

Analyzing Product Stewardship Policies

for Packaging and Printed Paper
in Washington State



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Northwest Product Stewardship Council

www.productstewardship.net

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Executive Summary

Today, manufactured products and their associated packaging make up 75 percent of the waste generated in the United States each year, yet less than half of this material is being recycled. Packaging and printed paper are generated at the rate of 95 million tons per year and only 49 million tons (52%) are recycled each year. This represents over 45 million tons of wasted packaging resources each and every year.¹

The recycling rate for packaging and printed paper in Washington State has reached 54 percent, slightly higher than the US average and other states. Unfortunately, the percentage of materials recycled has plateaued over the past few years despite the fact that curbside recycling programs have expanded and are now available to 80 percent of Washington residents and drop-off recycling is available to the other 20 percent of the population who do not have access to curbside recycling.²

The purpose of this report is to stimulate dialogue among the various stakeholders in the solid waste and recycling systems in Washington State and to examine alternative ways to finance and incentivize recycling programs in the state. The goal of the dialogue would be to help identify and craft viable opportunities to move toward increased recycling of packaging and printed paper in Washington.

The report provides an overview of the current recycling system in Washington State and explores ways to increase the rate of recycling, especially for packaging and printed paper. Several successful recycling programs in Europe and Canada are featured in this report as examples of programs that have achieved recycling rates between 60 and 90 percent. Recycling programs in those countries employ the concept of product stewardship, whereby the product producer is responsible for financing and ensuring the delivery of the recycling program. In many countries, local municipalities and private sector waste hauling companies are utilized to provide the collection services.

In drafting this report, we have kept three themes in mind. These themes provide an organizing structure to consider when evaluating or designing any program intended to increase the reuse and recycling of packaging and printed paper. The program should:

1. Divert more material from disposal to recycling.
 - a. Robust goals for recycling and material quality will incentivize the diversion of more materials into productive use.
 - b. More recycling equals more jobs, less marine pollution, less litter and less greenhouse gas emissions.
2. Utilize the existing public and private sector collection and processing infrastructure.
 - a. Washington has some of the highest recycling rates in the US and the existing public

1 Municipal Solid Waste Generation, Recycling, and Disposal in the United States Detailed Tables and Figures for 2008, U.S. Environmental Protection Agency Office of Resource Conservation and Recovery November 2009.

2 Solid Waste in Washington State; 18th Annual Status Report, Waste 2 Resources Program, December 2009 Publication #09-07-038.

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- and private sector collectors have been an instrumental part in making that happen. The existing collectors have the expertise and experience to offer cost-effective collection and processing services.
- b. Transition the financing of recycling programs from local government and their ratepayers to the manufacturers and users of the materials collected.
3. Local governments and their ratepayers are no longer able to invest the necessary financial resources to increase the diversion of materials from disposal to recycling.
 - a. Transitioning to a manufacturer financed system implements the “polluter pays” principle and brings new financial incentives into play which should promote better packaging design and encourage the use of more recycled materials.

What is included in Packaging?

Packaging materials are used for the containment, protection, handling, delivery and presentation of goods. The most common packaging materials are cardboard, aluminum cans, tinned steel cans, PET LDPE and HDPE plastics, and glass. With the exception of glass and LDPE, all of these materials are commonly collected in residential curbside recycling programs. Many programs also include printed paper in the programs as these are often part of the standard mix of materials collected in curbside and drop box programs.

What is included in Printed Paper?

Printed paper includes newspaper, magazines, third-class mail and paper generated by households and businesses from home- or office- based equipment such as printers, scanners, fax machines and copiers.

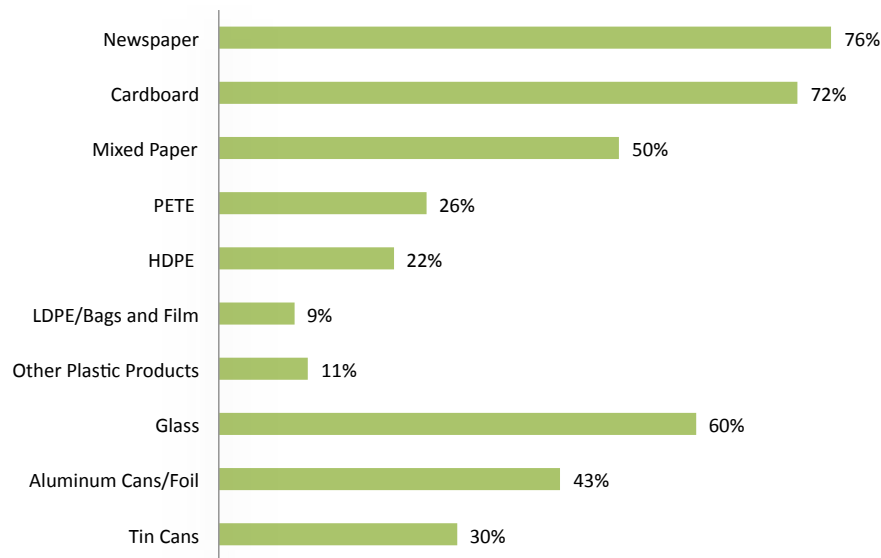
Packaging and Printed Paper Disposal and Recycling Rates in Washington

According to the numbers provided by the Washington State Department of Ecology (Ecology), over 2.3 million tons of packaging and printed paper are generated in the state each year, representing 28 percent of the total solid waste generated within the state annually. Of this total, 1.1 million tons are discarded each year and 1.3 million tons are recycled. Packaging and printed paper represent 23 percent of the total solid waste thrown away each year and 35 percent of the total that is recycled annually in the State of Washington.

The 54 percent recycling rate for packaging and printed paper has remained relatively flat over the last few years. The overall rate also conceals some very good recycling numbers and some very poor ones. Newspaper and cardboard are recycled at average rates of 76 percent and 72 percent respectively. However, plastics are recycled at an overall rate of 15 percent, despite the expansion of curbside recycling programs and the increase of recyclable containers in the marketplace.³

3 Washington State Department of Ecology, 2009 State of Washington Waste Characterization Study,

Figure 1: Packaging and Printed Paper Recycling Rates in Washington



Source: Washington State Waste Characterization Study, Department of Ecology 2009 and Solid Waste in Washington State: 19th Annual Status Report

Why Recycle Packaging and Printed Paper?

The failure to recover more packaging and printed paper from the waste stream results in multiple negative impacts, including lost jobs and tax revenue, the wasting of irreplaceable resources, increased marine pollution and increased greenhouse gas emissions (GHG).

The converse is also true. If we were to increase the recycling of these materials in Washington to levels currently being achieved in Canada and Europe, the state would create an additional 2,000 jobs, reduce GHG emissions by 467,000 metric tons of carbon equivalent (a reduction equal to removing 314,000 passenger cars from the road each year) and generate an additional \$48 million of commodity value to Washington residents, recycling businesses, waste management companies and municipalities. In turn, this additional tonnage would be available for use as feedstock in manufacturing processes, reducing reliance on valuable natural resources.

Current Recycling System in Washington State

Curbside recycling services are now available to 80 percent of the population and drop-box recycling is available to 100% of the population in Washington.⁴ National studies have shown that the highest recycling rates are achieved when the following factors exist:

- Recycling costs are embedded in fees paid for overall solid waste services, i.e. there is one fee for garbage, recycling and yard waste services.
- The container for garbage is no larger than 32 gallons (and preferably 19-21 gallons).

⁴ Email communication with Washington State Department of Ecology Staff and map entitled "Access to Residential Recycling in Washington State 2009".

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- Significant rate differentials are used to provide an incentive to recycle (variable pricing or a “pay as you throw” price structure).
 - Waste management companies are required to report disposed and recycled tonnages.⁵

Washington already has many of these factors in place. Variable rates are mandated by state law for all of the jurisdictions under the authority of the Washington Utilities and Transportation Commission (WUTC), the state agency that regulates solid waste hauling services in unincorporated areas of the state. Cities have the option of contracting for garbage service with local garbage haulers outside of the WUTC purview and most of these jurisdictions also use variable rates where the smallest available container is either 20 or 30 gallons. In addition, state law requires annual reporting by waste management companies. (RCW 70.95) Despite these factors, Washington’s recycling rate is still below 50 percent overall.

Barriers to Greater Packaging Recycling

So why have recycling rates stalled, especially for packaging materials? Some contributing factors include the problematic nature of certain packaging materials such as multi-material packaging that include paper and metal in one package or the new “biodegradable” packaging that may or may not be compostable in modern commercial scale compost facilities.

Additionally, material recycling facilities (MRF’s) often have difficulty separating specific types of packaging materials from other recyclables. As a result, materials that have been put into the recycling stream by residents and businesses may not end up being fully recycled. Glass, for instance, when collected in the current single stream systems can break and become a contaminant that lowers the value of the other collected materials. Broken glass in paper also has significant negative cost impacts on paper mills in Washington. One local mill estimates that glass in their recycled paper stream costs them an additional \$360,000 per year in increased maintenance and operational costs.⁶ These costs do not include the loss in value of the paper products they produce due to the presence of glass fines.

“Away-from-home” consumption of beverages has increased in the past decade and where there is no incentive for consumers to keep the bottles for redemption, or, typically an absence of away-from-home recycling infrastructure, these containers usually end up in the garbage stream.

Recycling options for commercial and industrial customers are limited. Recycling infrastructure for residents is greater than the infrastructure for commercial and industrial customers. There are several reasons for this including federal commerce issues but the lack of commercial infrastructure is an ongoing challenge.

Finally, in the current economic climate, local governments are unable to devote significant additional resources to recycling programs and it is unlikely the future will be any better. To date, recycling programs have been almost solely funded by local government and their ratepayers. The first curbside recycling programs began in the mid 1980s and since beginning local governments in Washington have spent millions of dollars promoting and educating residents and businesses

5 Skumatz 2001 in “MSW Management” <http://www.mswmanagement.com/september-october-2002/recycling-waste-diversion.aspx>.

6 McClelland, S. Washington State Department of Ecology, Waste 2 Resources Program (2010).

about their local recycling programs.⁷ These efforts have resulted in Washington achieving one of the highest statewide recycling rates in the country. Nevertheless, even with all of these expenditures, less than half of the waste stream gets recycled. New funding sources and other steps need to be taken for our recycling programs to achieve the higher levels of performance.

European and Canadian Programs for Packaging

In Europe and Canada, a product stewardship approach to packaging and printed paper has resulted in recycling rates that average more than 65 percent for all packaging materials, with recycling rates for some materials much higher.

These programs vary in structure and operation but are broadly referred to as product stewardship, producer responsibility or Extended Producer Responsibility (EPR). The programs have several things in common:

- Producers (also known as brandowners) of packaging materials share in the cost of residential recycling collection programs.
- Producers have the option of joining together to pool resources and administer their financial obligations.
- Producers pay into the pool based on the quantity and type of packaging materials they use.
- Producer organizations report annually to the government oversight agency.
- Producers contract with the private sector or with local government to provide collection services. According to the summary report of the European Commission on the performance of the European Packaging Directive, the private sector hauling community is extensively involved with the EPR programs in the EU.

In Europe, recycling goals have been established by the European Union, and in Canada these goals are set by the individual provinces. For the most part, these recycling goals have been achieved on schedule.

Given all of these considerations, a product stewardship approach offers a promising opportunity to boost recycling rates significantly without additional costs to local governments while keeping much of the current recycling infrastructure intact.

⁷ Cascadia Consulting & Industrial Economics, Inc. Washington State Department of Ecology, Solid Waste and Financial Assistance Program (2007). Solid waste management cost flows in Washington State.

Purpose and Scope

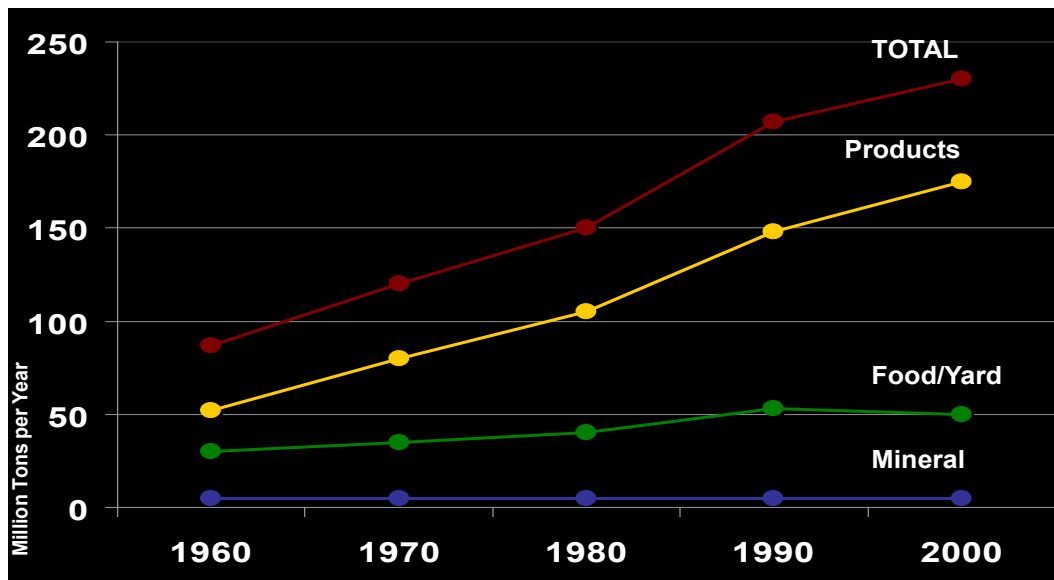
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Introduction

The composition and the amount of waste generated in the United States have changed drastically over the past fifty years. As Figure 2 shows, product waste has gone from 50 million tons in 1960 to over 175 million tons in 2000.

Figure 2: Changes in Waste Composition Over Time



Source: EPA

Today, manufactured products and their associated packaging make up 75 percent of waste generated.⁸ This “trash” is made primarily of glass, aluminum, steel, various kinds of paper, and plastic. On average in the U.S., 66.8 percent of all recyclable items (primarily packaging) go unrecovered, thus wasting the opportunity to reduce greenhouse gas emissions, energy consumption and resource use that would accompany increases in recycling.

8 “The Problem is Manufactured Product Waste,” California Product Stewardship Council. <http://www.calpsc.org/solution/problem.html>

The Environmental Impacts of Packaging and Printed Paper

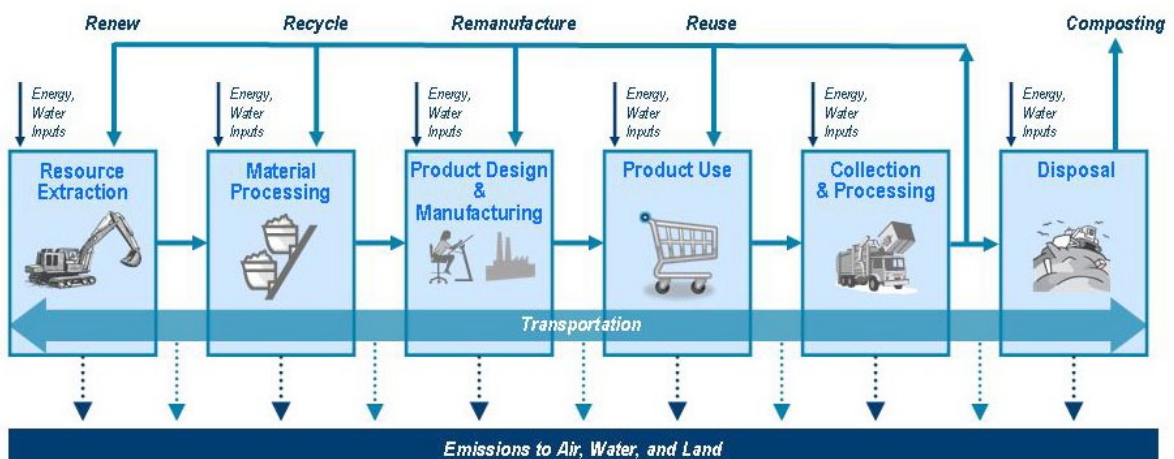
There are many environmental impacts associated with packaging and printed paper. This section summarizes some of the impacts caused by the creation, use and disposal of these materials.

Life-cycle Emissions

The primary environmental impacts of packaging and printed paper are illustrated by the energy and emissions associated with the typical product life cycle. Recycling packaging and printed paper significantly reduces the amount of energy used in the extraction of raw materials; quantifying those savings is an excellent indicator of the potential environmental benefits to be gained from increased recycling.

Figure 3 below shows a typical product life cycle from resource extraction to final disposition. The figure shows that energy and water inputs and emissions to air, water and land occur at every stage. Recycling of materials eliminates the resource extraction phase of the life cycle and can eliminate or modify intermediate processing steps, further reducing the energy needed to transform the recycled materials into new products. According to a recent evaluation report, “the main environmental impact throughout a material’s life cycle occurs during the manufacturing phase (over 90 percent), so a reduction of the virgin resources used, through closed-loop recycling, could greatly reduce this impact. [...] Additionally, the life cycles of these materials have a range of effects on the environment, including greenhouse effect, acidification, carcinogenic substances, summer smog, winter smog, ozone layer depletion, pesticides, heavy metals, and eutrophication.”⁹

Figure 3: Typical Product Life Cycle



Greenhouse Gas Emissions (GHG)

When packaging and printed paper are used once and discarded, the energy used to mine and process the materials that went into them is wasted. Using recycled materials to make paper, plastics, glass, and metal products saves energy and thus greenhouse gas emissions. Collecting, processing, and transporting recycled materials typically uses less energy than extracting, refining, transporting, and processing raw materials.

A U.S. EPA report noted that there are twenty-one single-material items most likely to have the greatest impact on greenhouse gas emissions. These twenty-one items include all the materials that are utilized for packaging and all of the common printed paper. The U.S. EPA selected these materials based on, “the quantity generated, the differences in energy use of manufacturing a product from virgin versus recycled inputs, and the potential contribution of materials to methane generation in landfills.”¹⁰

The twenty-one materials are listed below with the **packaging and printed paper highlighted**.

- **Aluminum Cans, Steel Cans**, Copper Wire;
- **Glass**
- **HDPE (high-density polyethylene), LDPE (low-density polyethylene), PET (polyethylene terephthalate)**
- **Corrugated Cardboard, Magazines/Third-class Mail, Newspaper, Office Paper, Phonebooks, and Textbooks**
- Dimensional Lumber, Medium-density Fiberboard
- Food Discards, Yard Trimmings, Clay Bricks, Concrete, Fly Ash, Tires

Packaging- and Product-Related GHG Emissions

Figures 4 and 5 below generated by the Product Policy Institute from EPA data show U.S. GHG emissions by ultimate use of the energy consumed. The charts take a systemic view of emissions rather than a sector-based approach. The advantage of the systems approach is that it provides a better roadmap for policy makers who are tasked with prioritizing programs that will reduce GHG emissions. The traditional sector-based approach is too broad and generic to provide adequate guidance for effective program development.

