic waste materials.

Organic materials are treated through composting and anaerobic digestion. At the beginning of the 1990s, there was one centralized compost plant that received mixed residential waste, but the compost quality was so bad that source separation was made a requirement in the regional plans for organic materials. In the second plan for organic materials, passed in 1995, the inter-municipal associations required separate collection of green waste (produced in public parks and areas as a result of pruning) or VFG waste, and advocated home composting. Subsequent organic materials plans have focused on promoting further home composting and cycle gardening, and encouraging businesses to compost.

By 2010, there were 35 compost plants in Flanders (8 for VFG waste and 27 for green waste) and 29 anaerobic digestion plants that processed organic residential waste together with manure and agricultural waste. In total, 1,804,000 tons of these organic materials were processed in 2010. About 1 million tons were anaerobically digested and 804,000 tons were composted (for composting: 269,000 tons of VFG, 525,000 tons of green waste, and the rest discards from food processing industries).<sup>4</sup>

**Approximately 4,900 tons of organic materials were composted or treated through anaerobic digestion every day in Flanders.**

According to VLACO, 327,044 tons of compost were sold in 2010 (106,952 from food and yard waste and 220,092 from green waste) for different uses including gardening and landscaping (35%), horticulture and agriculture (7%), and others.

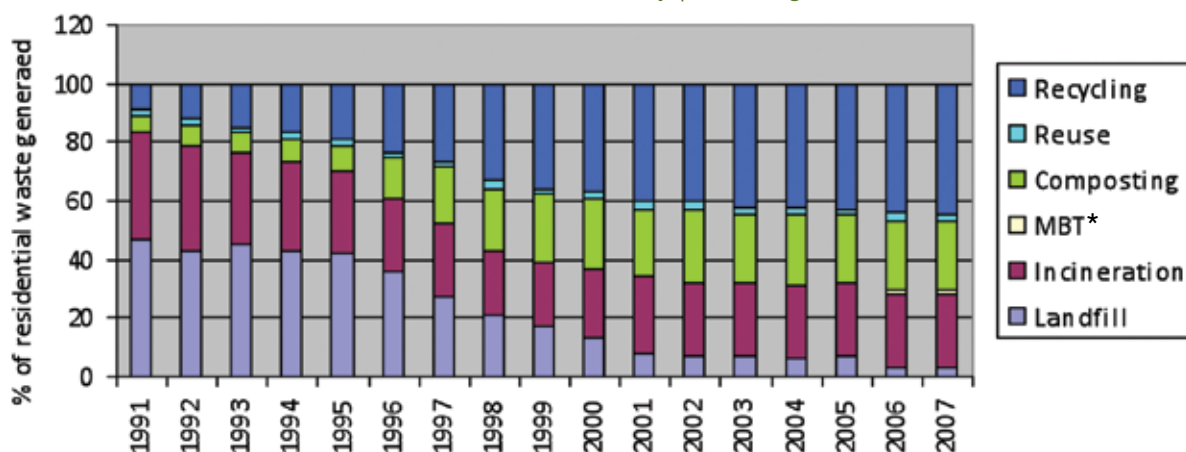
VLACO estimated the energy savings and reduction in CO<sub>2</sub> emissions resulting from compost production, compared to a scenario in which the organics were treated through incineration with energy recovery.<sup>5</sup> It found that **in 2007, 480,000 fewer tons of CO<sub>2</sub> were emitted due to separate collection and composting of 833,000 tons of organic materials.**<sup>6</sup> It also estimated that by composting organic materials, 80,000 to 110,000 m<sup>3</sup> of water were saved that year.

## Impact of Recycling and Composting

The past few decades have seen an increase in recycling and composting and a reduction in the amount of waste sent to landfills, while incineration capacity has remained stable since the beginning of the 1990s.