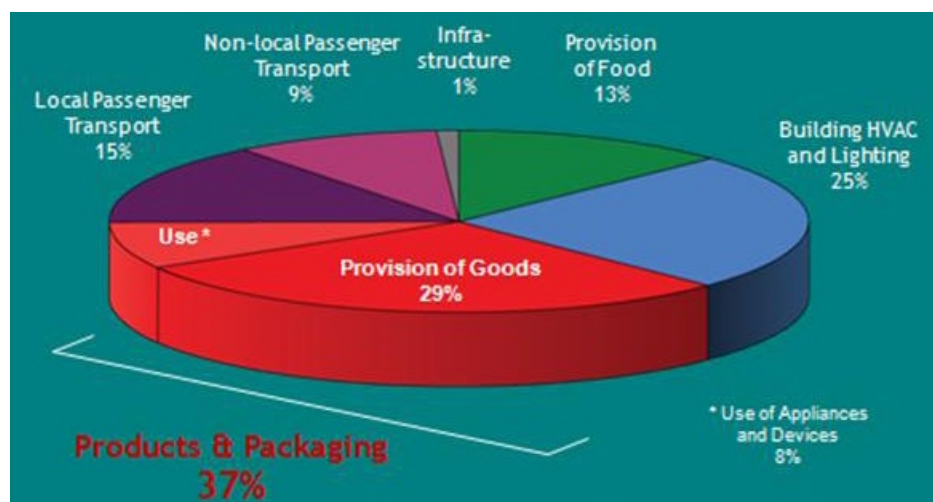
As shown in Figure 4, the provision of goods, the packaging materials associated with those goods and the use of those goods account for 37 percent of U.S. greenhouse gas emissions. When including emissions that occur overseas due to the manufacturing and use of products and packaging intended for U.S. consumption, this percentage increases to 44 percent.¹¹

9 Huang, Chien-Chuang and Hwong-Wen Ma. “A multidimensional environmental evaluation of packaging materials.” *Science of the Total Environment* 324 (2004) 161-171. <http://ntur.lib.ntu.edu.tw/bitstream/246246/96881/1/10.pdf>

10 “Solid Waste Management and Greenhouse Gases: A Life-Cycle Assessment of Emissions and Sinks” EPA. 3rd Edition, September 2006. <http://epa.gov/climatechange/wycd/waste/SWMGHGreport.html#sections>

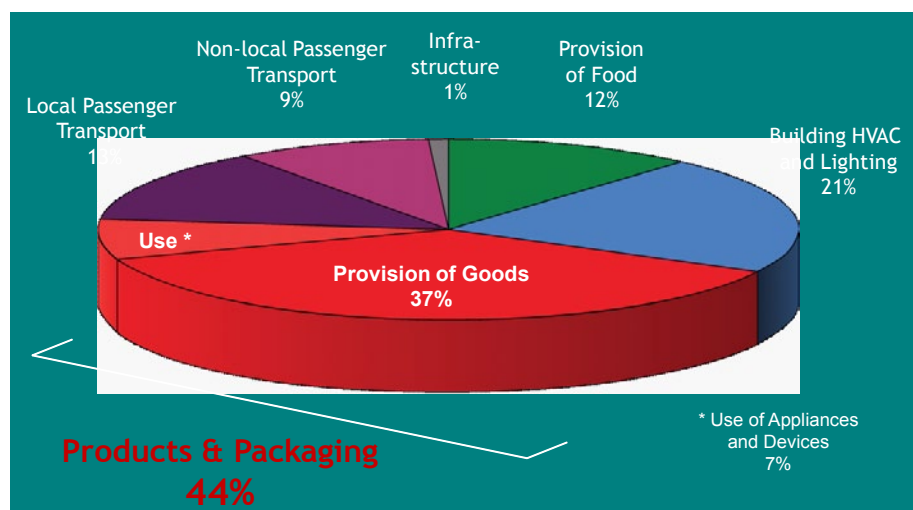
11 Joshua Stolaroff, U.S. EPA, 2009.

Figure 4: Domestic U.S. Greenhouse Gas Emissions by Purpose



Source: U.S. EPA 2009, Joshua Stoloski

Figure 5: Global U.S. Greenhouse Gas Emissions by Purpose



Source: U.S. EPA 2009, Joshua Stoloski

Land Pollution

The most recent Washington State litter survey from 2004 reported that packaging and printed materials represent 32 percent of the litter on roadways in the state by weight.¹² The biggest component of this litter is glass beverage containers which accounted for 12% of the statewide totals.

¹² Washington 2004 State Litter Study; Litter Generation and Composition Report, March 2005, Publication 05-07-029. Solid Waste and Financial Assistance Program.

The state has a litter tax on packaging materials of .015 percent, which equates to \$150 for every million dollars of gross proceeds of either the manufacturers or the retailers of the products covered by the tax. The tax rate has not changed since 1971.

Plastics and Ocean Pollution

Marine pollution, demonstrated most visibly by the “Great Pacific Garbage Patch” in the northern Pacific gyre, is now a major environmental concern. Research has found that the mass of plastics in the gyre now exceeds the total mass of living creatures (plankton) by 6 to 1. Worldwide, plastics comprise 60 to 80 percent of marine debris on average with some areas as high as 90 to 95 percent. Urban runoff—material entering the water via storm drains or being swept or blown into the water—is the primary source of marine debris and litter is the major source of trash in urban runoff.¹³ Litter makes its way to the ocean in Washington through the storm drainage systems and waterways, by wind action and by direct disposal into the water.

The 2009 International Coastal Cleanup report documents that worldwide packaging materials account for 40 percent of marine debris items and the data for Washington shows that 50 percent of the material collected during the cleanup was packaging material.¹⁴

According to the state’s work plan to tackle marine debris, “Washington State is unique in that a large percentage of its marine shorelines are located in Puget Sound. Many beaches in Puget Sound are privately owned, which makes monitoring and removing land-based marine debris challenging. Despite much focus on toxic pollution and habitat restoration, litter and solid waste are a real problem for Washington waterways.”¹⁵ Any efforts that increase recycling and composting and reduce disposal and littering of packaging materials will help reduce the amount of packaging materials that end up in our waterways and oceans and reduce threats posed to the animals that call the ocean their home.

13 Gordon, M. State Water Resources Control Board, California Coastal Commission (2006). Eliminating land-based discharges of marine debris in California: a plan of action from the plastic debris project.

14 Ocean Conservancy, (2010). A Rising tide of ocean debris and what we can do about it. Retrieved from http://www.oceanconservancy.org/site/PageServer?pagename=icc_report

15 Marine Debris Action Coordination Team. (2009). West coast governor’s agreement on ocean health.

Overview of Solid Waste Management in Washington

In the United States, solid waste management has been a state and local government function with many well-established roles and responsibilities for over 100 years. This section of the report looks at the planning requirements and the current regulatory structure for solid waste management in Washington State.

Solid Waste Planning

Washington State law requires counties, in coordination with cities, to adopt comprehensive solid waste plans for the management, handling, and disposal of solid waste for the next twenty years and, if necessary, to update the plans every five years. Plans must reflect the waste management hierarchy which emphasizes reuse and recycling over landfilling or incineration. Cities may choose to be joint participants in the plan, delegate the planning to their counties, or choose to do their own plan.

Counties are responsible for overall planning, disposal, and waste reduction and recycling education. Cities may take responsibility for refuse collection and the development of any recycling programs specific to their jurisdictions or they may establish interlocal agreements with other local jurisdictions to provide or contract for these services.

State regulations (RCW 70.95.090) and the Ecology Guidelines for Local Solid Waste Management Plans detail what is required within comprehensive plans. The waste management hierarchy requires that counties and cities consider a number of waste reduction and recycling (WRR) programs, which include:

- Residential recycling collection for urban and rural areas and for single-family and multi-family residents;
- Yard waste collection, public information and educational programs on waste reduction and recycling, and programs to monitor collection of recyclables from businesses and industries;
- Procurement plans and “in-house” recycling collection programs.

Counties must also adopt urban/rural boundaries for recycling collection programs and implement special waste collection programs, if necessary. In their solid waste management plans, counties must also maintain an inventory of all existing solid waste handling facilities, identify potential disposal and recycling facility needs, and assess disposal capacity needs based on 20 years of population growth for all participating jurisdictions. Counties must also review potential areas that meet siting criteria for disposal facilities. Also, counties must plan for financing capital and operation costs; have a six-year capital improvement program; and an assessment of the plan's

impact on the costs of solid waste collection prepared in conformance with guidelines from the Washington Utilities and Transportation Commission.

Beyond Waste Plan

In 2004, Ecology published the Beyond Waste Plan, the combined state solid waste and hazardous waste plan. It identified issues and necessary changes to move Washington towards a society where waste is viewed as inefficient, and where most wastes and toxic substances have been eliminated. One of the background papers for the plan focused on financing the solid waste system. The proposed actions section of the paper identified several steps that should be taken within the next five years. The steps relevant to the issue of packaging and printed paper include:

- Examine a range of potential financing mechanisms and other actions, if needed, and collaboratively work to inform and educate all parties, and to implement successful options.
- Evaluate options for moving from end of life financing to up-front financing.
- Identify regulatory barriers that need to be addressed.
- Expand partnerships where needs can be funded and carried out by non-governmental organizations and the business sector.
- Work toward the elimination of subsidies, tax breaks and incentives that serve to encourage waste generation and toxic substance use. Replace with incentives to reduce wastes, use fewer resources, reduce use of toxic substances, and reduce overall environmental footprints.¹⁶

The recently published Beyond Waste Plan 2009 Update identifies five common misconceptions about the current solid waste management system. The three misconceptions applicable to packaging and printed paper are:

1. Landfills solve the waste problem.
2. Recycling solves the waste problem.
3. Eliminating waste and toxins will be bad for the economy.

The report identifies key principles and strategies that are important to the successful implementation of the Beyond Waste Plan. The following strategies are those most relevant for packaging and printed paper:

- Incentives, especially financial ones, are key tools in implementing Beyond Waste.
- Eliminate waste and toxic substances wherever possible, rather than just managing them after use.
- Choose activities with the goal of creating the least damaging ecological footprint possible.
- Change the mindset, as individuals and as a society, that waste is “normal” or “necessary.”
- Work with manufacturers to take responsibility for end-of-life management of their products.

16 *Financing Solid Waste for the Future* Washington State Department of Ecology Publication 04-07-032.

- Work with product designers and manufacturers to encourage the development of product lines that conserve energy and water and eliminate unnecessary materials and waste.
- In addition, work with designers and manufacturers to make products that are least toxic or non-toxic, reusable where possible, and readily recyclable.
- Encourage people to buy and use environmentally preferable products and services.

Finally, sustainable and ongoing financing are an essential component in a Beyond Waste world. With most solid waste systems financed by end of life disposal fees, reducing the volume of materials going for disposal will also reduce the level of funding available for solid waste programs and services. According to the 2009 update,

Business and government investment at all levels will be needed to meet Beyond Waste goals. Achieving large increases in waste reduction and closed-loop recycling will require extensive technical assistance, education, planning, and collaboration. We should seek ways in which financing structures can reinforce rather than work against Beyond Waste goals. For example, there are regional and national efforts to shift from charging fees at the end-of-life (disposal fees) to incorporating costs at more appropriate points in the life cycle (such as cost internalization, where product life cycle costs are shared by participants in the product life cycle).¹⁷

Role of the Washington Utilities and Transportation Commission (WUTC)

State law gives the WUTC the ability to set rates and to grant monopoly collection certificates to private sector haulers for the provision of residential garbage service in a defined geographic area. The certificates (franchises) authorize solid waste collectors to provide service in designated franchise districts in cities and unincorporated areas that either do not have contracts with private sector haulers or that provide the collection themselves. Solid waste collection certificates authorize the collection of garbage and refuse from all residential and non-residential generators by the collection company that holds the certificate. The WUTC website has maps by counties showing these franchise areas at this link: <http://www.wutc.wa.gov/webimage.nsf/0/9D70C4EC7AAFC39888256C44007034EE>.

Since the solid waste collectors have exclusive rights to their geographic areas, they have often become the sole provider of curbside recycling services in those areas as well. Their existing presence in the area and collection capacity gives them a competitive advantage over others who might want to enter the market to collect only recyclables. Counties do have the legal authority under state law to contract directly with private sector haulers for residential recycling services, but only one county, Clark, currently does so.

The rates requested by the certificated collection companies must reflect the state's solid waste management priorities and must be approved by the WUTC. Counties do not control collection costs charged to customers but do work with the franchised collection company and the WUTC to implement solid waste programs and set minimum service levels for recycling. The WUTC does not have jurisdiction over cities that choose to collect their own solid waste or for those cities that contract with private solid waste collection companies.

¹⁷ *Beyond Waste Plan; 2009 Update* Washington State Department of Ecology, Publication 09-07-026.

Washington State Litter Program

Chapter 70.93 RCW, the *Waste Reduction, Recycling, and Model Litter Control Act*, makes Ecology the lead agency in managing statewide litter programs. In 2008, Ecology focused on increasing awareness of and compliance with Washington's secured load laws. The Waste 2 Resources Program (W2R) carries out the following core elements of the statewide litter program, as funding allows:

1. Helping with coordination of litter control and prevention activities.
2. Conducting periodic statewide litter surveys.
3. Managing allocations from the Waste Reduction, Recycling and Model Litter Control Account.
4. Running Ecology Youth Corps litter cleanup crews (EYC).
5. Managing the Community Litter Cleanup Program (CLCP).
6. Strengthening partnerships with other state agencies and local governments.

The programs are funded by a litter tax on packaging and other designated materials of \$150 per million of gross revenue. The tax was implemented in 1971 and the tax rate has not been increased over the years.

Regulatory Structure of Recycling in Washington State

It is important to understand the current regulatory structure and economics of recycling in the state to understand the potential paths forward to greater recycling of materials. The next section gives an overview of how recycling is regulated and paid for in the state of Washington.

Recycling programs in Washington are either made up of collection services at the curbside in larger urban areas or drop-off programs offered in more rural portions of the state. Counties and cities have several options for implementing curbside recycling programs:

1. Cities can be the exclusive direct collector of residential recyclables.
2. Cities can contract with private sector haulers for the exclusive collection of residential recyclables under RCW 81.77.020.
3. Cities may choose to remain under the Washington Utilities and Transportation Commission (WUTC) system and use the designated solid waste collection company to provide curbside recycling services for their geographic area.
4. Counties must use the designated WUTC solid waste collection company for curbside recycling in their geographic area unless they are collecting source separated recycling authorized by RCW 36.58.040. One county in Washington (Clark) has chosen this option of contracting for residential recycling collection.

A September 2009 report issued by RW Beck on behalf of the American Beverage Association indicated that in 2008, 72 percent of Washington residents had access to curbside collection while 94 percent had access to drop-off locations.¹⁸ Ecology data indicates that 80 percent of residents have access to curbside recycling and the other 20 percent have access to drop-off locations. Regardless of which data set is more accurate, the vast majority of Washington residents (94-100%) have access to curbside or drop-off recycling programs for at least some—though usually not all—packaging and printed paper.

Economics of Recycling and Solid Waste Management

The solid waste system in Washington is financed primarily by user fees paid for by the collection, hauling and disposal of garbage and recycling. These fees can take the form of tipping fees at

¹⁸ 2008 ABA Community Survey R.W. Beck.

transfer stations, landfills or recycling facilities, and/or monthly or bi-monthly utility billings from private sector waste management haulers or local government utilities.

In 2007, the Washington State Solid Waste Advisory Council (SWAC) commissioned a study on the cost flows in the state solid waste system. The report estimated that \$1.8 billion is spent on solid waste operations annually in the state (based on 2005 data). Of that, \$722 million (40%) is spent on disposal activities and \$275 million (15%) is spent on recycling programs. The recycling expenditures include \$33 million by local governments and \$243 million by solid waste collection companies, both through their rate payers. Ninety percent of the total amount spent on recycling (\$247 million) is spent on collection and processing of recyclables, 7 percent (\$19.5 million) on equipment, capital needs, facilities operations and other activities, and 3 percent (\$8.5 million) is spent on recycling education and outreach. Based on 2000 census data, each household in Washington spends \$121 per year on recycling (or \$41.26 per person) and \$3.74 per household (\$1.27 per person) on recycling education and outreach.

Figure 6: Estimated Expenditures on MSW Recycling by Sector

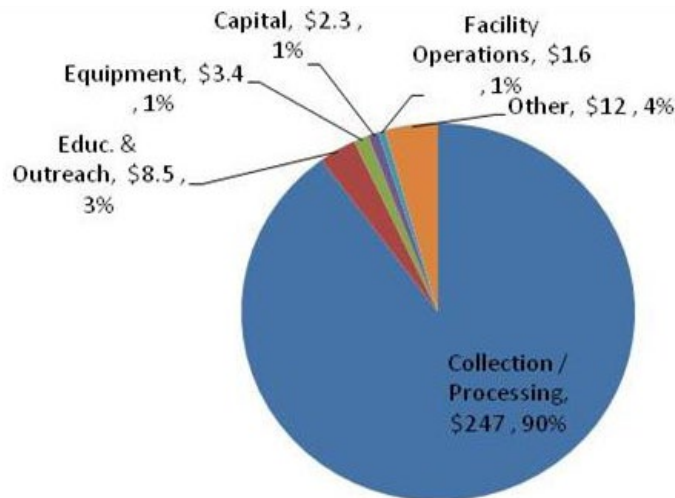


Source: *Solid Waste Management Cash Flows in Washington State, Project Synopsis Report*, Washington State Department of Ecology, 2007.

Most of the money spent on education and outreach comes from local governments. Furthermore, spending on recycling program education represents 25 percent (\$8.5 million) of local government expenditures.¹⁹

¹⁹ Cascadia Consulting, , & Industrial Economics, Inc. Washington State Department of Ecology, Solid Waste and Financial Assistance Program. (2007). Solid waste management cost flows in washington

Figure 7: Estimated Expenditures on MSW Recycling by Activity



Source: Solid Waste Management Cash Flows in Washington State, Project Synopsis Report, Washington State Department of Ecology, 2007.

Employment Data for the Recycling Industry

The process of recycling creates jobs. In 2008, the recycling industry in Washington employed at least 4,456 people in jobs such as collection, hauling, transport, processing, or remanufacture of recyclable materials.²⁰ On a per ton basis, sorting and processing recyclables alone sustains 6-10 times more jobs than landfilling or incineration.²¹

The largest economic pay-off, however, is from making new products from recycled materials. Recycling-based manufacturers employ more people and at higher wages than what is paid for the initial sorting of recyclables at materials recycling facilities. A report for the Arizona Department of Commerce estimates that four new jobs in recyclables processing and recycled-content manufacturing are created for every 1,000 additional tons of recovered recyclables.²²

Based on information from the state Office of Financial Management (OFM 2004, see www.ofm.wa.gov/economy/io) and the Arizona study, if Washington increased its diversion of packaging materials to 80 percent, an estimated 545 additional jobs could be created. OFM estimates that for every job directly created there is an indirect job gain factor of 2.74 based on economic multiplier effects. If you apply that multiplier to the estimated 545 jobs created by increased packaging recycling, a total of 1,480 jobs could be created.²³

Government Expenditures on Recycling Education

Education is one means to increase the rates of recycling. As shown in a 2001 study by Skumatz and Green, 140 Iowa municipalities were surveyed and it was determined that recycling education expenditures averaged \$1.00 per household per year. The study found that adding \$1.00 in

20 2008 Green Economy Jobs in Washington State. Washington State Employment Security Department, Labor Market and Economic Analysis, January 2009

21 Institute for Local Self Reliance, 2006. Waste to wealth-recycling means business. Retrieved from <http://www.ilsr.org/recycling/recyclingmeansbusiness.html>

22 U.S. Recycling Economic Information Study, Prepared for the National Recycling Coalition by RW Beck, July 2001.

23 OFM 2004, see www.ofm.wa.gov/economy/io

expenditures (per household per year) adds 3 percent to recycling rates in communities with lower than average expenditures and 1 percent in communities with higher than average expenditures. Based on this data, and Washington's already much higher than average recycling rate, it would take an additional \$22.7 million per year (in addition to other measures) to boost recycling rates by 10 percent.²⁴

Materials Collected in Curbside Recycling Programs

While decisions about which specific materials are collected for recycling are determined by individual local governments, the typical residential curbside and drop-off recycling program includes the following packaging and printed paper:

- Cardboard
- Printed paper, including newsprint, mixed paper and magazines
- Plastic bottles (PET and HDPE)
- Aluminum Cans
- Tin/steel cans
- Container glass

The following table was developed from a study of the southwest region of Washington State by the Department of Ecology. While it is likely that the list of materials would be valid for the entire state, this has not yet been confirmed.²⁵ Note again, the prevalence of packaging and printed paper in the list of items collected.

24 Evaluating the Impacts of Recycling / Diversion Education Programs – Effective Methods and Optimizing Expenditures, report prepared for Econservation Institute, for Iowa Department of Natural Resources, August 2001.

25 McClelland, S. Washington State Department of Ecology, Waste 2 Resources Program. (2010). Beyond the curb-tracking the residential recyclables from southwest Washington. June 2010, Publication 10-07-009.

Table 1: Materials Collected in curbside recycling programs in southwest Washington region

| Collected in All Programs | Collected in Some Programs | Not Collected |
|--------------------------------|------------------------------|----------------------|
| Corrugated cardboard | Glass bottles & jars | Waxed boxes |
| Aluminum & Steel cans | Aluminum foil & pans | Non-bottle/jar glass |
| Phone books | Pots & pans | Large scrap metal |
| Mail | Aerosol cans | Hangers |
| Magazines | Scrap metal (< 2ft & 35 lbs) | Juice pouches |
| Catalogs | Frozen food boxes | Batteries |
| Boxboard (shoe & cereal boxes) | Shredded paper | Ammo |
| Paper bags | Milk cartons/Juice boxes | Paper towels |
| Newspaper & inserts | Egg cartons | Plates & cups |
| PET/HDPE bottles & jugs | Soda/Beer cartons | Napkins |
| | Aseptic cartons | Tissues |
| | Ice cream cartons | Food soiled paper |
| | Paper cores/rolls | Metallic giftwrap |
| | Paper giftwrap | Styrofoam |
| | Paperback books | Chip bags |
| | Plastic bags | Trays & Clamshells |
| | Buckets | Frozen food bags |
| | Dairy tubs & cups | Lids & Caps |
| | Pill bottles | Toys |
| | Nursery pots | HazWaste containers |

Source: Washington State Department of Ecology 2010

Recycling Processing Capacity

A 2006 report from King County Solid Waste Department evaluated the four material recycling facilities (MRF) operating in the Puget Sound region at that time. The report concluded that based on the projected 2010 volume of 640,000 tons of recyclables, the four MRFs would be at capacity by 2010. These estimates assumed that MRFs would increase their operational times, invest in additional equipment, and/or incorporated new sort lines.

Since 2006, one new MRF has been built in the Puget Sound region: SP Recycling in Fredrickson, Pierce County. The SP facility has the capacity to process 168,000 tons per year bringing the total capacity in the region to over 800,000 tons per year.²⁶ Department of Ecology's recent recycling data shows that the Puget Sound area counties (King, Pierce, Snohomish, Kitsap and Thurston) generated almost 950,000 tons of recycling in 2010, 150,000 more tons than the estimated capacity. This would indicate that the region is at capacity for recycling processing and to dramatically expand the amount of recycling would require additional investments in sorting capacity leading to more employment opportunities.

26 Personal conversation with Chris Thomas, June 2010.

End-Markets for Recyclables

The end-markets for Washington's recyclables are global, with at least 75 percent of the collected volume exported out of the state for processing. Each material—old corrugated containers (OCC), glass, metal, mixed waste paper (MWP), old news print (ONP), and plastics—requires development and maintenance of its own end-markets.

For the southwest region of Washington, the most common end-markets for recyclables are as follows:

Old corrugated cardboard

- Georgia Pacific and International Paper in Oregon
- Longview Fiber in Longview, WA
- Exported to Japan, Mexico and China

Glass Containers

- Local aggregate operations for use in roadbed
- Non-commingled glass to Strategic Materials in California for processing into fiberglass and aggregate

Aluminum

- Processed domestically by Anheuser Busch (70%)

Steel

- Approximately half of the collected steel is process at Nucor Steel in Seattle and Schnitzer Steel in McMinnville, OR
- The remaining portion is exported

Mixed waste paper

- Almost all exported to China
- Nine Dragons Paper Industries and several other smaller Chinese mills

Old newsprint

- The local end-markets for ONP (and some MWP) are: NORPAC in Longview, WA; Nippon in Port Angeles, WA; and SP in Newberg, OR
- Exported to Nine Dragons Paper Industries in China

Plastics

- Domestic end-markets are: Merlin Plastics, B.C.; KW Plastics, Bakersfield, CA and Troy, AL; and Mohawk Industries, Calhoun, GA
- Exported to China

Future-Market Considerations

Several important considerations are on the horizon for the recycling commodities markets. First is the rapid growth of the consumer culture in Asia, and China specifically, and the potential for domestic generation of recyclables in those countries to displace imports from the United States.

Another factor is the significant expansion of domestic capacity for processing certain commodities, most notably PET. For example, Coca-Cola opened the world's largest PET recycling plant in Spartanburg, South Carolina. The facility is a \$60 million joint venture of Coca-Cola and the United Resource Recovery Corporation. The plant will have the capacity, when fully operational, to process 50,000 tons of recycled PET annually—enough to produce 2 billion 20-ounce bottles.²⁷ Similarly, Clear Path Recycling, a joint venture between Shaw Industries Group, Inc. and DAK Americas, is building a plant in Fayetteville, NC to recycle over 280 million pounds of PET annually.²⁸ Both facilities demonstrate a significant expansion of domestic processing capacity for PET and likely will drive local improvements in the collection and processing infrastructure.

Finally, new bio-based packaging materials are coming on the market. One example is the PLA-based clear beverage bottle developed by Nature Works.²⁹ But these changes are not without challenges. Bio-based packaging has generated considerable debate in the recycling community about its recyclability, and how they should be addressed in existing recycling programs.

Recycling Trends in Washington

Over the past five years, the recycling rate in Washington has only increased by 6 percent. The Washington recycling rate appears rather stagnant compared to 20 percent recycling rate increases in Canada and the EU, which are the result of initiatives to increase the scope and requirements of recycling programs.

Table 2: Recycling Trends 2003-2009

| Program | Washington State | |
|----------------------------------|------------------|-----------|
| | 2003 | 2009 |
| Population | 6,098,300 | 6,668,200 |
| Area (km ²) | 184,827 | 184,827 |
| Waste generated (lbs/person/day) | 11.41 | 12.27 |
| Recycling rate | 38.42% | 55.00% |

Source: Data obtained from US Census and data from Washington State Department of Ecology 19th Annual Solid Waste update

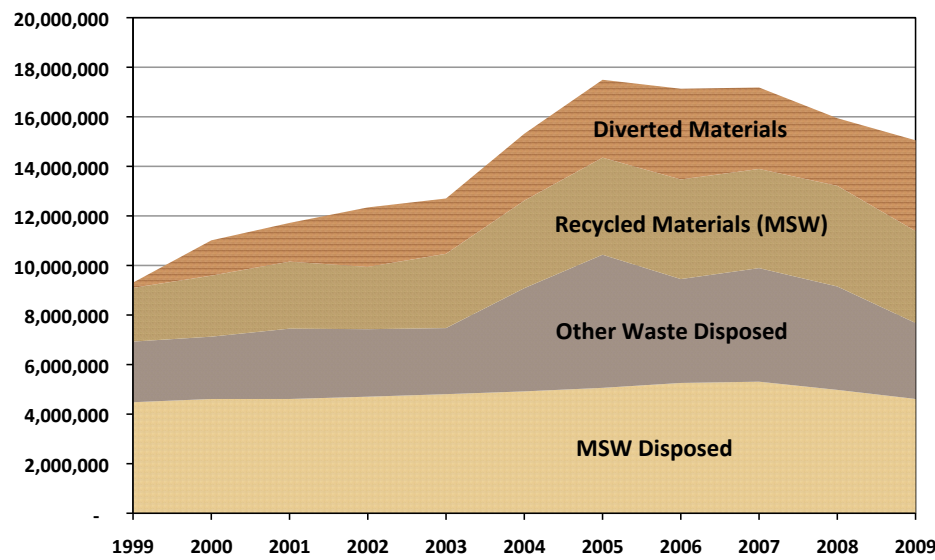
The 2010 annual report published by the Washington State Department of Ecology (Ecology) shows that disposal, recycling and total generation rates have declined since 2007 after a leveling off period between 2005 and 2007. This decline is likely due to the recession's impact on consumer purchasing. Figure 8 below shows this trend graphically.

27 Accessed October 15, 2010 http://www.thecoca-colacompany.com/presscenter/nr_20090114_bottle-to-bottle_recycling.html

28 Accessed October 15, 2010, <http://www.clearpathrecycling.com/facilities.html>

29 Accessed October 15, 2010 <http://www.natureworksllc.com/product-and-applications.aspx>

Figure 8: Solid Waste Disposition, Washington State 1999-2009 (Data in tons)



Source: Solid Waste in Washington State; 19th Annual Status Report, Washington State Department of Ecology

Table 3 below shows the per capita disposal, recycling and generation rates for municipal solid waste in Washington since 2001 in pounds per person per day. Again, these numbers show a leveling off beginning in 2006 and a slight decrease from 2007 to 2009.

Table 3: Municipal Solid Waste Disposed, Recycled/Diverted and Generated (pounds/person/day)

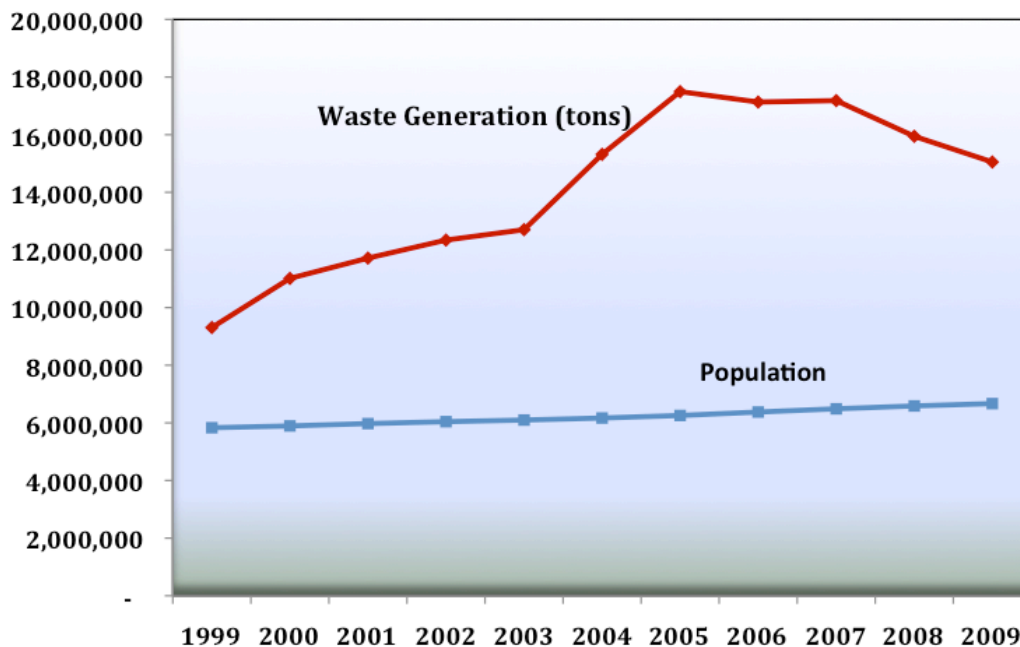
| Per Capita MSW Only | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---------------------|------|------|------|------|------|------|------|------|------|------|
| MSW Disposed | 4.29 | 4.23 | 4.27 | 4.32 | 4.37 | 4.43 | 4.52 | 4.48 | 4.14 | 3.79 |
| MSW Recycled | 2.29 | 2.48 | 2.28 | 2.69 | 3.14 | 3.43 | 3.46 | 3.38 | 3.38 | 3.05 |
| MSW Generated | 6.58 | 6.71 | 6.55 | 7.01 | 7.51 | 7.86 | 7.97 | 7.86 | 7.52 | 6.84 |

Source: Solid Waste in Washington State; 19th Annual Status Report, Washington State Department of Ecology.³⁰

Total diversion of solid waste from disposal to recycling and composting has also remained stagnant until the recession beginning in 2007 when the total waste generated begins to decline.

30 Note that these numbers do not include wastes generated from all sources. For example, they do not include wastes produced by business, industries and other manufacturing activities. They also do not include historic wastes that are being removed from the environment, such as petroleum contaminated soils from leaking gas tanks at service stations, asbestos being removed from buildings that are torn down or remodeled, and contaminated soils that are dredged from Puget Sound. These types of wastes cannot be recycled and should be placed in a landfill.

Figure 9: Washington State Diversion Rates – 1999 to 2009³¹



Source: Solid Waste in Washington State; 19th Annual Status Report, Washington State Department of Ecology.³²

Packaging and Printed Material Recycling Rates

The Department of Ecology has recently completed a state-wide waste audit. The results of the audit and the results of the 2009 recycling survey show the overall recycling rate for packaging and printed paper is 54 percent. This number averages out some very good and very poor recycling numbers. Newspaper and cardboard are recycled at 76 and 72 percent respectively while on average only 24 percent of plastic bottles are being recycled.

31 Diversion rates are adjusted retroactively each year to reflect adjustments in disposal and recycling or diversion data and methodology for determining the rates.

32 Washington State Department of Ecology, Waste 2 Resources Program. (2010). Solid waste in washington state; 19th annual status report (09-07-038).

Table 4: 2009 Washington State Packaging and Printed Material Recycling Rates

| Material | Recovery Rate | Disposed Tonnage | Recycled Tonnage | Total Generation |
|------------------------|----------------------|-------------------------|-------------------------|-------------------------|
| Totals | 54% | 1,083,604 | 1,284,352 | 2,367,956 |
| Paper | 64% | 600,651 | 1,086,564 | 1,687,215 |
| Newspaper | 76% | 82,682 | 267,524 | 350,206 |
| Cardboard | 72% | 189,205 | 491,266 | 680,471 |
| Mixed Paper | 50% | 328,764 | 327,774 | 656,538 |
| Plastic | 15% | 345,235 | 58,574 | 403,809 |
| PETE | 26% | 47,907 | 16,767 | 64,674 |
| HDPE | 22% | 49,584 | 13,876 | 63,460 |
| LDPE/Bags and Film | 9% | 147,471 | 15,407 | 162,878 |
| Other Plastic Products | 11% | 100,273 | 12,524 | 112,797 |
| Glass | 60% | 68,435 | 100,823 | 169,258 |
| Metal | 36% | 69,283 | 38,391 | 107,674 |
| Aluminum Cans/Foil | 43% | 28,457 | 21,098 | 49,555 |
| Tin Cans | 30% | 40,826 | 17,293 | 58,119 |

Source: Washington State Department of Ecology 2010.

Washington's recycling efforts are ahead of the majority of other state's programs and U.S. averages. In 2009, the U.S. average was at 33.8 percent and Washington State was at 55 percent.³³ Compared with other developed nations, however, Washington's program is significantly less effective.

The recycling rate for packaging and printed paper in Washington State has plateaued at a level well below rates achieved in countries that have adopted product stewardship systems. This is the case even though Washington has implemented many of the best practices shown to boost recycling rates, including volume-based rates or pay as you throw (PAYT) and bundled rates. In fact, volume-based rates are in use in 100 percent of the cities and counties in the state that are subject to the rate-setting process by the WUTC.

According to the Skumatz Economic Research Associates (SERA) study which examines national recycling programs, the most effective programs incorporate the following elements:

"The best PAYT legislation (state) or ordinances (local) include the following elements:

- Recycling costs embedded in the garbage fees,
- Smallest container no larger than 32 gallons (and preferably 19-21 gallons),
- Require significant rate differentials to provide an incentive—perhaps requiring 75% incremental rate increase for each level of service (i.e. 1 can, 2 can, 3 can levels of service), and
- Require hauler reporting of disposed and recycled tonnages."

33 Washington State Department of Ecology 2010.

Despite the fact that many jurisdictions in Washington have already implemented all four of these best practices, the overall recycling rate is still below 45 percent.³⁴

Current and Potential GHG Reductions

The 1.3 million tons of packaging and printed material recycled in Washington in 2009 resulted in the following greenhouse gas emission reductions and energy savings:

- Saved energy equivalent of more than 445 million gallons of gasoline, comparable to taking 719,000 passenger cars from the roadway each year.
- Prevented carbon equivalent (MTCE) GHG emissions of more than 1,071,000 metric tons – comparable to conserving 20,508 railway cars of coal.

If Washington State increased its diversion for packaging and printed paper generated in the state to 80 percent as has been accomplished in other countries, the GHG emission savings would increase dramatically. At an 80 percent recycling rate, the state would recycle an additional 575,000 tons of material which would result in an additional 467,000 MTCE of GHG reductions and save energy equivalent to 194 million gallons of gasoline or the removal of an additional 313,991 passenger cars from the roadway each year.³⁵

34 Model Pay As You Throw (PAYT) Variable Rates Legislation: Elements, Options and Considerations for State or Local level legislation in Solid Waste. SERA 2008.

35 Environmental Protection Agency (EPA) Waste Reduction Model (WaRM): http://epa.gov/climatechange/wycd/waste/calculators/Warm_home.html. Energy use information from Energy Information Administration: http://www.eia.doe.gov/emeu/states/_seds_updates.html.

Introduction to Product Stewardship

In order to achieve the goals of the state's waste management hierarchy and the Beyond Waste Plan, new incentives and models likely will be needed. The following sections of this report explore the concepts of product stewardship and provide examples of how these policies have been adopted in Belgium, Germany, and Canada to increase the recycling of packaging materials and other recyclable commodities.

Product stewardship is an environmental management strategy that means whoever designs, produces, sells, or uses a product takes responsibility for minimizing the product's environmental impact throughout all stages of the products' life cycle. Product stewardship efforts aim to encourage manufacturers and others influencing the life cycle of a product to take increasing responsibility to reduce the impacts of that product. These impacts include energy and materials consumption, air and water emissions, the amount of toxic materials used to create the product, worker safety, and waste disposal in product design and in the end-of-life management of the products produced.