The optimization of separate collection, in conjunction with policies designed to reduce landfilling of waste, have enabled Flanders to significantly increase

**Figure 2.** Evolution of Residential Waste Treatments (by percentage)

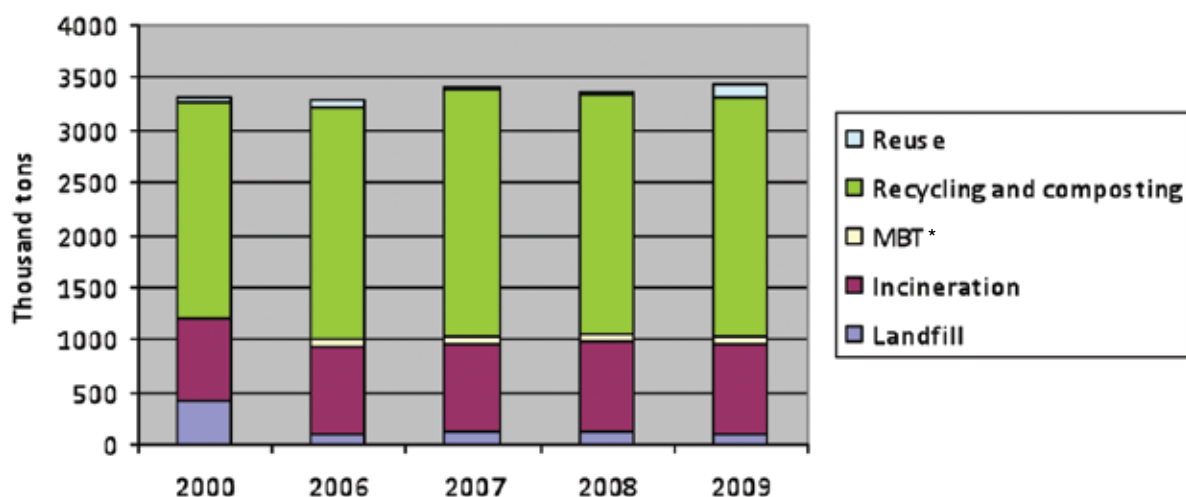


\*MBT = Mechanical and Biological Treatment

Notes: Composting also includes anaerobic digestion.

Source: Christof Delatter, VVSG quoted in Green Alliance, 2009.

**Figure 3.** Evolution of Residential Waste Treatments (by weight)



\*MBT = Mechanical and Biological Treatment

Note: Composting includes anaerobic digestion.

Source: MIRA, 2010, page 114.

recovery of recyclable and compostable materials while decoupling waste production from economic growth, a significant and unusual achievement. However, policies and practices have not yet enabled a reduction in total waste generation.

## Strategies for Municipal Governments

**Targets and regulations.** The Flemish government mandates source separated collection throughout the region. In order to encourage improvements in

separation, it also sets targets for per capita residential waste production, home composting, and maximum residuals, which must be met by all municipalities.

**Landfill and incinerator restrictions.** As a way to discourage burying and burning, the government implemented landfill and incinerator restrictions in 1998 and 2000. As a result, landfilling of unsorted waste, separated waste suitable for recovery, combustible waste, and all pharmaceuticals was banned. Incineration of separated recyclables and unsorted waste was also prohibited.

**Incinerator and landfill taxes.** In addition to incinerator and landfill restrictions, OVAM uses financial mechanisms to discourage burying and burning. There is an environmental tax for residual waste treatment that ranges from €7 (US \$9) per ton for incineration to €75 (US \$95) per ton for landfilling. In 2009, the revenues from these levies totaled €28 million (US \$36 million). About 40 percent of this amount was used to finance the subsidies in the environmental agreements with the municipalities (see below). Adding the taxes to the treatment tariffs charged per treatment, landfilling costs €135 (US \$171) per ton, while the cost of incineration comes to between €77 (US \$98) and €137 (US \$174) per ton.

**Agreements.** OVAM signs agreements with municipalities to carry out waste prevention activities. These agreements include obligations for municipalities to hold waste prevention campaigns, provide technical or financial assistance to citizens to reduce waste, sponsor specific campaigns for target groups like schools, etc. These agreements often include subsidies to finance public education campaigns as well as things like home compost programs, promoting reusable nappies, and school water fountains.

**Subsidies.** OVAM also provides investment subsidies to municipalities and inter-municipal associations for waste prevention, separation, and treatment. In 2009, €5.5 million (US \$7 million) were provided as subsidies to build drop-off centers and compost plants, implement Pay As You Throw systems (see below), and other activities.

**Environmentally preferable procurement.** OVAM helps municipalities through a web application that contains tips and a questionnaire for choosing more sustainable options in office supplies, cleaning products, electric and electronic equipment, varnish, and paints. The application can be used by citizens as well.