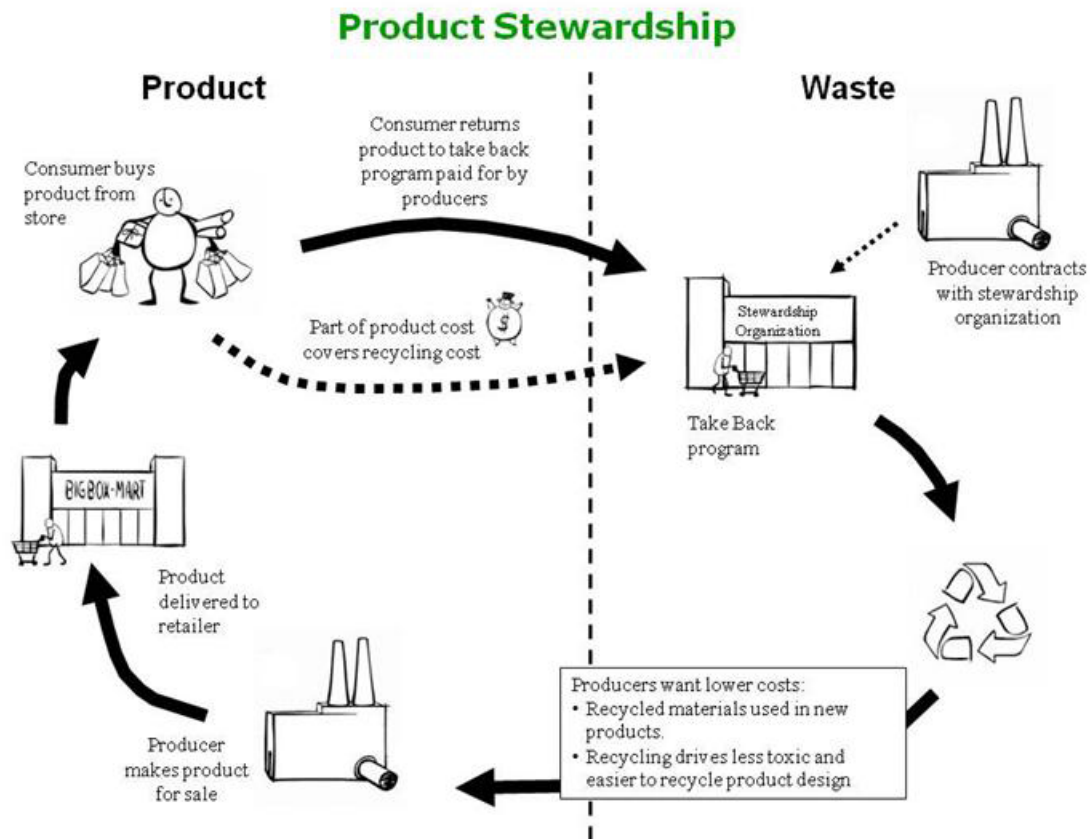
Commonly, in product stewardship systems, the end-of-life management costs are internalized in the cost of the product by the product brandowners. These costs are often passed on to the consumers rather than taxpayers, so those that buy and benefit from the use of the product are actually paying for the recycling costs. These costs can be either separately itemized and visible as in deposit systems or can be invisible as is the case in Washington with the electronics product stewardship program. In some examples of product stewardship, the brandowners are also responsible for arranging for the collection and recycling of their products.

By engaging brandowners in financing and ensuring the provision of the collection and recycling system, the product and packaging end-of-life costs are factored into the initial design decisions. Not only do the products and packaging more truly reflect their environmental costs, but opportunities exist to reduce the overall collection and recycling system costs on a per unit or per ton basis due to increases in collection volume and support for infrastructure development.

As shown in Figure 10, in a product stewardship system, products are made and delivered to stores where they are purchased by consumers. When consumers are done using the products and the packaging, the product producers are responsible for funding and sometimes directly providing programs to recycle the materials. End-of-life management becomes a cost of doing business, just like advertising, manufacturing, distribution, health and safety compliance and other business costs, and it is in the business' interest to minimize these costs, which often can be done through intelligent design changes and selection of less toxic materials.

The producer can contract with a "stewardship organization" to implement and manage the take-back program. As noted, because producers pay for this program, they have an incentive to make products that are less toxic, and easier and less costly to recycle.

Figure 10: Product Stewardship Overview



Source: King County Solid Waste Division with permission from Annie Leonard

Stewardship laws have been enacted by various states in the United States for several products, most notably unwanted electronics, batteries and mercury-containing lighting. However, interest is expanding to other products including carpet, paint and now packaging and printed paper. Product stewardship regulatory activity has been left to the states with little Congressional consideration to date. However, as stewardship measures continue to proliferate, the federal government's potential role and the opportunity for synthesis of state programs likely will receive increased attention.

At multiple states' requests, the U.S. EPA has prioritized packaging as a candidate material category for product stewardship, and is convening a national dialogue to address the topic. Such activity will present an opportunity to promote consistency between various states' regulatory initiatives regarding packaging and printed paper.

Because individual packaging and printed paper often have higher recycling rates than other components of municipal waste, tremendous opportunities exist to increase recycling rates across the U.S. and thus conserve resources, reduce greenhouse gas emissions and increase the availability of commodity materials.

The following sections are intended to serve as a tool to initiate a discussion about the opportunities and challenges of a stewardship program for packaging and printed paper. These sections outline the context for packaging and printed paper stewardship, assess the existing stewardship

programs that are in place around the globe with an emphasis on Europe and Canada, and offer considerations as to the necessary components for packaging and printed paper stewardship policy development.

Key Elements in Product Stewardship Systems

Product stewardship programs for packaging and printed paper have been adopted across the globe starting with the German Packaging Ordinance in 1991, commonly called the “green dot” program. These measures generally place responsibility for ensuring the collection and recycling of packaging and printed paper on the brandowners and importers. In the jurisdictions where stewardship programs have been implemented, such as the Canadian multi-material initiatives, the volume of recyclables has increased, the municipal expenditures on waste management have decreased and source reduction and shifts to more recyclable packaging materials have occurred.

The following section is taken from the *Canada-wide Action Plan for Extended Producer Responsibility*:

The following is a suggested summary of the program elements that are key to considering when structuring product stewardship programs. These elements may or may not be prescribed in product stewardship regulations. These elements can be represented through such means as regulation and best practices guidance.

Scope

In the interests of clarity and a level playing field in the marketplace, the responsible producer needs to be clearly identified.

Product Definition

The products from both the residential and non-residential waste streams should be covered by the PRODUCT STEWARDSHIP program and both need to be clearly identified, defined and listed.

Responsibilities of Designated Producers and Producer Responsibility Organizations (PROs)

Identified producers should be individually and fully responsible for the financing and operation of the PRODUCT STEWARDSHIP program and have the ability to raise and spend funds to meet the program objectives. PROs need to operate with due regard to the needs for accountability and transparency.

Stewardship Plan

A stewardship plan sets out how the designated producer or producers and the PRO will meet their obligations. The elements to be considered or included in the plan can be specified in a governing regulation or set out in other guidance documents. Generally stewardship plans contain details on such things as how discarded products are to be collected and recycled, key program performance indicators, recycling rate targets, timelines for implementation and reporting protocols. Stewardship plans should be reviewed and revised on a regular basis and at least every five years.

Approvals

Producers are accountable for the content, technical details and for meeting established performance targets arising from a stewardship plan and product stewardship obligation. Jurisdictions require proper reporting of program outcomes, environmental benefits and waste diversion performance. Stewardship plans need to be available for review and consultation.

Information Requirements/Reporting/Communications

Documentation and public reporting of the product stewardship program's performance will be necessary and should follow established or recommended key performance indicator and reporting formats. Efforts should be made to limit reporting requirements and concentrate on key measures which are strong indicators of program performance.

Training and Education

Training and education of staff working for the product stewardship program's PRO is essential to ensure compliance with environmental and occupational health and safety requirements and best management practices.

Performance Measures

Product stewardship programs should operate using recognized and comparable key performance indicators in keeping with the recommended indicators cited in this Action Plan and in Environment Canada's guidance document on Performance Measures and Reporting for product stewardship programs.

Targets

Product stewardship programs should set measurable and quantifiable targets for products captured and/or recovered and reused and/or refurbished. Targets should be designed to ensure measurable, waste diversion and environmentally sound end-of-life management.

Design for Environment

Producers are encouraged to improve the life-cycle environmental performance of their products, to undertake the necessary research and development to improve their products and to voluntarily report on their progress to improved environmental product design.

Fees

Costs associated with an product stewardship program should be internalized as a factor of production of the product – i.e., the costs for end-of-life management of products should be treated similarly to other factors of production (such as manufacturing, distribution, marketing and sales) and incorporated into wholesale and retail product prices. Jurisdictions may or may not choose to regulate the visibility or non-visibility of such fees at the point-of-consumer purchase. Fees should be differential and should be linked to material- and product-specific costs and designed to reward improved environmental performance. Fees should be structured with due regard to the nexus principle, which means those levied should be closely connected to the product offered.

Auditing

Product stewardship programs should be audited for financial and operational performance and such audits should report on the final disposition of the secondary materials collected.

Efforts should be made to not increase the administrative burden or overhead for companies in meeting these auditing requirements.

Compliance and Enforcement

Jurisdictional authorities can enforce regulation provisions by restricting a product's market access as provided for under the governing legislation.

End-of-Life Management

Recycling and other end-of-life management practices should be conducted in accordance with the appropriate environmental regulations and recognized environmentally sound management standard or guidance document. Producers and PROs should be required to report on the ultimate disposition of materials recovered by the product stewardship program.

Competition

Supporting competition between players is a key feature of any stewardship program. Not only does this reduce program costs but supports innovation in program design. However, it is important to recognize that brandowners may need to collaborate to establish certain aspects of the stewardship program such as if setting of fees is appropriate and potentially arranging collection and processing contracts so that existing law and policy may need to be amended to support such activity.

Consultation

Consultation should be undertaken with all interested stakeholders and members of the public in the preparation of stewardship plans and regarding other program proposals.³⁵

36 Canada-wide Action Plan for Extended Producer Responsibility. http://www.ccme.ca/assets/pdf/epr_cap.pdf

Global Packaging and Printed Paper Stewardship Programs

Packaging and printed paper have long been a focus of governments outside the U.S. and product stewardship approaches to increase the collection and recycling of packaging materials and printed paper have yielded impressive results in most cases. Following the enactment of the German Packaging Ordinance in 1991, many nations have stepped forward to implement packaging stewardship programs, most prominently in Europe, Japan, Australia and several of the Canadian Provinces. While the programs differ in terms of their history and scope of products addressed, they shift the sole financing responsibility from local government to engage brandowners and first importers in the financing of these efforts.

The European Union Packaging Directive

Following the example in Germany, the European Union took steps to address discarded packaging in the member countries in 1994 with the enactment of a “Packaging Directive” which required member states to enact programs to reduce packaging waste. The directive established recovery and recycling rates for discarded packaging, required reductions in the heavy metal content of packaging and obligated member states to implement recycling education campaigns, among other provisions. This legislation sought to promote environmental protection, resource conservation and to spur manufacturers to develop more environmentally-preferable packaging while ensuring the functioning of the EU market and striving for consistency. The directive was amended in 2004 to raise the recovery goals and to add goals for the new members of the EU.

As an illustration of the recovery and recycling rates, member states were required to introduce systems for the return and/or collection of discarded packaging to achieve goals as defined in the directive. The following targets were established by in the 2004 amendment:

- Recovery of at least 60 percent and recycling of between 55 and 80 percent by weight of discarded packaging by December 2008
- Material-specific minimum recycling rates starting at 15 percent for wood and climbing to 60 percent for glass and paper by December 2008

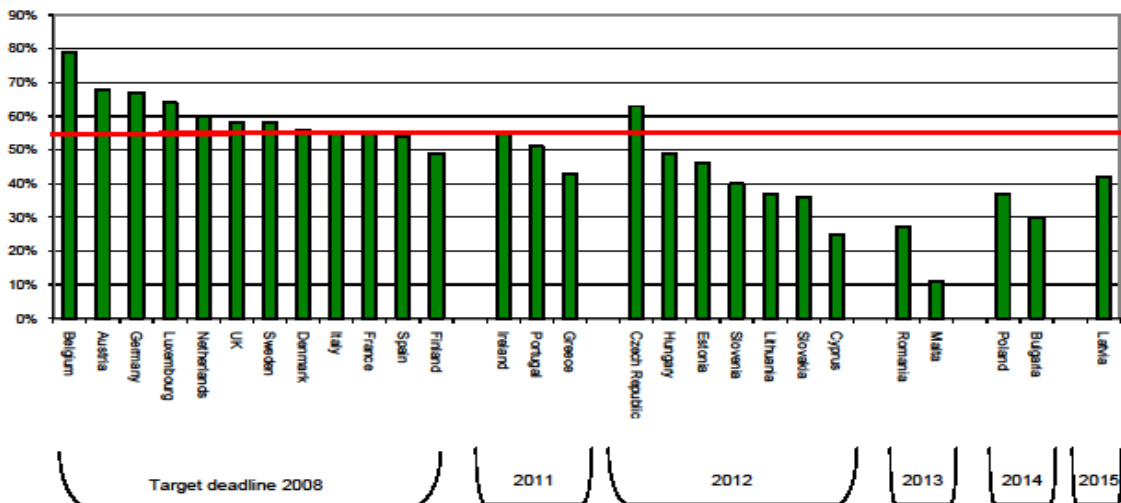
Table 5: European Union Packaging Directive Goals and Recovery/Recycling Rates 1994 and 2004

| Targets of Packaging Directive 94/62/EG | | |
|---|----------------------|----------------------|
| | 1994 Directive | 2004 Directive |
| Recovery | Max: 65% Min: 50% | Max: n/a Min: 60% |
| Recycling | Max: 45% Min: 25% | Max: 80% Min: 55% |
| Recycling Specific Materials | | |
| Glass | 15% | 60% |
| Paper | 15% | 60% |
| Metal | 15% | 50% |
| Plastic | 15% | 22,5% |
| Wood | - | 15% |

Source: *European Experience with Industry Stewardship Programs. Presentation by Joachim Quoden, Managing Director, PRO Europe*

As Figure 11 indicates, as of 2006 almost all of the EU countries had achieved the 2008 goals.

Figure 11: Progress Towards the EU Recycling Targets (2006 recycling rates)



Source: *Packaging and Packaging Waste Statistics, EUROPEN, 2009.*

The European Parliament and the Council, acting on a proposal from the Commission, are expected to establish new targets for 2014.³⁷

³⁷ The European Organization for Packaging and the Environment (EUROPEN) Packaging and Packaging Waste Statistics 1998-2006.

Product Stewardship in Canada

Canadian Council of Ministers of the Environment: The Canada-wide Strategy for Sustainable Packaging

In 2005, the Canadian Council of Ministers of the Environment (CCME) established an Extended Producer Responsibility Task Group with a mandate to provide guidance on the development and implementation of product stewardship programs. Packaging, which in Canada and elsewhere makes up a significant portion of the waste stream, was identified as a first priority. To this end, the Task Group developed the following two documents:

- A Canada-wide Action Plan for Extended Producer Responsibility³⁸; and
- A Canada-wide Strategy for Sustainable Packaging.³⁹

The Canada-wide Strategy for Sustainable Packaging is part of the broader Canada-wide Action Plan for Extended Producer Responsibility, which provides guidance to provinces and territories as they develop product stewardship programs.

Purpose

The purpose of the Canada-wide Strategy for Sustainable Packaging is to build on the Canada-wide Action Plan for product stewardship. Its major goals include creating a more consistent Canada-wide approach to product stewardship for packaging, and to support a shift by all packaging actors towards greater packaging sustainability. The strategy aims to increase awareness and information about packaging sustainability among all packaging actors and to promote reductions in packaging and more sustainable packaging choices at all stages of the packaging life cycle—from design to waste management. CCME's ultimate goal is to reduce the overall quantity of packaging materials generated and disposed throughout Canada, with an aspirational goal of zero-waste.

Product Stewardship for Packaging

The Canada-wide Action Plan for Extended Producer Responsibility report commits all jurisdictions to work towards the establishment of operational product stewardship programs for packaging (among other things) within six years, and sets out general principles and guidance for provincial/territorial regulators and program developers for regulating, developing, designing and implementing consistent product stewardship programs across Canada.

The strategy for packaging builds on the Product Stewardship Action Plan approach to product stewardship program requirements for packaging across Canada. It provides guidance on key program elements for product stewardship for packaging, including steward fees, targets, data collection and reporting. A Canada-wide approach to product stewardship for packaging helps to create a level playing field for industry, ease regulatory burdens, and place provinces and territories in a better position to drive sustainable packaging design and reduction.

Selected Programs

Following a review of the packaging programs described in Appendix B, the Northwest Product Stewardship Council selected the programs in Manitoba, Ontario, Germany and Belgium as most relevant for further investigation.

38 http://www.ccme.ca/assets/pdf/epr_cap.pdf.

39 http://www.ccme.ca/assets/pdf/sp_strategy.pdf

The Canadian programs were selected, in part, due to the similarities between the United States and the Canadian Provinces in the structure and financing of their solid waste management systems. Also, because many of the same brandowners operate in both Canada and the U.S., a comparison will provide insight as to how the provincial experience could be adapted here.

The German packaging program was selected because it has been operational for nearly two decades and illustrates how a program has evolved over time. Finally, the program in Belgium was selected since it demonstrates a remarkable level of recycling and has been profiled by several key constituency groups in the U.S.

Table 6 below summarizes the key features of each program.

Table 6: European and Canadian Product Stewardship programs for Packaging Materials and Printed Paper

| Program | Hauling Services | Government Role | Retailer Role | Who Pays? | How is \$ calculated | What is Covered? | Packaging Covered |
|----------|---|---|--|--|--|----------------------------|---|
| Manitoba | Public and Private-TPO* Contract | Regulation Enforcement Compliance 20% of program costs | Only sell products in system-pay fees if they are first importer | 80% stewards 20% gov't | Weight of material | Collection and processing | All residential packaging consisting of plastic, glass, paper or metal |
| Ontario | Public and Private Sector-Public Sector Contract | Provide or contract for collection, provide program data for cost calculations. Pay 50% of program costs but will be moving to 100% soon. | Only sell products in system or join system if they are first importer | 50/50 split between stewards and gov't with deductions for efficiency fund. Moving to 100% steward funding | Collection costs by material, recovery rate by material | Collection and Processing | Residential glass, metal, paper, plastic and textiles |
| Germany | Private Sector 724 waste mgt. partners currently-TPO Contract | Enforcement/ Compliance | Must ensure reuse or recycling of packaging left by customer. Must be member of system if they are manufacturer or brand owner | Manufacturers brand owners 100% | Weight, and amount sold plus costs incurred for collecting and sorting (Green Dot) | Collection and processing | Transport , Sales and Secondary packaging |
| Belgium | Public and Private Sector-Public sector contract with Fost Plus | Contract for services, attend education sessions put on by Fost Plus for best practices in sorting and collection | Must be a member if they bring packaging to market | Manufacturers-Brand Owners 100% | Weight and amount sold (Green Dot) | Collection, and processing | Household packaging or equivalents by Fost Plus, Transport packaging by Val-I-Pac |

Source: Summary of data from Appendix B.

*TPO=Third Party Organization typically set up by the industries whose products come under the legislation

Table 7: Comparison of Program Data

| Program | Germany | | Belgium | | Ontario | | Manitoba | |
|--|-----------------|-----------------|---------------|--------------|--------------|--------------|-------------|-------------|
| | 2003 | 2007 | 2003 | 2008 | 2003 | 2008 | 2003 | 2008 |
| Population | 82,476,000 | 82,329,758 | 10,318,000 | 10,414,336 | 12,262,600 | 13,150,000 | 1,161,600 | 1,213,815 |
| Area (km ²) | 357,002 | 357,002 | 30,528 | 30,528 | 1,076,395 | 1,076,395 | 649,950 | 649,950 |
| Packaging waste per capita (tons/person) | 0.1875 | 0.1957 | 0.1573 | 0.0700 | 0.0696 | 0.0568 | 0.0761 | 0.0920 |
| Recovery rate | 86.30% | 94.70% | 91.50% | 96.60% | 46.00% | 63.00% | 56.00% | 63.00% |
| Recycling rate | 70.60% | 66.90% | 73.90% | 93.00% | | | | |
| Number of brandowners | | 25,000 | 6,244 | 5,644 | 1,653 | 1,038 | | |
| Funds from brandowners (in millions) | \$2,387,908,647 | \$1,438,499,185 | \$116,682,422 | \$95,739,313 | \$35,822,639 | \$70,695,695 | \$7,274,416 | \$8,377,564 |
| Brandowners pay % of total costs | 100% | 100% | 100% | 100% | 50% | 50% | 80% | 80% |
| Annual program cost per capita | \$28.95 | \$17.47 | \$11.31 | \$7.03 | \$5.84 | \$10.42 | \$7.83 | \$6.92 |

Source: Summary of Data from Appendix B

For further illustration and guidance, it is useful to look at the details of the Ontario Blue Box program.

The Ontario Blue Box Program

The Ontario Blue Box program is one of the oldest curbside recycling programs in North America, as well as the most comprehensive. Moreover, since industry has paid half the costs of the program since 2004, performance and cost data are closely tracked by the businesses required to participate, making the Ontario Blue Box program an ideal model for examining the strengths and weaknesses of an advanced municipal curbside recycling program as a basis for product stewardship for packaging.

Stewardship Ontario was established in 2004 as the industry funding organization to collect fees from producers and allocate the required funding to municipalities. Stewardship Ontario gathers detailed province-wide cost and performance data in order to assess producer fees. Blue Box materials are divided into two basic categories: Printed paper and packaging. Printed paper includes two classes of newsprint, as well as magazines and catalogs, telephone books, and other printed paper. Packaging includes paper-based packaging, plastic packaging, steel packaging, aluminum packaging and glass packaging. Within each of these packaging categories are several sub-categories. For each category and sub-category, Stewardship Ontario provides data on quantity generated, percentage of generated, quantity recovered, and recycling rate (quantity recovered divided by quantity generated).

Key results include the following:

1. Printed Paper and OCC & Boxboard both have significantly higher recycling rates (80%) than Other Packaging (40%).
2. Printed Paper constitutes more than half (52%) of all materials collected in the Blue Box program, but accounts for less than 6% of net program costs.
3. Together, OCC & Boxboard and Other Packaging comprise less than half (48%) of the diversion achieved by the Blue Box program, but accounts for 94% of all net costs.

The total net cost of managing packaging was more than \$157 million. The only material in the Blue Box program that incurs a negative net cost (revenue source) is aluminum (\$937 per metric ton), whereas the net cost for other materials ranges as high as \$2,604 for polystyrene, \$2,380 for plastic laminates, and \$2,318 for plastic film. Printed paper, on the other hand, incurs a much lower per metric-ton net cost (average \$20, range \$10 to \$77 per metric ton).

Ontario is in the process of reviewing the Waste Diversion Act. Currently, industry pays 50% of net recycling costs. Environment Minister John Gerretsen has proposed moving to 100% industry funding. Provincial and local governments understand that at some point some industries paying 100% of costs may elect to contract with alternative service providers and choose to no longer do business with local government. Anticipating that possibility, the local government discussion is turning to fair compensation for “stranded” public infrastructure assets. Even with a change in providers, however, recycling targets set by legislation, still need to be met.

In its review of the Blue Box system the Ontario government emphasizes that “product stewardship is premised on making those who put products and packaging into the marketplace responsible for managing the waste associated with them. Product Stewardship shifts the responsibility for waste diversion to those that are best able to influence and control decisions throughout the lifecycle of a product or package.” Municipalities “have little influence over the products and packaging introduced into the Ontario marketplace, yet must manage those products and packages through their waste management systems.”

The Ontario government is stating its intent to move towards “outcomes-based” legislation, making individual producers fully responsible for meeting waste diversion requirements, as well as for waste disposal in the residential, industrial, commercial and institutional sectors. “This approach,” the government emphasizes, “would re-orient the focus of the Waste Diversion Act from instructing producers on how to fulfill their requirements to making individual producers responsible for meeting outcomes and letting them decide how to do so.”⁴⁰

40 *Evolution of the Ontario Blue Box Program: From Government Responsibility to Full EPR* Product Policy Institute.

Recent Policy Development in the U.S.

Product Stewardship legislation has also been proposed and adopted in the U.S. Twenty-two states now have product stewardship laws for electronics, and within the U.S. there are product stewardship laws covering paint, carpet, batteries, mercury-containing switches and thermostats, cell phones and fluorescent lighting. The first state to introduce legislation implementing a product stewardship approach to packaging and printed paper is Vermont.

Vermont Extended Producer Responsibility Act of 2010 (Proposed Legislation)

The Vermont Extended Producer Responsibility Act (VEPRA), which was developed by the beverage industry, has opened up the discussion of packaging and product stewardship policy in the United States. The act outlined a framework for product stewardship as the basis for managing solid waste in Vermont. While the proposal did not move forward during the 2010 legislative session, it did receive an informational hearing and it is anticipated that the legislation will be introduced again in 2011.

As defined in the proposed legislation, producers of designated products would be required to provide for the collection and recycling of that waste including financing for the recycling system. This means that the costs of recovering designated wastes would shift from municipalities and solid waste districts to producers.

VEPRA would have established packaging and printed material as the first designated wastes in Vermont and set forth a process, managed by a state agency, under which producers of these products must develop plans for recovering these materials and financing the program through fees. The Secretary of Natural Resources would have approved the plans after which the producers would have one year to implement their programs.

VEPRA would have provided producers with flexibility in how they design, implement, and manage recycling programs, and would have ensured a level playing field for all obligated companies. Producers would work with existing municipal and private sector recycling programs to help achieve the goal of 60 percent recycling of the designated materials and would also develop new programs where necessary.

The proposed bill required that the producers' plans address:

- Governance of the producer organization(s)
- Program delivery and administration
- Public education and outreach
- Research & development

-
- Market development (if needed to reach required recycling levels)
 - Cost projections
 - Fee-setting methodology

Product Stewardship Framework Legislation

Product stewardship legislation in the U.S. has been focused on specific products primarily due to their toxicity and the need to handle them separately from the rest of the solid waste stream. The product stewardship framework concept utilized in many Canadian provinces and EU countries strongly supports a consistent methodology for how products are selected for stewardship programs, how products are designated for such activity and finally suggests objectives for the stewardship program.

In 2010, Maine became the first state in the U.S. to adopt product stewardship framework legislation. The framework approach was also discussed and included as part of recommendations from the Beyond Waste Implementation Working Group of the Washington State Climate Action Team. Those recommendations are considered key strategies for increasing source reduction and recycling, thus reducing greenhouse gas emissions.⁴¹

41 http://www.ecy.wa.gov/climatechange/2008CATdocs/IWG/bw/110308_beyond_waste_iwg_report.pdf

Overview of Product Stewardship in Washington

Washington State has adopted product stewardship laws for electronic waste (computers, TVs and monitors) and for mercury-containing lamps.

Electronics

Washington State's Electronic Product Recycling Law (Chapter 70.95N RCW) passed by the legislature in 2006 requires producers to pay for and provide recycling services at no cost to households, small businesses, charities, school districts and small governments in Washington as of January 1, 2009. Producers of TVs, computers (desktops and laptops) and monitors must finance the collection, transportation and recycling of these products. There must be a minimum of one collection site in every county and in every city with a population of 10,000 or more.

The law requires producers to register with the Washington State Department of Ecology and participate in an approved recycling plan in order to sell their products in or into the state by any means including internet sales. The law also created the Washington Materials Management & Financing Authority to administer and operate the Standard Plan for electronics recycling. By default, all producers must participate in the Standard Plan unless they meet the requirements to operate their own independent recycling plan.

In the first two years, the program collected 39,000 tons of material, which is equal to 12 pounds per household based on 2010 Census data. Of the total collected, 61 percent of the total were televisions, 29 percent monitors and 10 percent were desktop or laptop computers.⁴²

Fluorescent Lighting

Engrossed Substitute Senate Bill 5543 was passed by the House and Senate in March 2009 and signed by the Governor (Chapter 70.275 RCW). The bill requires a convenient, statewide recycling program for mercury-containing lighting from residents in Washington State starting in 2013. No-cost recycling services must be provided for residents in each county and, at a minimum, in every city with population greater than 10,000. Mail-back or curbside collection programs can be included at extra cost to the customer. Producers of mercury-containing lights sold in or into the state for residential use are required to participate and fund the product stewardship program (retail businesses are excluded).

42 Accessed February 2, 2011 <http://www.ecy.wa.gov/programs/swfa/eproductrecycle/docs/2009AnnualReportfromWMMFA.pdf> and <http://www.ecy.wa.gov/programs/swfa/eproductrecycle/docs/2010TotalCEPPoundsWA.pdf>

The Department of Ecology can contract with a stewardship organization to operate the recycling program. Producers pay a one-time \$15,000 fee providing start-up funds for the stewardship organization and Ecology oversight. After this start-up funding, the state-contracted stewardship organization will need to set up an internal funding structure with the participating producers. Alternately, the producer(s) can obtain approval from Ecology to operate an independent plan (and pay a \$5,000 annual fee to fund Ecology oversight costs). The bill requires that mercury-containing lamps be recycled by all residents and by all government, industrial, and commercial facilities. Disposal of mercury-containing lights in the garbage or landfills is prohibited. View the ESSB 5543 Fact Sheet or Bill Overview for more information.

Context for Stewardship for Packaging in Washington

As we have seen, product stewardship policies are well established in Europe and are emerging as a key strategy to address discarded packaging and printed paper in Canada. Based on the review of the packaging and printed paper programs that are in place around the globe, product stewardship programs have shown to be an effective and efficient method of achieving desired economic and environmental benefits. Product stewardship approaches offer a pathway toward higher recycling rates. They support packaging reduction objectives, reduce local government expenditures on recycling programs (an important consideration in a time of constrained public resources) and place the funding, and sometimes programmatic and management responsibilities on brandowners or their stewardship organizations.

Within the general approach, there are a variety of specific policy approaches and implementation strategies that have been used. As the case studies indicate, packaging and printed paper stewardship programs often contain provisions crafted for particular jurisdictions and reflect local political, business and operational considerations while engaging manufacturers in program financing.

With that in mind, the outline below lists key components that are typically contained in packaging and printed paper stewardship programs, and offers a discussion of several of the policy options available to address those components. A key consideration in Washington is how to most effectively utilize and work with the existing collection infrastructure regulated by the WUTC, while determining how to finance programs that will divert more material from disposal to recycling. The policy options here are designed to outline the issue and serve as a tool for discussion among the full range of stakeholders that should be engaged in any exploration of product stewardship for packaging and printed paper.

Coordination with Existing Recycling Infrastructure

Of primary consideration is how the existing public and private sector recycling programs—ranging from WUTC-regulated private hauler curbside services and municipal contracts with haulers to publically-owned and operated collection infrastructure—will be maintained and integrated into a brand-owner financed program. A significant discussion with a broad range of stakeholders will be required to establish the optimum balance between existing systems operating under WUTC hauler franchise regulations and municipal contracted and owned systems and new efforts to increase recycling of packaging while assigning funding and ensuring provision of services by the brandowners.

This issue has been addressed differently by various global packaging stewardship programs. For example, the German brandowners have substantial authority to establish contracts with vendors

while the proposal under consideration in Ontario to transition to full brandowner financing does not change the fundamental control over the recycling system that is exercised by municipalities. Three of the four product stewardship programs highlighted in this report utilize a combination of publicly and privately financed collection infrastructures.

Implementation Mechanism

Regulation would create a level-playing field to ensure participation and establish consistency for the operation of the program. This is especially important in the case of packaging and printed material because of the large number of brandowners, as well as the various and often competing material types, sales channels and recycling infrastructure. For example, as of 2009, 2,470 companies have registered with Stewardship Ontario (the non-profit stewardship organization that manages the system for the obligated parties) indicating they have products or packaging that fall within the purview of the stewardship program. Such a large number of entities could not be managed under a wholly voluntary program given the lack of consequences for “free-riding” or non-compliance.

Even in the context of the Australian National Packaging Covenant, often presented as a purely voluntary effort, a legislated National Environmental Protection Measure (NEPM) is in place to address those companies that fail to participate in the Covenant. Details of the Australian program and other product stewardship programs around the globe can be found in Appendix B.

Policies that internalize the environmental costs of the product (including its packaging), and that implement an industry-led effort, provide significant flexibility for brandowners to meet specified outcomes. Such policies should recognize the need for a variety of collection options, including retailers, curbside and others, to ensure a high level of convenience for residents and a high level of recycling. The role of government is to ensure compliance, performance and accountability.

Designated Wastes and Products

The range of packaging and printed paper to be included in a product stewardship program as well as the businesses—product producers—that should be included are questions to be answered through stakeholder involvement early on in the development of any product stewardship program. Generally, the global packaging product stewardship programs elsewhere focus on the collection of packaging and printed paper that is typically generated by households and traditionally collected at curbside: containers of glass, plastic, paper and metal. Most programs exclude the packaging that is used in business-to-business transactions such as pallets and shrink wrap.

Specific categories of packaging materials can be designated by statute, but there needs to be a clearly delineated process to identify and to add or delete materials in the future as changes occur in packaging types, technology or public demand.

Decisions on the scope of packaging and printed paper to be included in a stewardship program will affect the number of brandowners that will be obligated under the program as well as potentially impacting the transition to an industry-financed program. The range of products and materials addressed under a product stewardship program also may influence the types of collection strategies that are put in place.

For instance, the packaging stewardship organization in Belgium, Fost Plus, collects a wide variety of packaging through curbside programs. However, glass is collected separately at designated

glass depots. The extraordinary recycling rate in Belgium (93%) suggests that by placing responsibility on the brandowners for financing programs, experimentation with various collection methodologies—such as optimized single-stream with parallel glass depots—may be feasible.

It is likely that the most cost-effective way to increase the collection of packaging and printed paper for recycling and at the same time reduce the fiscal burden on local government and rate payers will be to focus on residential and small business collection programs.

Level of Financing

Much of the debate regarding packaging product stewardship policy in the U.S. has focused on the financing mechanisms employed to fund the programs. The debate has centered on two main financing types: “shared responsibility” and “full producer responsibility”.

Shared responsibility policies apportion the responsibility for the costs of collection and processing between brandowners and government agencies. While this model is often embraced to address political obstacles, it does present some decision-making and programmatic challenges for both parties. Brand owners do not have sole decision-making authority over program design and may complain as a result that they don’t have the flexibility necessary to attain required performance goals. It can also be problematic for local governments who need to know clear lines of responsibility and system costs in order to set budgets.

Alternatively, product stewardship systems where the brandowners assume full financial responsibility for the program create a more direct incentive for the brandowners to make changes to packaging designs that will reduce toxicity, minimize material use, switch to more recyclable packaging, and incorporate recycled materials into the content of the packaging because those changes will be rewarded with lower costs.

In most if not all cases, full industry financing can be adapted to a community’s existing collection infrastructure. While it has been demonstrated that a full brandowner-financed system can dramatically boost recycling rates, moving to an industry-financed system likely will require a transition period to accommodate the infrastructure, stakeholders and regulations that may be impacted by such a change.

Program Plan

Another key element of product stewardship programs around the globe is the requirement that individual brandowners or stewardship organizations with an obligation under the program submit a program plan to an oversight agency. Such plans are important to secure agreement amongst the stakeholders on system operations and to articulate roles and responsibilities. Program plan components often include a description of the collection infrastructure, financing, processing considerations, actions to support end-market development, program reporting and evaluation.

Program plans are a key tool for surfacing potential challenges to program implementation so they can be dealt with from the start. While typically the vast majority of brandowners participate in a single stewardship organization, product stewardship laws usually allow businesses to file individual plans or form smaller entities that more adequately reflect their business models. For instance, multiple stewardship organizations have proven effective in several of the existing programs such as in Germany where nine organizations give companies options in how they comply with the Packaging Ordinance.

Performance Goals/Service Levels

Performance goals are important tools that can be used to improve and enhance collection opportunities and at the same time serve as a means to evaluate the effectiveness of the stewardship program.

There are numerous ways to establish performance measures. For example, the packaging stewardship legislation proposed in Vermont would require a 60 percent recycling rate—an “output measure” which requires additional data on the quantity of material produced or sold that is sometimes difficult to obtain. Some product stewardship laws have chosen “input measures,” such as “convenience standards” whereby the brand owner is required to establish a specific level of collection service. The Washington electronics law requires the stewardship program to provide access to a drop-off facility for computers, monitors and TVs in all counties and in cities with a population of 10,000 or more.

Ultimately, setting—and achieving—high recycling goals will maximize the ancillary benefits of recycling, including job creation, reduced greenhouse gas emissions, and reduced water pollution. An overall recycling goal in combination with commodity-specific targets will drive development of collection and processing infrastructure where existing systems fall short, so that the full range of packaging materials and printed paper on the market can reach the recycling goal. Recycling goals should not only call for improved or expanded curbside collection opportunities statewide, but also drive expanded away-from-home collection including dropbox and event recycling.

Roles of Key Stakeholders in a Product Stewardship System

Role of State Government

State government oversight is critical to ensuring a level playing field and making sure that the objectives of the program are met. Stewardship programs place brand owners and their stewardship organizations in the driver’s seat to design, finance, and ensure delivery of the programs as well as facilitate compliance with the program requirements, however, the ultimate responsibility for ensuring compliance lies with state government.

The Washington Department of Ecology has experience with oversight of the stewardship program for waste electronics and soon will have experience with programs under the recently passed mercury-containing lamps legislation. This knowledge can be shared and improvements made to any potential stewardship programs for packaging and printed paper materials.

Role of Local Government

Product stewardship programs offer significant opportunities for upgrading, expanding, or redesigning existing local government recycling programs. Some mature systems, newly supported all or in part by obligated-brandowner funding, may prove the best option for reaching very high recycling levels and improving processor output quality. Other local systems may need significant change and some local governments may choose to withdraw as service providers, transferring that obligation entirely to a brandowner funded and managed system. Charting the roles and responsibilities for local government in a brandowner-driven system would require substantial consultation and dialogue with local governments throughout the state.

Packaging and printed paper product stewardship legislation likely would lead to a broad range of programs, varying by material and by local government preference. Some local governments

may choose to continue providing collection and processing services as they do now through contracts with private haulers or by providing the service directly—all fully or partially paid for by the stewardship organization. Local governments can also serve as a key conduit for brandowner financed public education as has occurred in many of the existing packaging stewardship programs. Local governments may also be asked to provide input on the development of stewardship policies such as establishing service levels and performance goals to ensure consistency statewide.