## Designing Out Waste

**Tools to prevent waste.** One of OVAM's central strategies to prevent waste goes to the root of the waste problem: the very design of products. To address this, the agency has created a set of tools to promote clean production and sustainable design. These include:

- **“ECOLIZER”** – a tool for designers to estimate the environmental impact of products. It includes a set of environmental impact indicators relating to materials, processing, transport, energy, and waste treatment, allowing designers to identify opportunities to reduce those impacts by changing the design. For instance, one can calculate the environmental burden of a coffee machine by finding scores for different indicators—the materials, the manufacturing process, the related transport, and the treatment after the product is discarded—and then evaluating possible changes in the design of the coffee machine to reduce its environmental burden score.
- **Eco-efficiency assessment** – a program to evaluate the efficiency of small and medium companies. It identifies points of intervention for reducing waste, improving energy and water efficiency, increasing recycling, and so on.



The Ecolizer tool. (photo: OVAM)



The test is free of charge. OVAM consultants follow up to implement the changes. As of 2009, 1,000 companies had been assessed.

- **MAMBO** – a software program that allows companies to calculate the direct and indirect costs associated with waste, including those resulting from waste treatment and inefficiency.
- **Inspirational online database** – a collection of case studies of businesses that have implemented clean production and eco-design methods.

**Subsidies and incentives.** The regional government provides subsidies to second-hand shops. In 2008, OVAM provided €936,000 (US \$1.19 million) in subsidies for reuse and recycling centers. In 2009, Flanders had over 110 second-hand shops employing a total of 3,861 employees and serving over 3.6 million paying customers. The government also organizes “Ecodesign awards” for students and professionals as a way to encourage innovations in waste prevention. The prizes range between €400 and €4,000 (US \$508 to US \$5,080).

**Extended Producer Responsibility.** Flemish waste legislation<sup>7</sup> makes it mandatory for producers, importers, and retailers of certain items to take back waste products and meet collection and recovery targets. These obligations apply to batteries and accumulators, vehicles, printed matter, tires, electrical and electronic equipment, lubricating and industrial oils, lighting equipment, animal and vegetable fats and oils, and medicines. People can return broken or obsolete products to retailers free of charge. Producers are then responsible for management and treatment of the products according to specific requirements that include recovery targets. In most cases, non-profit organizations handle the product take-backs. For instance, in the case of batteries and accumulators, the industry created BEBAT, an

organization comprised of over 800 members, to handle this stream. An extra charge collected from the sale of every battery (€0.12/US \$0.15) and flashlight (€0.20/US \$0.25) funds the system. Used batteries can be dropped free of charge in containers placed in stores, schools, and public buildings. Metals from inside the collected batteries are then recycled.

**Deconstruction, not demolition.** By law, new construction projects that generate over 1,000 m<sup>3</sup> of debris must present a “deconstruction” plan and waste inventory and are responsible for recycling this waste. According to OVAM, 90 percent of construction and demolition waste—11 million tons—was recycled in 2010. While this stream is not part of residential waste, the logic of Extended Producer Responsibility is applied.<sup>8</sup>

## Waste Prevention Strategies Directed at Households and Individuals

**Pay As You Throw (PAYT).** The hallmark of this significant waste prevention strategy is the application of graduated taxes to different types of waste. Most expensive is the collection of residual waste, followed by the collection of organic materials, with the lowest taxes applied to plastic bottles, metal packaging, and drink cartons. Collection of paper and cardboard, glass bottles, and textiles is free. Tax on bulky waste varies depending on the quantity.

Elements of PAYT vary among inter-municipality associations. Some use bags (charged at €0.75/US \$0.95 - €2.50/US \$3.18 per 60 liter bag), others use bins with electronic chips that charge according to the volume or weight of the waste. For larger containers, there is taxation per volume (€2.50/US \$3.18 - €3.76/US \$4.78), per weight (€0.15/US \$0.19 - €0.20/US \$0.25 per kg) and per pick up (€0.25/US \$0.32 - €1/US \$1.27).

**Home composting.** The promotion of composting is another central strategy to reduce the volume of waste collected from households. In Flanders, successful approaches have included annual charges for the collection of organic materials (€40/US \$51 for a 120 liter bin), educating citizens about home composting through communication campaigns, promoting “cycle gardening” to reuse yard waste, encouraging composting at schools, and composting demonstrations at community compost plants. A “compost masters” program has also been established, through which citizens are trained in composting and then encouraged to work as volunteers training other citizens and assisting them to compost properly. By 2008, 4,000 citizens had been trained, and there were 2,500 active master composters. These efforts have yielded significant results: **it is estimated that about 100,000 tons of organic materials were kept out of the collection and management system in 2008, thanks to home composting.** In densely populated areas, the government encourages community compost plants, where citizens can take their organic materials. These facilities usually use compost bins, and so do not take up much space. The success of this program continues to grow. **By 2010, approximately 34 percent of the Flemish population—almost two million people—was composting at home.**

**Green event assessment and guide.** Online tools are available for organizers to calculate the ecological footprint of their events and to prevent waste during events. The agency also maintains an online list of places that lend reusable tableware for events and parties.