Role of Haulers

Washington is fortunate to have a progressive recycling industry which has been instrumental in achieving the high recycling rates significantly exceeding national averages. The industry has been an invaluable partner with state and local governments in the planning and implementation of curbside recycling programs.

Solid waste haulers are heavily regulated and in return are guaranteed certain service areas for solid waste collection. State law gives the WUTC the ability to grant monopoly collection certificates to haulers to provide residential garbage service in a certain geographic area. As a result of these regulations, public- and private-sector solid waste haulers in Washington have invested significant amounts of money in collection infrastructure, providing an exceptional base on which product stewardship programs can be built. A product stewardship program for packaging and printed paper would put more materials into the recycling stream—much of which is already collected by public and private sector haulers in Washington

Private and public sector haulers are heavily involved in many of the existing product stewardship programs in Europe and Canada. According to the summary report of the European Commission on the performance of the European Packaging Directive, the private sector hauling community is extensively involved with the EPR programs in the EU.

“With regard to definite packaging waste management activities, the responsibility is shared in the majority of Member States between municipalities and industry. While collection and sorting of municipal packaging waste is predominately undertaken by the public sector, the collection of industrial packaging waste and the recovery and recycling of both municipal and industrial packaging waste is a privately organised domain.

In Austria and in Germany, obligated economic operators are explicitly required to organise the collection and sorting of domestic packaging waste and to comply with recycling targets for this waste stream. The packaging regulations in these countries set out criteria for the collection system, inter alia capacities and distances between collection points, extensions of the collection system. The compliance schemes in Austria and Germany conclude contracts with municipalities (and private operators) for the services necessary in the context of separate collection and sorting of municipal packaging waste.

Summary of three dominant models:

1. Industry is fully responsible for covering all costs; municipalities can be involved in separate collection on behalf of the industry. **Austria, Germany, Sweden**
2. Industry and municipalities share responsibility, the industry covers costs of sorting and recycling; municipalities are in charge of separate collection and their costs are (completely or partially) reimbursed. **Belgium, Denmark, Finland, France, Ireland, Italy, Luxembourg, Portugal, Spain,**
3. Industry and municipalities share responsibility, the industry covers the costs of recycling;

municipalities are in charge of separate collection and receive revenues through selling the collected materials. **United Kingdom, the Netherlands**⁴³

Role of Retailers

Retailers in the European and Canadian programs are required to ensure that they are selling only products supplied by manufacturers that are part of the product stewardship system. In some instances where vertically integrated retailers are also the manufacturer or are the first importer of the products/packaging into the state, the retailers are part of the stewardship organization for those products.

Some retailers also voluntarily participate in stewardship programs as collectors of products. The Washington electronics program, E-Cycle Washington, is one example. In some Canadian provinces, retailers have voluntarily chosen to become packaging take-back locations in order to encourage shoppers to patronize their stores.

Conclusion

The transition to a “Beyond Waste” future will require re-thinking the funding and the provision of solid waste services. A dialogue focused on how to move from where we are to where we need to go to increase the capture of packaging and printed paper for recycling needs to occur.

This paper provides the reader with a) an overview of the current recycling infrastructure in Washington state, b) a summary of product stewardship systems and their effectiveness both internationally and locally and, c) a discussion of the basic elements of product stewardship policies that could be applied to the recycling infrastructure in Washington state.

The purpose of this paper is to stimulate dialogue among the various stakeholders in the solid waste and recycling industries in Washington in order to look at alternative ways to finance and incentivize recycling programs for packaging materials and printed paper in the state. Such a dialogue will help to identify and craft more sustainable policies and programs to increase the recycling and recycling of packaging materials and printed paper in Washington.

The dialogue should identify and clarify factors that need to be addressed in order to transition to a workable packaging and printed paper stewardship program in Washington State. These factors include:

1. Analyzing the WUTC system and how a product stewardship approach could work within that existing framework.
2. Determining how to finance and provide packaging and printed paper collection in rural and other areas currently without curbside collection services.
3. Exploring the removal of problem materials (such as glass containers) from single stream bins.
4. Exploring the creation of a financing and collection system for these problem materials.
5. Providing funding for existing and new Material Recovery Facility (MRF) upgrades to better handle collected materials.
6. Providing “market development funds” that could help stimulate and enhance local markets for recyclable commodities.

43 European Commission DGXI.E.3 ARGUS in association with ACR and Carl Bro | s: Karin Jordan (ARGUS), Jürgen Gonser, (ARGUS), Francis Radermaker (ACR), Roald Jorgensen (Carl Bro)

Appendix A: Recent Developments in Packaging in the Public and Private Sector

Wal-Mart Packaging Scorecard

In November 2006, Wal-Mart Stores, Inc. released a packaging scorecard to continue its commitment of reducing packaging across its global supply chain by 5 percent by 2013.

Wal-Mart stated that more than 97,000 products have been entered into the scorecard by 6,371 distinct vendors. The scorecard measures sustainability through various metrics including GHG emissions, product-to-package ratio, and the amount of renewable energy used throughout the manufacturing and delivery process. Suppliers receive scores in each category and are rated in comparison to their competitors.

Sustainable Packaging Coalition

The Sustainable Packaging Coalition (SPC) is an industry working group inspired by cradle-to-cradle principles and dedicated to creating a more robust environmental vision for packaging. Through informed design practice, supply chain collaboration, education, and innovation, the Coalition strives to transform packaging into a system that encourages an economically prosperous and sustainable flow of materials, creating lasting value for present and future generations. For more information, visit SPC's website at www.sustainablepackaging.org.

The Sustainable Packaging Coalition is focused on raising awareness of the sustainability issues related to packaging, as well as fostering the development of tools and resources, partnerships, and strategies to address them. SPC believes that improved communication among the businesses in the packaging supply chain will encourage collaboration as a key strategy to facilitate the development of more environmentally responsible packaging and the creation of effective systems to recover it.

National Packaging Dialogue

The dialogue, funded by U.S. EPA's Office of Resource Conservation and Recovery (formerly Office of Solid Waste), convened key interested parties to discuss issues and strategies around sustainable financing for municipal recycling programs. The goal of this discussion, which began in the fall of 2010, is to develop one or more well-developed and articulated options for sustainable financing of municipal recycling programs, focusing on consumer packaging and printed paper.

EPA brought to the discussion companies and organizations that represent the packaging value chain, as well as government and NGO representatives, including:

- Brandowners (national consumer packaged goods companies, including food and beverages, cosmetics and personal care, and household cleaning products)
- Retailers (“big box” stores and grocery chains)
- NGOs
- Local and state governments and EPA

Initial discussions will be facilitated by an organization of national stature with no real or perceived bias or organizational conflict. The facilitator will be asked to interview prospective dialogue participants and produce a preliminary convening assessment, which will be used to structure the initial meetings. The facilitator shall investigate issues such as the following, which will also be addressed at the first facilitated meetings:

- Challenges faced by state and local governments in funding end-of-life management of discarded packaging
- Sub-goals or objectives of this initiative
- Current and planned initiatives in the producer/retail community that impact end-of-life considerations (e.g., new materials, design initiatives, collection initiatives and strategies)
- Current and planned producer responsibility framework legislation
- Lessons learned from similar legislation in other countries, including fee structures and material ownership (e.g., Ontario’s Blue Box System and Belgium’s FostPlus)
- Potential funding sources and mechanisms

Appendix B: Summaries of Product Stewardship Programs for Packaging in Europe, Canada and Australia

Sustainable Product Packaging Program Summaries

- Manitoba
- Ontario
- Germany
- Belgium
- The Netherlands
- France
- Australia

Manitoba “New” Blue Box

Program Description

- The Multi-Material Stewardship Manitoba (MMSM) Packaging and Printed Paper (PPP) Program Plan was developed in response to the Packaging and Printed Paper Regulation enacted in December 2008 under the Waste Reduction and Prevention Act (WRAP). The Regulation established mandates for a packaging and printed paper stewardship program. Through steward fees, 80% of the program will be funded, with municipalities paying for the remainder. Additionally, there is a specific focus on beverage containers, plastic bags, and litter. The program was developed by MMSM, which is comprised of representatives of obligated stewards in response to the Regulation. So, stewards were a large part of the Program Plan development process, along with government staff, politicians, municipal organizations, and other interested parties

Legislative/Regulatory Requirements

- The Packaging and Printed Paper Regulation was enacted in 2008 under the Waste Reduction and Prevention Act (WRAP). This regulation yielded the Multi-Material Stewardship Manitoba (MMSM) Packaging and Printed Paper Program (PPP) Plan.

Implementation Organization(s)

- The Manitoba Product Stewardship Corporation (MPSC) was created with the passing of the Multi-Material Stewardship (Interim Measures) Regulation in 1995. A multi-stakeholder board or ten directors governs MPSC and represents equally: grocery distributors, distributors of beverages in containers, newspaper publishers, retail sector, Manitoba municipalities, City of Winnipeg, and other at-large appointments by government. This Corporation provided guidance to the implementing organization, Steward Responsibility Organization (SRO), which is temporary, until a more permanent organization is founded.
- The PPP Program Plan was developed by MMSM, an interim SRO formed with help by the MPSC, Resource Conservation Manitoba, and the Manitoba Chamber of Commerce.

Scope of Products

- This plan includes all product packaging that consists of plastic, glass, paper, or metal, or any combination of those materials including service packaging and 'pre-packaged goods'. It establishes a broad scope, but the intent is to include all packaging normally managed by the municipal waste management system in Manitoba.
- Packaging exempt from fees under the program includes: transportation and distribution packaging, industrial or bulk packaging (that not intended for residential use or management), durable packaging (with a useful life of at least five years in association with the product use), service packaging that is managed on premise, retailed packaging components, and items that constitute an integral part of the product. In addition, packaging materials that are not covered by the Regulation: wood, ceramic, crystal, rubber, leather, and textile.

Product Design Incentives

- Since steward fees are based on material weight, there is incentive to produce lighter or smaller packaging using less material and therefore pay less in fees. There are no other specific design incentive programs.

Funding Mechanism

- The program provides 80% of the net cost of recycling the designated materials.
- The program will be funded by the Steward Responsibility Organization, which is an industry-operated WRAP fund that administers the funds which will pay for:
 - establishing and administering waste reduction and prevention programs as well as education programs;
 - expenditures from the collection, transportation, storage, processing and disposal of the waste for the purposes of waste reduction and prevention programs;
 - research, developmental, and promotional activities and economic instruments to encourage waste reduction and prevention;
 - appropriate disposal of designated material;
 - salaries and other costs of the government for the administration and enforcement of the Act and the regulations and other such activities in relation to waste reduction and prevention as are prescribed by Regulation.

Role of Waste Management Companies

- Waste management companies contract with a program operator to provide collection services.

Role of Brand Owners

- Stewards are required to submit a stewardship program plan proposal for approval by the Minister. The following program requirements, as set out in the regulation, must be included in any proposed program plan.

“A plan for a packaging and printed paper stewardship program shall include provision for:

- the establishment and administration of a waste reduction and prevention program for packaging and printed paper with waste reduction and prevention targets as set out in the plan;
- the appropriate management of discarded packaging and printed paper in accordance with any written guidelines established by the Minister;
- a province-wide, convenient collection system for discarded packaging and printed paper without user fees at the point of collection;
- a system for the payment of expenditures incurred in the collection, transportation, storage, processing and disposal of packaging and printed paper in connection with the waste reduction and prevention program;
- the orderly collection of revenues from subscribers to the program in balance with expenditures for the program;
- the establishment and administration of education programs for the purpose of the waste reduction and prevention program;
- the establishment and administration of a point-of-sale information program for the purpose of the waste reduction and prevention program;
- the payment of salaries and other costs of government for the administration and enforcement of this regulation and of the Act as it relates directly to packaging and printed paper; and
- on-going consultation about the stewardship program with persons who the operator considers the stewardship program may affect, including members of the public, in accordance with any guidelines respecting consultation that the Minister may establish.”

Role of Municipalities

- Municipal participation in recycling programs is voluntary in Manitoba, which could hurt the achievement of recycling targets. Therefore in cases where municipalities do not participate, MMSM has the right to “deliver a material recycling program through contracts or other means in the municipality and invoice them for 20% of the net program costs.”
- Municipal Funding Allocation Model: MMSM will provide each participating municipality up to 80 percent of the net program costs for the efficient collection and processing of designated material, which will be based on an efficiency standard. This standard will be set relative to the median net cost of the programs within each population group. Then communities will be paid 80 percent of the median net cost per ton for that population category, encouraging communities to operate at a higher efficiency standard, so that the funding will cover more of their costs.

Role of Retailers

Under the regulation, a two-stage hierarchy of obligation is created; “no person shall supply designated material for consumption unless:

- a. the steward of the designated material operates or subscribes to a packaging and printed paper stewardship program; or
 - b. the person operates or subscribes to a packaging and printed paper stewardship program.”
- The steward is defined as “the first person that supplies a designated material to another or uses a designated material obtained in a supply transaction outside of Manitoba.” In addition, obligated stewards include those who supply packaging for a “prescribed activity”, which refers to an activity or program of: the Government (municipality or local), an educational institution, a religious organization, or a non-profit organization.

Collection Infrastructure

- There are three primary PPP Program collection routes:
 - Municipal residential recycling (with both public and private curbside and depot systems),
 - Public space recycling, a shared cost with participating municipalities, will be initiated by MMSM as a pilot program, and
 - Public event recycling on a pilot basis in order to assess its feasibility.

Performance metrics

- Recycling program cost and recycling volume data will be collected and analyzed annually so that municipality payments can be calculated for the following year and in order to make continuous improvements to the recycling rate and program costs.
- The data collected will include;
 - Volume of material collected by each municipality,
 - Contract costs for recycling collection and processing,
 - Direct municipal costs for capital items and staff,
 - Municipal recycling operating costs,
 - Costs related to transporting material to a broker or market,
 - And expenditure for Promotion and Education.

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- MMSM will use historical collection data to maintain cost and volume trends by municipality and overall as well as benchmark and compare the recycling program recycling rates and costs with other multi-material recycling program jurisdictions.

Summary of Program Finances

- The cost of managing designated waste materials is borne by the stewards and users of the product or packaging rather than by the taxpayer or solid waste ratepayer.
- The management of these materials is economically and environmentally sustainable.
- Industry stewards determined the method by which these materials are managed and how these costs are borne by the affected stewards, users of the product or packaging, and potential program partners.
- Fees, if any, required to support implementation of an approved program plan will be set and collected by an approved not-for-profit Industry Funding Organization (IFO) established for that purpose.
- Funds raised for the management of a designated material or product category will be directly related to the costs of managing that designated material or product category.

Enforcement/Compliance Issues

- None identified at this time

Citations:

Packaging and Printed Paper Program Plan. *Multi-Material Stewardship Manitoba*. 17 June 2009.

Guideline for Packaging and Printed Paper Stewardship *WRAP Guideline 2008-01 November 2008*

Ontario “Blue Box”

Program Description

- Implemented in 2004, at the time curbside recycling programs were already in place, the Ontario Blue Box Program Plan has two main features:
 - Municipalities in the province are required to operate or contract with a private operator to provide curbside recycling programs and
 - Brand owners and first importers are required to fund 50 % of the net cost of the municipally operated curbside program
- The Industry funding is managed by Stewardship Ontario.

Legislative/Regulatory Requirements

- The Blue Box Program Plan was established by the *Waste Diversion Act* (2002) under Ontario's Minister of Environment. In addition, the plan follows the waste categories designated as Blue Box Waste in Schedule 1 of Ontario Regulation 101/94 under the *Environmental Protection Act*.

Implementation Organization(s)

- The plan was created by Waste Diversion Ontario (WDO) and Stewardship Ontario. Stewardship Ontario is the designated IFO for Blue Box wastes by the WDO.
- Minimum level is set so that if a company makes under \$2 million in annual revenues or less than 15 metric tons of packaging and printed paper they are exempt from the program.

Scope of Products

- Blue Box waste consists of: glass, metal, paper, plastic, and textiles.
- Addressing only consumer packaging material commonly found in the waste stream, the definition of packaging materials adopted by this plan is:
 - All products made of the above materials used for the containment protection, handling, delivery and presentation of goods, from raw materials to processed goods, from the producer to the user or the consumer (sales packaging, grouped or “secondary” packaging, and transportation, distribution, or “tertiary” packaging),
 - Service or in-store packaging (plastic bags, take-out boxes, etc.),
 - Packaging components and ancillary elements that are integrated into the packaging; elements that are hung or attached to a product to perform a packaging function
 - An element is not considered packaging, if it is an integral part of the product and is meant to be consumed or disposed with the product.

Product Design Incentives

- Financial incentive, since Stewards will have to pay less, if less material is used in packaging.

Market Development

- The Blue Box Program Plan only requires ordinary recycling markets, there are no special or specific end-of-life management requirements. Several materials are more difficult to market, such as multi-laminate packages (aseptics and gable tops).

Funding Mechanism

- Stewards finance 50% of the net system costs, including approximately half of the municipally-operated recycling programs.
- Every year Waste Diversion Ontario conducts a tonnage and financial data call to determine the total net program costs. From this data, as well as steward sales reports, Stewardship Ontario calculates the fee to charge stewards based on each material type sold into the Ontario marketplace.
- To calculate the charges to stewards, three factors are incorporated: actual recycling costs (by material type), each material's recycling rate, and a factor that shifts some costs from better performing materials to poorer performing or hard-to-recycle materials.
- 5% of program costs is put towards the Effective and Efficiency Fund, now the Continuous Improvement Fund. The remaining 45% (which came from the Stewards) is distributed to the municipalities based on individual program performance (efficiency), "pay-out" model, using a benchmark standard.

Role of Waste Management Companies

- Contract directly with municipalities and arrange to take municipally collected material and recycle it.

Role of Brand Owners

- Must calculate the amount of packaging they supply that goes into the residential sector.
- Stewardship Ontario must also:
 - Develop/implement programs in coordination with municipalities
 - Determine cost allocation/financing mechanism
 - Set the minimum exemption level for stewards
 - Identify, notify, and register stewards, collect fees and allocate funds
 - Implement cost effectiveness/efficiency program for municipally run programs
 - Market development program
 - Execute promotion and education program
 - Develop a dispute resolution mechanism, and
 - Report to Waste Diversion Ontario

Role of Municipalities

- Municipalities (those with over 5,000 people) must provide curbside collection either through a municipal program or a private contractor. The curbside program must at least collect Blue Box Waste. The collection of aseptic, gable top, HDPE and other container types is voluntary.
- Must also provide program data and receive payments from Stewardship Ontario.

Role of Retailers

- Brand owners and first importers of Blue Box wastes are legally obligated under the WDA and must either join an Industry Funding Organization (IFO) designated by the WDO or seek approval from the WDO to implement an Industry Stewardship Plan (ISP).

Collection Infrastructure

- There are over 200 municipal programs, each either contracting or using their own forces for collecting and Material Recycling Facility.
- Municipalities (those with over 5,000 people) must provide curbside collection either through a municipal program or a private contractor. The curbside program must at least collect Blue Box Waste. The collection of aseptic, gable top, HDPE and other container types is voluntary.

Performance metrics

- 48% of packaging was recycled in 2006.

Summary of Program Finances

- The total costs in 2006 were just over \$120 million (Canadian) of which stewards are responsible for half.

Enforcement/Compliance Issues

- Competition exists between municipalities, because the more efficient municipalities receive more funding. Competition also exists between private sector haulers and end-markets bidding for municipal business.