Additional waste prevention campaigns for citizens include promoting the use of tap water instead of bottled, encouraging bulk purchasing, and discouraging the use of packaging and disposable bags. Others include “Please No Publicity” stickers distributed to citizens to reduce junk mail, online tests

to find opportunities to prevent waste, and publications to help citizens interpret product labels.

## **Federal Waste Prevention: Regulating Products That Enter the Market**

Although waste management is a local and regional responsibility, the Belgian federal government sets the standards for products that enter the market and eventually become waste. It has enacted a number of such laws, guided by the Polluter Pays Principle and the desire to promote sustainable production and consumption patterns. These policies include:

- an Eco-tax Act, approved in 1993, for items like beverage containers, some packaging, and disposable cameras and batteries;
- a sustainable material management strategy;
- a federal act on product standards, passed in 1998, that discourages producers from manufacturing items that increase waste problems or pose health or pollution risks;
- the adoption of standard labels for products meeting certain environmental and social criteria; and
- the publication of a green procurement guide in 2003.

In addition, several cooperation agreements have been signed with the regional governments containing key waste reduction measures.

**Special rules for packaging.** Throughout Belgium, packaging is the producer’s responsibility. Packagers, importers, and those who sell packaging and packaged products bear responsibility for packaging waste. All parties responsible for packaging

must take back these items and meet recovery targets. This program covers the entire nation and is monitored by an inter-regional packaging commission. Nearly all the companies that produce household packaging are grouped in a single organization known as FOST Plus. Each participating company pays a fee based on the type and amount of packaging they are responsible for introducing into the market. The organization funds the public collection, sorting, and recycling of these materials.

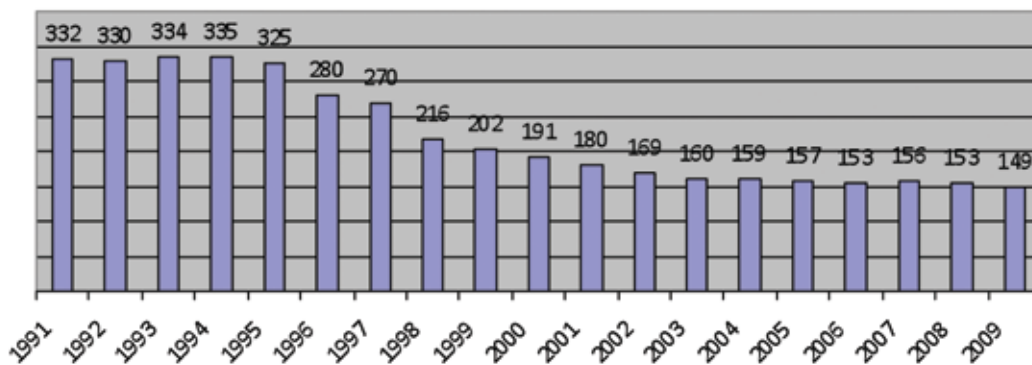
According to FOST Plus, the recycling rate for household packaging in Belgium has increased from 28.1 percent in 1995 to 91.5 percent in 2010, when a total of 690,828 tons of material were recycled.

Flanders accounts for 60 percent of the total household packaging recycled in the country (415,763 tons in 2010). FOST Plus estimates that compared to incineration, recycling prevented the emission of 860,000 tons of CO<sub>2</sub>.<sup>9</sup> A 2006 study estimated that the total cost per inhabitant for the packaging management system in Belgium, accounting for income from recycling sales, was €5.78 (US \$7.34) per year.

### Prevention Plus Diversion Means Less Residuals

As a result of the waste prevention and diversion strategies put in place over the last 20 years, Flanders

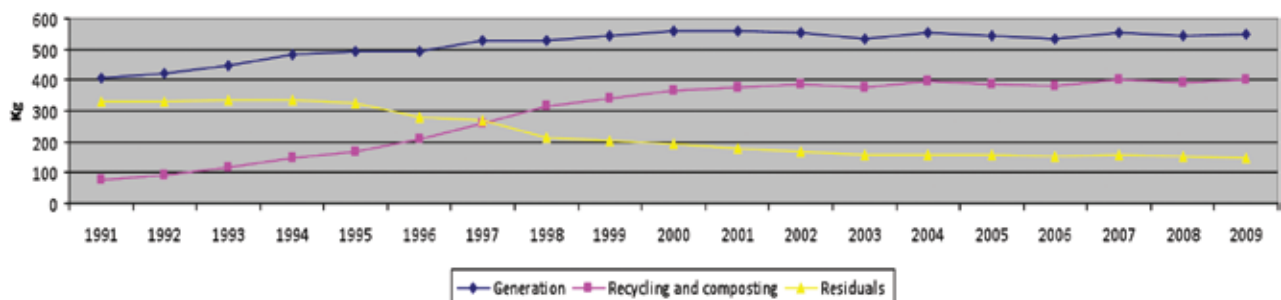
**Figure 4.** Evolution of Residuals in Residential Waste.



Source: OVAM.

The figure above shows that residual waste has been steadily decreasing in Flanders, beginning in the mid-1990s when the region started adopting waste prevention targets and developing a materials recovery circuit. The graphic below shows the evolution of residential waste generation, recovery, and residuals over the past two decades:

**Figure 5.** Evolution of Waste Generated by Residences.



Note: Residuals go to landfill or incineration.

Sources: OVAM, 2004 and OVAM 2010b.





has some of the lowest residuals per capita and best waste prevention results in Europe. **Per capita waste generation has held steady since 2000, showing a rare example of economic growth without increased waste generation.**

Figures 4 and 5 show how residential waste in Flanders has been impacted by its waste reduction and prevention strategies. By 2007, 42 municipalities showed levels of residual waste below 100kg/person/year. Two municipalities generated less than 70 kg per capita: Herenthout (pop. 8,350) produced 59 kg/person/year, and Balen (pop. 20,000) produced 66 kg/person/year.<sup>10</sup> **The regional target of 150 kg of residuals per capita was achieved by 2009.**

The transition from an end-of-pipe approach—focused on waste disposal—to a front-end approach—focused on production and consumption patterns—has put Flemish policies at the leading edge of waste management in Europe. This change of vision has been successfully complemented with materials recovery programs that allow discards to be reintroduced in the market or in nature. Phasing out waste incineration would help complete the path to sustainability; but it continues because the existing incineration capacity locally and in Europe makes incineration more cost-competitive in the short term than the interventions required to further increase diversion.

By dividing responsibility appropriately between municipal, regional and national governments, Flanders has successfully implemented a comprehensive strategy for waste prevention, recycling and composting. The results speak for themselves: stable waste generation and the highest diversion rate in Europe.

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## Endnotes:

- 1 Data from 2009; 73% of the municipal solid waste produced is reused, recycled, composted or treated through anaerobic digestion.
- 2 Amount spent by municipality in household waste management in 2008. Source: OVAM, 2011.
- 3 Based on an exchange rate of €1 = \$1.27 on 17 May 2012.
- 4 Personal communication with OVAM staff, August 2011.
- 5 Recovering only electricity, not heat.
- 6 The study estimates a CO<sub>2</sub> saving of 624 kg CO<sub>2</sub> per ton of green waste composted, and 517 kg CO<sub>2</sub> per vegetable, fruit and garden waste composted. In that year, 465,000 tons of green waste and 350,000 tons of vegetable, fruit and garden waste were composted. Source: VLACO.
- 7 VLAREA <http://navigator.emis.vito.be/milnav-consult/consultatie?language=en>.
- 8 Bouw- en sloopafval: de helft van ons afval, OVAM.
- 9 Fost Plus annual report 2010. Available online at <http://www.fostplus.be/>.
- 10 Source: OVAM.



**[www.no-burn.org](http://www.no-burn.org)**  
**June 2012**

This case study was originally published as part of *On the Road to Zero Waste: Successes and Lessons from around the World* (GAIA, 2012). *On the Road* profiles nine diverse communities, each providing a real-world example of authentic progress toward the goal of zero waste. None has yet achieved this goal, and a few still employ practices that are incompatible with zero waste, such as incineration. Nonetheless, each community has achieved considerable success with one or more elements of zero waste and has something to teach us. For more case studies, visit: [www.no-burn.org/ZWcasestudies](http://www.no-burn.org/ZWcasestudies).