Citations:

Evaluating End-of-Life Beverage Container Management Systems for California. *R3 Consulting Group, Inc., Clarissa Morawski, Heidi Sanborn, and Bill Sheehan. May 15, 2009.*

Blue Box Program Plan. *Waste Diversion Ontario and Stewardship Ontario. February 2003. http://www.stewardshipontario.ca/bluebox/pdf/BBPP2003/BBPP_Feb28_Plan_Appendices.pdf*

Germany “Green Dot”

Program Description

- In response to Germany’s 1991 Packaging Ordinance, the Duales System Deutschland GmbH (DSD) was established as a contract company to organize the collection, sorting, recycling, and disposal of packaging.
- The program was designed to avoid, reduce, recycle, or recover packaging in Germany, placing the responsibility of packaging on the brand owners.
- The brand owners are encouraged to first reduce packaging and to provide for the collection of packaging from all sources (including commercial and residential sources).
- Service fees, paid by the brand owners based on the quantity and material of packaging they put into the system, pay for the DSD system.
- The DSD runs the Green Dot program, which is also partnered with Packaging Recovery Organization Europe (PRO Europe), which licenses the green dot symbol to other member states. PRO Europe is the umbrella organization for European packaging and packaging waste recovery and recycling.

Legislative/Regulatory Requirements

- The Packaging Ordinance holds businesses within the European Economic Community producing and packaging goods for sale in Germany and those that are the (first) importer into Germany responsible for their packaging waste.
- The Packaging Ordinance was most recently (5th amendment) amended in 2008.
- As of December 2008 there are nine organizations, which the manufacturers/brand owners can contract to organize the collection, sorting, recycling, and disposal of packaging. The DSD is the most established and has the largest membership among these nine companies.
- It applies to all material subject to the Closed Substance Cycle and Waste Management Act.
- It also includes the Foodstuffs and Commodities Act and EU 1994 Directive framework.

Implementation Organization(s)

- As of December 2008 there are nine organizations, which the manufacturers/brand owners can contract to organize the collection, sorting, recycling, and disposal of packaging. The DSD is the most established and has the largest membership among of these nine companies.
- There are about 25,000 companies affected by the Packaging Ordinance and 20,000 that are small enough to be exempt from submitting a declaration (but not from registering with the system).

Scope of Products

- Applies to all material subject to the Closed Substance Cycle and Waste Management Act.
- All packaging, specifically sales (that made available as a sales unit for the final customer) and secondary (used as additional packaging for transfer to the final customers) packaging are included under the ordinance.

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- If a manufacturer/brand owner sells below the minimum threshold (in all three specific categories), then they only need to file a declaration stating they are below the minimum.
 - The threshold minimums are:
 - Glass less than 80 tons/yr
 - Paper/cardboard less than 50 tons/yr
 - Aluminum/plastics/steel and composites less than 30 tons/yr
 - Products that are not included in the program include:
 - Sales packaging not disposed by a private consumer (though it must be collected by the distributor).
 - Biodegradable plastic packaging, until 2012, and compostability must have a certificate of authentication.
 - Transport packaging (must be collected by the distributor or manufacturer/brand owner at point of delivery).
 - Outer packaging (also must be collected by manufacturers/brand owners or have free, take-back facilities for customers).
 - Disposable packaging for drinks (deposit/refund duty exists).
 - Returnable packaging, which is reused—normally through a deposit/refund system with customers.

Product Design Incentives

- Weight-based fees provide an incentive for manufacturers/brand owners to reduce material used in packaging. Analysis suggests that there has been some packaging redesign, though typical first steps have been eliminating non-essential packaging “lightweighting” packaging, and more use of concentrate and refill packs.

Funding Mechanism

- Participating manufacturers/brand owners are charged service fees, which are based on the material type, its weight, and the amount sold. The DSD 2008 fees are:
 - Glass 3.36 (USD Cent/lbs)
 - Paper/board/cardboard 7.95
 - Tinplate (Steel) 12.4
 - Aluminum (and other metals) 33.3
 - Plastic 58.9
 - Composite cartons (LPB) 34.2
 - Other composites 46.1
 - Natural materials 4.6
- The fee is paid directly to the contract company. DSD maintains 55-59% of Germany’s market share of sales packaging sold.

Role of Waste Management Companies

- Complete contracts through DSD and other contract companies, responsible for fulfilling the obligations of the contract.

Role of Brand Owners

- If located within the European Economic Community, must prepare a ‘declaration of completeness’ and pay fees to pay for collection, sorting and processing of packaging

Role of Municipalities

- In some cases local authority oversees compliance on behalf of the retailers and manufacturers. Additionally, the states decide whether a Dual System may be admitted as a service provider.

Role of Retailers

- Must prepare a “declaration of completeness” if service packaging is sold or they’re a manufacturer/brand owner.
- The declaration is checked and its data is made available by the Chamber of Industry and Commerce to regulators.
- Must ensure the reuse or recycling of all transport packaging and any secondary packaging left by a customer.

Collection Infrastructure

- The DSD collection of materials is either by curbside collection (in yellow bins) or drop-off locations. Packaging can also be removed at the point of sale (though it typically cannot be returned to the store later). In either case, collection is free for the customer. DSD is supported by 724 waste management partners and also works with new contract companies offering to fulfill stewards’ obligations.
- The sorting of materials is done after the waste is collected from curbside pick-up. However, the drop-off system keeps glass, paper, and cardboard separate.
- The collected material is either recycled or used as feedstock to generate energy, both which count towards fulfilling the Ordinance’s stipulations.

Performance metrics

- Recycling targets are set and updated regularly. The current recovery targets are: glass 75%, aluminum 60%, steel 70%, paper/cardboard 70%, composites 60% and plastics 60%.
- The goal is to create “mass flow verification” documents that accurately represent all 16 federal states. However, because there are multiple systems and DSDs recovery rates are often over 100 due to free-riding, the companies will need to be better organized and unite on combining their data in order to have more accurate recovery rates.

Summary of Program Finances

- The total program costs are about 1 billion Euros a year.

Enforcement/Compliance Issues

- The 5th Amendment of the Packaging Ordinance was to deal with free riding by replacing the individual compliance at point of sale with a general requirement to join and register/license all packaging by tonnage. This amendment reinforces the responsibility of manufacturers/brand owners and prevents them from opting out.
- Free riding also occurs because DSD picks up unlicensed material that is not their responsibility. This amounts to about 393,000 tons compared to the 2.9 million tons of licensed material that is recycled.

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- Since all of the Germany's sales packaging recycling system is financed by industry, there is an incentive to ensure that there are no to few free riders in the system.
 - Free riders usually occur in service packaging and small retail operations.
 - The Dual System companies try to ensure that all manufacturers/brand owners comply with the Packaging Ordinance.

Citations:

Evaluating End-of-Life Beverage Container Management Systems for California. *R3 Consulting Group, Inc., Clarissa Morawski, Heidi Sanborn, and Bill Sheehan. May 15, 2009.*

Hopstaken, C.F. Review Dutch waste market 2007 FFact Management Consultants BV. September 25, 2007 www.FFact.nl

Belgium, Interregional Cooperation Agreement

Program Description

- In response to the European Directive in 1998, three regions: Wallonia, Flanders, and Brussels created the Interregional Packaging Commission (CIE) to monitor compliance with the Cooperation Agreement. The CIE is a public institution designed to oversee and organize the recovery of packaging as well as information collection, prevention, and education regarding packaging.
- The Cooperation Agreement requires all companies to take back used packaging from products they put out on the Belgian market.
- Companies can meet the Cooperation Agreement individually or through membership in an accredited organization: Val-I-Pac (for industrial packaging waste) or FOST Plus (for household packaging waste).
- Companies are responsible for contributing to Fost Plus and Val-I-Pac to finance the collection, sorting, and recovery of packaging waste.

Legislative/Regulatory Requirements

- The primary legislative force is the Cooperation Agreement, which established the take-back obligation, 75% recycling, 15% recycling minimum by packaging material, 80% recovery, prevention obligation, and an obligation for public education.

Implementation Organization(s)

- There are two implementing organizations: Val-I-Pac and Fost Plus focusing on industrial and household packaging waste, respectively.
- Fost Plus, created in 1994 and accredited in 1997, started with 54 associate members that represent producers, importers, distribution companies, and trade federations. Today Fost Plus represents more than 5,800 companies, representing 92% of the household packaging sold on the Belgian market.
- Val-I-Pac was created in 1997 after the Cooperation Agreement and today aids more than 8,000 Belgian companies to meet the Agreement's requirements.

Scope of Products

- Industrial waste includes companies that:
 - Have products packaged in Belgium or supply their own packaged goods to the Belgian market (Type A).
 - Import products and neither unpack nor use the products (Type B).
 - Unpack or use packaged products on Belgian territory (Type C).
- Household packaging waste includes those materials whose sole function is to package the product.
- Also includes reusable packaging, defined as packaging intended and designed to be reused a minimum number of times over its normal lifecycle. It must satisfy certain technical requirements and be included in a system that enables its reuse.

Product Design Incentives

- There is no specific design incentive, except that using less packaging material means lower fees, so it is cost effective to improve product packaging design.

Recyclers and Material Organizations

- Material organizations are specialized, independent companies that assist Fost Plus with: competence centre and supervision. These organizations “accumulate and develop knowledge and expertise on the collection, sorting, and recycling of various types of packaging and materials. They monitor technological developments in packaging and recycling, maintain contacts with existing and potential recyclers, and study the recyclability of new packaging. In addition, they carry out administrative and operational checks in the field, visiting sorting centers and recyclers to check on and ensure the quality.

Market Development

- Material organizations, which provide technical assistance to Fost Plus and participating companies, accumulate and develop knowledge and expertise on the collection, sorting, and recycling of various types of packaging and materials. They monitor technological developments in packaging and recycling, maintain contacts with existing and potential recyclers, and study the recyclability of new packaging. By doing so, the recyclers and material organizations look for better materials and packaging solutions.
- Additionally, Fost Plus organizes interactive sessions in primary and secondary schools to encourage and educate students about recycling.

Funding Mechanism

- Fost Plus is financed by the Green Dot system, which charges parties based on the material and quantity of that material used.
- The materials included by definition are glass, paper/cardboard, steel, aluminum, PET bottles, HDPE bottles/flasks, drink cartons, other recoverable materials, and other not recoverable.

Role of Waste Management Companies

- Collectors and sorting centers are responsible for the collection and sorting of all the different packaging material types in household packaging. They are contracted by the inter-municipal authorities and municipalities; although sometimes inter-municipal agencies do their own collecting and/or sorting.
- Contracts are awarded via public calls for tender. Additionally, Fost Plus organizes training sessions for the employees of these companies to help them collect and sort efficiently and correctly.

Role of Brand Owners

- The Cooperation Agreement contains three principles to which responsible parties must adhere: the take-back obligation, an obligation to do public education and waste prevention planning.
- To become a member of Fost Plus, the company must sign a contract and submit an annual household packaging declaration for what it puts into the Belgian market.

Role of Municipalities

- Fost Plus and intermunicipal authorities enter into contracts that outline which fractions are collected, how that collection occurs, what activities Fost Plus finances and under what terms and conditions, what administrative obligations both parties have, and how they are followed up and enforced.
- Fost Plus organizes training sessions for employees of intermunicipal authorities and municipalities which include container park staff, environmental officials, city guards, and police officers. These employees are taught about collection, sorting, and recycling waste so that they can correctly keep citizens educated and informed of new information.

Role of Retailers

- Unless, the retailer brings packaging onto the Belgian market, the company does not have any specific responsibilities aside from doing its part like consumers to put out recycling for collection.

Collection Infrastructure

- Fost Plus gives funds to local authorities (municipalities, cities, and intermunicipal authorities)
 - Local authorities organize the selective collection of waste or hire specialized companies to do so.
 - Mixed collection system which includes door-to-door collection and voluntary returns from the public via container parks and a bottle bank network.
- Collection is separated by: glass, paper/cardboard, and plastic bottles, metal packaging and drink cartons (PMD).

Performance metrics

- A web application, ProFost, has been established to monitor the data flow between all the partners, which ensures that data about collection, sorting, and recycling is easily traceable and viewable in a central database.
- The costs of the Fost Plus program are less than 10 euros per inhabitant per year.
- The overall contribution for 2008 was 66.6m euros, which was a 15% drop relative to 2007, but is primarily because of lowered Green Dot rates.
- Recycling rate in Belgium: 93%, recovery rate: 96.6% in 2008.

Summary of Program Finances

- In 2008, Fost Plus's income from sales and services was 127.1m euros (a 10.5% drop from the previous year due to weakened commodity markets worldwide), proceeds from materials were 60.2m Euros, and the operating expenses were 134.6m Euros.

http://www2.fostplus.be/SiteCollectionDocuments/Over%20Fost%20Plus/Tabellen%20en%20grafieken/Kosten%20per%20inwoner_EN.jpg

Enforcement/Compliance Issues

- The CIE has the power to enforce the Cooperation Agreement by approving the method an organization chooses to fulfill its take-back obligation, by granting, suspending, or withdrawing the license of approved organizations, by verifying how the minimum recycling standards are achieved and by verifying the information it receives from parties.

Citations:

<http://www.pro-e.org/belgium1.html>

<http://www.valipac.be/Belgium/about-us/history.php>

<http://www.fostplus.be/>

http://www.sectors.wallonia-export.be/en/about.asp?pole_id=5§or_id=17

http://www.fostplus.be/PARTNERS/COLLECTORS_AND_SORTING_CENTRES/Pages/default.aspx

Annual Report 2008: Giving Substance to Recycling *Fost Plus*. 2008.

The Netherlands, The Dutch Packaging Decree

Program Description

- As a method of collectively implementing the Dutch Packaging Decree, in 2005 producers and importers established Nedvang. Nedvang helps companies meet their responsibilities under the Packaging Decree, the primary target being to recycle 65% (rising to 70% in 2010) of the packaging generated each year.

Legislative/Regulatory Requirements

- The Packaging Decree, signed in March 2005, was based on European Directive 94/62/EC and the revised Packaging Directive 2004/12/EC.
- The Decree states that Dutch producers and importers of packaged products are not only responsible for the separate collection and recycling of packaging waste, but also for waste prevention.
- These companies can either achieve the targets individually or as a collective, under organizations like Nedvang.

Implementation Organization(s)

- Nedvang is a non-profit organization and acts as a mediator between producers, importers and distributors and waste disposal and waste processing/recycling companies, municipalities and the national government. They are the primary organization responsible for designing the infrastructure for the collection of both household and commercial waste in the Netherlands.

Scope of Products

- Individual recycling percentages for each material have been set as: glass: 90%, paper/cardboard: 75%, metals: 85%, plastic: 32%, and wood: 25%.
- Additionally, packaging is divided into three types: primary (consumer packaging), secondary (packaging used to hold several products together), and tertiary (packaging used to transport products).

Product Design Incentives

- Companies that bring packaging into the Dutch market are required to reduce the quantity through waste prevention as well as collect and recycle the material. This requirement for minimal packaging pushes them toward efficient product packaging designs.

Funding Mechanism

- A packaging tax (a Supplementary Agreement) was enacted in 2008, directed at producers, importers, and distributors of packaged products, in order to pay for the collection, sorting/processing and recycling of packaging waste. Those that bring more than 15,000 kg of packaging into the Dutch market have to pay this tax.
- The proceeds of the tax are distributed among the general funds of the Dutch State and Waste Fund, which reimburses municipalities for their role in the recycling and processing of waste.

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- The tariffs are calculated based on the environmental impact of each material (aluminum being the priciest, then plastics), and according to the packaging category (primary: consumer, secondary: packaging used to hold products together, tertiary: used to transport products).
 - Additionally, companies must pay an annual fee for membership in Nedvang, which organizes the collection and recycling of the packaging waste.

Role of Waste Management Companies

- Municipalities manage household waste collection and recycling, either directly or through contracts with waste management companies.

Role of Brand Owners

- Businesses are solely responsible for the collecting and recycling all packaging they bring into the Netherlands market.
- They are also required to monitor and report prevention yearly.

Role of Municipalities

- Municipalities are responsible for the collection of household packaging waste.
- Previously, they were also partially financially responsible for the collection and recycling of materials, but now stewards are solely responsible for funding this activity.
- There are competitions between municipalities for recycling efficiency, based on cost, for each material, so there are incentives (and to a degree social pressure) to increase efficiency.
- Each municipality must report the amounts of collected recyclable packaging.

Collection Infrastructure

- Most commercial waste is collected door-to-door by both private and municipal companies (with exceptions being wood and tin)
- The collection of household packaging waste occurs as follows:
 - Glass: collected, color-sorted in containers.
 - Paper/cardboard: collected door-to-door about once a month, additionally there are container drop-off sites that residents can use.
 - There are two options for plastic: 1) municipalities can collect either plastic bottles and flasks or they can add all other plastic packaging waste as well. In addition, municipalities can choose between door-to-door collection or a central drop off container.
 - Wood and tin: separation from other waste at waste processing plants.

Performance metrics

- At least 65% of the packaging waste has to be recycled; at least 70% has to be recovered. Recovery goals allow for incineration with energy recovery.
- Furthermore, individual recycling percentages per material have been defined:
 - glass: 90%
 - paper/cardboard: 75%
 - metals: 85%
 - wood: 25%
- The recovery percentage has been increased to 75% for 2010.

Summary of Program Finances

- 115 million Euros annually is reserved in a waste fund, which is dispersed to municipalities to pay for collection of packaging.

Enforcement/Compliance Issues

- Nedvang, a not-for-profit organization, acts as mediator between producers, importers and distributors and waste disposal and waste processing/recycling companies, municipalities and the national government.

Citations:

http://www.pro-e.org/_Netherlands.html

<http://www.nedvang.nl/>

<http://www.svm-pact.nl/web/show/id=80327>

Hopstaken, C.F. Review Dutch waste market 2007 FFact Management Consultants BV. September 25, 2007 www.FFact.nl

France, Eco-Emballages

Program Description

Companies, in response to a 1992 French packaging decree, established Eco-Emballages. It is a non-profit, limited company, with 240 shareholders: 70% owned by producers, 20% material organizations, and 10% distributors. A second company, Adelphe, representing wine and spirit sector bottlers, was established in 1993. Adelphe, however, gradually expanded, so that in 2000 it included all economic sectors and all packaging materials. Eco-Emballages and Adelphe were competitors until a more recent merger in 2005 between the two.

Legislative/Regulatory Requirements

- Under Decree No. 92-377 (1992), the packer, importer or person primarily responsible for marketing is responsible for contributing to or providing for the disposal of packaging waste from the consumption of its commercial products. The companies can either recover the packaging on their own, or help a recycling group adhering to an organization (Eco-Emballages) that has been approved by the government.
- European Community Law, European Directive 2004/12/EC requires that all European nations reduce packaging volume and recover packaging waste. It also discourages unnecessary duplication of effort within the Community.

Implementation Organization(s)

- Eco-Emballages offers local authorities financial and technical support for the collection and recycling of household packaging waste.

Scope of Products

- Under the 1992 decree, packaging means all packaged goods purchased by households, including: primary (packaging of the unit selling to consumer) and secondary (packaging of multi-consumer sales units).
- Packaging for export, non-household consumption, and secondary or tertiary packaging disposed of in the supply chain are not included under the decree.
- Household packaging waste, consisting of the following materials: steel, aluminum, paper/cardboard, plastics, and glass is covered by the decree.

Product Design Incentives

- Members of Eco-Emballages are offered free training sessions on packaging minimization, using life-cycle methodology and packaging audits to optimize packaging use and minimize waste.

Funding Mechanism

- Fees are collected from participating licensees
- Licenses fees are calculated based on weight of material, with differing prices for materials, plastics being the most costly.
- If packaging with over 50% recycled content is used then there is a 10% reduction of the fee.
- If recyclable packaging is replaced by one that is not, then the fee will be doubled.

Role of Waste Management Companies

- Companies are contracted by municipalities to collect, sort, and recycle the packaging waste.

Role of Brand Owners

- Must join Eco-Emballages or Adelphe depending on the packaging material used and contribute based on the type and weight of packaging used in their product.

Role of Municipalities

- Local authorities are responsible for managing household waste. There is a sliding scale of costs based on the sorting efficiency (quality and quantity) of local programs, which Eco-Emballages pays for.

Role of Retailers

- Must only sell products in packaging produced by members of Eco-Emballages or Adelphe.

Collection Infrastructure

Three recovery options:

- Warranty Recovery,
- Reprise Guarantee (Federec, FNADE). Under contract with Eco-Emballages, these federations ensure traceability of recycling when their members contract the recovery of materials.
- Direct Recovery by local authority, committed to Eco-Emballages for effective recycling.

Performance metrics

- Recycling 75% of household packaging by 2012 that represents an additional 500,000 tons of waste to sort and recycle

Summary of Program Finances

- While Eco-Emballages curbside recycling costs 300m euros, the incineration of the waste would cost about 600m euros.
- Eco-Emballages supports up to 56% of the disposal costs for packaging, while local authorities pay the rest, thus ensuring an incentive to minimize costs.
- 47,000 companies pay about 423m euros and the green dot is on 95% of packaged goods sold.

Enforcement/Compliance Issues

No information was obtained on this topic

Citations:

<http://www.pro-e.org/France1.htm>

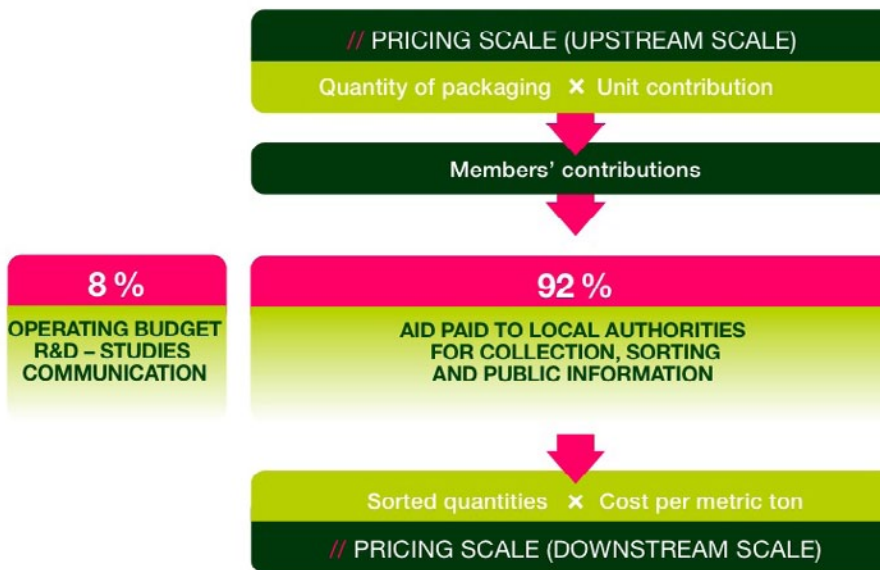
<http://www.ecoemballages.fr/>

<http://www.adelphe-recyclage.com/index.html>

Hopstaken, C.F. "Review Dutch waste market 2007" FFact Management Consultants BV. September 25, 2007.

Schematic of the Eco-Emballage System

Source: www.FFact.nlhttp://ec.europa.eu/environment/waste/prevention/pdf/Eco_Emballages_Factsheet.pdf 2008 Annual Report. Pdf (page 16)



Australia, National Packaging Covenant

Program Description

- The National Packaging Covenant was created by the Australia and New Zealand Environment and Conservation Council (ANZECC), built upon earlier strategies and in accordance with the Intergovernmental Agreement on the Environment and the National Strategy for Ecologically Sustainable Development.
- Australia's National Packaging Covenant is voluntary, however, it is supported/backed by the Used Packaging Materials National Environment Protection Measure (NEPM) that addresses free riders and requires non-signatory brand owners to take responsibility for their packaging contribution.
- The Covenant and NEPM were first established in 1999 and 1996 respectively, they were reviewed and revised in 2005 when they expired and renewed for another five years.
- The Covenant is intended to reduce the environmental impacts of packaging, improve designs and production processes and help in the re-use and recycling of packaging materials by creating a framework based on shared responsibility and product stewardship.

Legislative/Regulatory Requirements

- The Covenant acts as an umbrella document for packaging regulations, to which stewards, Commonwealth and state governments, local governments, and packaging supply chain companies become signatories.
- Those that don't sign the Covenant are subject to the Used Packaging Materials (NEPM) regulation, which is also designed to catch the free riders and focuses on a take-back requirement for brand owners. The NEPM is designed to ensure national consistency and prevent signatories to the Covenant from being at a disadvantage in the market.
- Signatories to the Covenant are required to also adopt the Environmental Code of Practice for Packaging (ECoPP), which promotes two main ideas: packaging should be well designed to have minimal environmental impact, while still preserving product integrity.

Implementation Organization(s)

- The Covenant is the primary organization as its signatories represent more than 80% of all packaged retail brands sold in Australia. Those that don't sign the Covenant have to face more rigorous state government regulations, the NEPM.
- The Covenant Council, which oversees its implementation, is comprised of State, Local, and Commonwealth Government and Industry and Community Representatives. They meet quarterly.
- There is also the National Packaging Covenant Industry Association (NPCIA), which is a committee of executive and senior representatives from the major industry associations. The NPCIA is the legal entity that handles the funds, contracts, legal obligations, and reports of the Covenant. They are also responsible for the development and management of the ECoPP.

Scope of Products

- The Covenant is meant to include all used consumer packaging. It takes a very inclusive approach in that it does not outline the specific materials it pertains to, but rather identifies responsible producers and agencies and the overall objectives, which are:
 - Better product design;
 - Increase reduction, re-use, and recycling of used packaging materials;
 - Reduce use of non-recyclable materials;
 - Reduce amount of used packaging materials going to landfill, and;
 - Reduce incidence of packaging being littered.
- Target recycling rates for specific materials are: paper/cardboard 70-80%, glass 50-60%, steel 60-65%, aluminum 70-75%, and plastics 30-35%.

Product Design Incentives

- All signatories must give careful consideration when designing packaging and realize its life-time, environmental effect as well as its recovery, re-use/recycling, and/or final disposal. Signatories are obligated under the Covenant to review and improve their product packaging designs.
- Additionally, under the ECoPP, to which all stewards are obligated whether or not they have signed the Covenant, packaging design must consider source reduction, potential for packaging reuse, recovery and recycling, ability to incorporate recycled content, minimizing impacts of packaging, propensity to become litter, and consumer information.

Market Development

- Signatories are also required to take action (as appropriate) in market development, “to ensure that new product development using recovered materials is accelerated and that inappropriate barriers to the marketing of products with recycled content are removed”
- There is no specific fund for market development; rather, signatories are expected to do this on their own, or in coordination with others through the Covenant Council or National Projects Group.

Funding Mechanism

- Funding between the packaging supply chain and government is a cornerstone in the Covenant’s funding arrangement. The packaging supply chain will aim to raise at least \$3m a year, over five years, as well as increase the signatory numbers. Funds are used for Covenant projects, which includes administrative costs.
- Signatories are responsible for adopting appropriate waste management pricing policies and providing financial and other support to optimize materials recovery systems.
- The packaging supply chain, in co-operation with state and local governments, will also provide financial support for the curbside and other materials recovery systems.

Role of Waste Management Companies

- Government contracted recyclers are additionally responsible for secondary market creation supported for recovered packaging material.
- Australian Council of Recyclers represents the recycling industry, the packaging and paper related members are: Alcoa Australia Rolled Products, AMCOR Paper Recycling, O-I, and Visy Recycling.

Role of Brand Owners

- Companies in the packaging supply chain must implement product stewardship policies and practices towards effective environmental management of packaging throughout its lifecycle.
- Additionally, they must provide financial and information/developmental support for recovery/collection systems as well as design environmentally conscious packaging for safety and packaging reduction. Finally, they are also responsible for adopting and implementing the Environmental Code of Practice for Packaging.

Role of Municipalities

- The Commonwealth, State, Territory, and Local Governments will:
- Determine the appropriate management modeling tools to be used in the development of materials recovery strategies.
- Promote, in co-operation with industry, the provision of resource recovery community education, particularly with regard to the community's role in good practice collection and sorting systems.
- Co-operate in producing reliable data on a national basis on the performance of disposal and materials recovery systems dealing with used consumer packaging that will assist the Covenant Council in its reports.
- Identify and seek to remove barriers to the purchase of recycled content goods and services.
- Ensure that any future industry waste reduction management agreements/plans negotiated by them and involving packaging will conform to this Covenant.
- Implement the NEPM, for those parties who decide against becoming signatories to the Covenant as well as those that fail to comply with Covenant requirements.
- Ensure their policy and strategic frameworks are subject to regulatory impact assessment, including environmental, economic and social analysis.
- Develop consistent and harmonious policies and systems for the management and disposal of used packaging.
- Promote, support and fund market development initiatives.
- Enforce the NEPM in their jurisdictions to discourage industry "free riders".

Local Governments will also be expected to:

- Implement best practices materials recovery systems.
- Make municipal budgets and rates associated with waste disposal and curbside collection systems transparent and available to households and the general community.
- As appropriate, apply variable rate (by volume or weight) charging to domestic waste collection.

Role of Retailers

- Companies in the packaging supply chain must implement product stewardship policies and practices towards effective environmental management of packaging throughout its

lifecycle. Additionally, they must provide financial and information/developmental support for recovery/collection systems as well as design environmentally conscious packaging for safety and packaging reduction. Finally, they are also responsible for adopting and implementing the Environmental Code of Practice for Packaging.

Collection Infrastructure

- The collection of waste will continue to be managed by local governments and/or private companies
- There is no set collection infrastructure, rather the Covenant looks at ways of improving the efficiency of recovery and waste management systems, which include:
 - Recovery and re-use of consumer packaging and related materials from curbside collection and drop-off systems.
 - Recovery of consumer packaging at public places, workplace/commercial premises, and industrial premises.
 - Recovery of consumer packaging, distribution packaging, and related materials throughout the packaging supply chain.
 - Reduction of litter and the impacts of littering consumer packaging.
 - Use of suitable lightweight alternatives single-use plastic bags.
- The Covenant will then create Action Plans and fund projects to improve these systems.

Performance metrics

- Key Performance Indicators (KPIs), Performance Goals, and Overarching Targets are used to analyze and report on the effectiveness of the Covenant. Data will be contributed by the Industry, commonwealth, state and local governments to provide a yearly Covenant Performance Report. Some of this data is required under the NEPM.
- The KPIs used are:
 - Packaging optimized to integrate resource efficiency, maximum resource re-use, product protection, safety, and hygiene considerations.
 - Efficient resource recovery systems for consumer packaging and paper.
 - Consumers able to make informed decisions about consumption, use and disposal of packaging of products.
 - Supply-chain members and other signatories are required to demonstrate how they contributed to the Covenant Performance Goals.
 - All signatories demonstrate continuous improvement in their management of packaging through their individual Action Plans and Annual Reports.

Summary of Program Finances

- Annual costs are estimated at \$750,000 (AUD) per year for the Covenant administration, which also includes the implementation of communication and education programs.

Enforcement/Compliance Issues

- To ensure that the industry signatories of the Covenant are not at a disadvantage in the market relative to those that do not sign, the non-signatories will be regulated under the NEPM to prevent them from free riding.

Citations:

<http://www.pca.org.au/>

<http://www.packagingcovenant.org.au/>

The National Packaging Covenant: Strategic Partnerships in Packaging. <http://www.environment.gov.au/settlements/publications/waste/covenant/pubs/covenant.pdf>

Environmental Code of Practice for Packaging and Guidelines. 25 May 2005. <http://www.pca.org.au/uploads/00439.pdf>

The two tables below are reprinted from the publication Packaging and Packaging Waste Statistics, 1998-2006 published in March 2009 by EUROPEN, the umbrella organization for the various EU producer organizations responsible for packaging recovery under the European Packaging Directive of 1994.

Recycling rates for non-wood packaging

| | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|---------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Austria | 66% | 67% | 71% | 66% | 69% | 67% | 69% | 70% | 72% |
| Belgium | 64% | 61% | 66% | 68% | 72% | 76% | 78% | 78% | 81% |
| Bulgaria | | | | | | | | 35% | 36% |
| Cyprus | | | | | | | 25% | 10% | 25% |
| Czech Rep. | | | | | 31% | 54% | 60% | 63% | 69% |
| Denmark | 50% | 53% | 56% | 57% | 57% | 57% | 56% | 56% | 59% |
| Estonia | | | | | | | 35% | 41% | 48% |
| Finland | 45% | 49% | 50% | 47% | 49% | 52% | 55% | 59% | 67% |
| France | 43% | 49% | 49% | 53% | 51% | 54% | 58% | 60% | 62% |
| Germany | 81% | 81% | 79% | 78% | 81% | 77% | 76% | 74% | 73% |
| Greece | 35% | 34% | 34% | 34% | 33% | 34% | 37% | 41% | 42% |
| Hungary | | | | | 35% | | 43% | 57% | 56% |
| Ireland | 15% | 17% | 19% | 27% | 35% | 45% | 50% | 52% | 52% |
| Italy | 29% | 33% | 39% | 43% | 49% | 49% | 52% | 55% | 55% |
| Latvia | | | | | | | 37% | 43% | 42% |
| Lithuania | | | | | | | 37% | 39% | 41% |
| Luxembourg | 42% | 39% | 45% | 57% | 56% | 62% | 64% | 63% | 61% |
| Malta | | | | | | | | | 10% |
| Netherlands | 62% | 64% | 65% | 60% | 61% | 62% | 62% | 63% | 64% |
| Norway | | | | | | | | | 70% |
| Poland | | | | | | | 30% | 31% | 40% |
| Portugal | 35% | 35% | 32% | 36% | 36% | 37% | 39% | 43% | 50% |
| Romania | | | | | | | | 25% | 33% |
| Slovakia | | | | | | 36% | 38% | 30% | 39% |
| Slovenia | | | | | | | 41% | 51% | 48% |
| Spain | 37% | 39% | 41% | 44% | 44% | 44% | 48% | 51% | 55% |
| Sweden | 75% | 65% | 58% | 63% | 65% | 77% | 67% | 67% | 69% |
| UK | 30% | 36% | 40% | 39% | 42% | 46% | 49% | 54% | 56% |
| EU-27 total | | | | | | | | | 60% |
| EU-15 total | 48% | 51% | 53% | 54% | 56% | 57% | 59% | 61% | 62% |
| EU-NEW total | | | | | | | | | 44% |
| EU-8 total | | | | | | | 37% | 40% | 47% |

Overall rates for recovery other than materials recycling, as reported to the Commission

| | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|-----------------------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------|------------|
| Austria | 5% | 6% | 7% | 9% | 9% | 13% | 16% | 18% | 19% |
| Belgium | 9% | 12% | 8% | 17% | 20% | 18% | 16% | 16% | 15% |
| Bulgaria | | | | | | | | 0% | 0% |
| Cyprus | | | | | | | 0% | 0% | 0% |
| Czech Rep. | | | | | 0% | 8% | 7% | 7% | 5% |
| Denmark | 39% | 39% | 36% | 33% | 36% | 35% | 39% | 38% | 38% |
| Estonia | | | | | | | 1% | 1% | 5% |
| Finland | 11% | 11% | 10% | 15% | 12% | 26% | 28% | 25% | 28% |
| France | 14% | 15% | 15% | 15% | 17% | 16% | 11% | 10% | 9% |
| Germany | 2% | 1% | 3% | 3% | 4% | 16% | 17% | 19% | 23% |
| Greece | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Hungary | | | | | 3% | | 3% | 6% | 2% |
| Ireland | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 3% | 3% |
| Italy | 2% | 3% | 4% | 5% | 5% | 7% | 9% | 11% | 10% |
| Latvia | | | | | | | 1% | 12% | 4% |
| Lithuania | | | | | | | 0% | 0% | 1% |
| Luxembourg | 10% | 4% | 14% | 13% | 5% | 26% | 30% | 25% | 33% |
| Malta | | | | | | | | | 0% |
| Netherlands | 22% | 22% | 19% | 3% | 3% | 34% | 34% | 33% | 29% |
| Norway | | | | | | | | | 19% |
| Poland | | | | | | | 14% | 11% | 11% |
| Portugal | 0% | 0% | 14% | 14% | 14% | 14% | 7% | 7% | 5% |
| Romania | | | | | | | | 2% | 7% |
| Slovakia | | | | | | 11% | 6% | 14% | 3% |
| Slovenia | | | | | | | 9% | 2% | 6% |
| Spain | 4% | 4% | 4% | 6% | 6% | 5% | 6% | 6% | 7% |
| Sweden | 7% | 8% | 8% | 2% | 3% | 29% | 8% | 8% | 23% |
| UK | 4% | 5% | 5% | 6% | 6% | 6% | 6% | 6% | 5% |
| EU-27 average | | | | | | | | | 13% |
| EU-15 average | 6% | 7% | 7% | 7% | 8% | 13% | 12% | 13% | 13% |
| EU-NEW average | | | | | | | | | 7% |
| EU-8 average | | | | | | | 10% | 9% | 8% |

Citation (for tables):

<http://www.europen.be/index.php?action=onderdeel&onderdeel=6&titel=EUROPEN+Publications&categorie=0&item=34&back=%3Faction%3Donderdeel%26onderdeel%3D6%26titel%3DPublications>

Appendix C:

Current solid waste and packaging regulations in Washington

| | | |
|--------|---|--|
| 70.93 | Waste reduction, recycling and model litter control act | |
| 70.94 | Washington clean air act | .743 Related to outdoor burning |
| 70.95 | Solid waste management - reduction and recycling | |
| 70.95A | Pollution control - Municipal bonding | Allows municipalities to issue revenue bonds for pollution control facilities |
| 70.95C | Waste reduction | Office of Waste Reduction established |
| 70.95D | Solid waste incinerator and landfill operators | |
| 70.95E | Hazardous waste fees | Fees collected to implement 70.95C.200 and .040 |
| 70.95F | Labeling of plastics | Requires that plastic bottles carry a number indicating the type of resin it is made of and the recycling symbol. It does not require recycling. |
| 70.95G | Packages containing metals | Prohibits use of toxic heavy metals in packaging |
| 70.132 | Beverage containers | Bans the use of detachable pull rings or tabs on beverage containers. |
| 82.06 | Retail sales tax | RCW 82.08.0282 “...shall not apply to sales of returnable containers for beverages and foods, including but not limited to soft drinks, milk, beer, and mixers. |

