

# Recycling and Reuse: End-of-Life-Vehicles and Extended Producer Responsibility: European Union Directive

The European Union's End of Life Vehicles (ELV) Directive [http://ec.europa.eu/environment/waste/elv\\_index.htm](http://ec.europa.eu/environment/waste/elv_index.htm) (2000/53/EC) to promote recycling and provide incentives for environmentally-friendly vehicle design represents an early application by the European Union (EU) of extended producer responsibility (EPR) principles for the sustainable life cycle management of products.

Important generic elements of EPR include:

- product category or waste stream focus
- standards for competing producers
- assignment of responsibility for life cycle management, including product take-back and phase-out of hazardous materials
- producer flexibility and accountability (e.g., through producer responsibility organizations) in program design and implementation
- transparency for the public (e.g., clear labeling of products)
- performance requirements and deadlines
- regular monitoring and reporting of progress

A major impetus for EPR in Europe has been the shortages of landfill capacity for waste disposal. By encouraging source reduction and recycling, EPR also can reduce energy and materials consumption and reduce toxicity in products. This fact sheet briefly describes the EU ELV Directive and provides examples of related policies for ELVs in Europe and elsewhere. The fact sheet is not comprehensive; rather, it provides a starting point for readers interested in investigating the topic.

## European Union End-of-Life Vehicles Directive

### Summary of the Directive

End-of-life vehicles generate an estimated eight to nine million tons of waste annually in the European Community (EC). The ELV Directive, the first product of the European Commission's priority waste streams program, seeks to prevent pollution and make vehicle dismantling and recycling more environmentally-friendly. Under the Directive, manufacturers must endeavor to reduce the use of hazardous substances when designing and producing vehicles and ensure that most components of vehicles placed on the market after July 1, 2003, do not contain mercury, hexavalent chromium, cadmium, or lead. The ELV Directive emphasizes the importance of increasing the use of recycled materials in vehicle manufacture. In order to identify vehicle components and materials suitable for reuse and recovery and handle these materials safely, the ELV Directive requires that producers use International Organization for Standards (ISO) guidelines for the labeling and identification of vehicle components.

The ELV Directive includes provisions for the collection of end-of-life vehicles and establishes deadlines for material recovery rates. Producers must meet all, or a significant proportion, of costs for collection and recovery measures. EU Member States are required to establish collection systems for end-of-life vehicles and ensure that all vehicles are transferred to authorized treatment facilities through a system of vehicle deregistration based on a certificate of destruction. The last holder of an end-of-life vehicle may dispose of it free of charge ("free

take-back"). Vehicle dismantlers must obtain permits to handle ELVs. Under Annex I of the Directive, storage and treatment of end-of-life vehicles are strictly controlled through de-pollution procedures and designated parts removal requirements – also see Directive 2006/12/EC <http://europa.eu/scadplus/leg/en/lvb/l21197.htm>. Vehicle manufacturers are obligated to compile specific data and report regularly to designated authorities. Member States are required to report to the European Commission on ELV Directive implementation every three years.

### Implementation of the Directive

Although the ELV Directive requires that most of its provisions be transposed into domestic law across the EU by April, 21, 2002, a March 2007 study <http://www.ecologic.de/modules.php?name=News&file=article&sid=2085> commissioned by the European Parliament found that only the Netherlands, Sweden, Germany, and Austria have made substantial progress on ELV implementation. According to the study, complex administrative requirements and reluctance by some Member States to impose additional costs on automakers are among the barriers to implementation. The study cites other difficulties, including: export of used vehicles to countries outside the EU with less stringent disposal laws; the presence of "rogue traders" who buy old vehicles and re-sell scrap metal or other parts without complying with environmental standards; and a general lack of public awareness about the requirements.

Although consumer preference and energy efficiency historically have been more influential factors than life-cycle management of materials in influencing European automobile industry research and development, carmakers increasingly are using design for recycling principles in vehicle manufacturing. The ELV Directive requirements to remove toxic and hazardous substances from vehicles have resulted in international efforts to eliminate their use in vehicle manufacturing. With respect to recycling, the greatest opportunities for increased recovery rates necessary to meet ELV 2015 materials recovery targets may involve polymers, rubber, glass, and electronic components of vehicles. To reach these targets, roughly half of such materials will need to be recoverable. Plastics, which comprise the largest proportion of currently non-recycled materials in vehicles, are a logical focus of research and development efforts directed toward vehicle recycling.

### Country Initiatives

#### Europe

By 2000, ten European countries (Austria, France, Italy, the Netherlands, Portugal, Spain, Sweden and the United Kingdom) had taken steps to address concerns related to end-of life-vehicles. For example:

- **Sweden.** Sweden pioneered policies for vehicle recycling in Europe, enacting its first car scrappage law (a deposit-refund program) in 1975. Sweden replaced this approach in 1997 with its Ordinance on Producer Responsibility, which required manufacturers to accept ELVS free of charge and established a system for their management. EPR requirements in Sweden <http://www.naturvardsverket.se/en/In-English/Menu/Products-and-waste/Waste/Producer-responsibility/> also apply to a number of other consumer products. Between 1999 and 2002, the Swedish automobile industry and its partners undertook Environmental Car Recycling in Scandinavia [http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=home.createPage&s\\_ref=LIFE99%20ENV%2FS%2F000627&area=2&yr=1999&n\\_proj\\_id=807&cfid=615886&cftoken=9524bd1657ba64b1-4296ACA0-D094-91A4-87343BEAAEF045A&mode=print&menu=false](http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=home.createPage&s_ref=LIFE99%20ENV%2FS%2F000627&area=2&yr=1999&n_proj_id=807&cfid=615886&cftoken=9524bd1657ba64b1-4296ACA0-D094-91A4-87343BEAAEF045A&mode=print&menu=false) to develop advanced recycling methods for dismantling and sorting vehicle components.
- **Netherlands.** Auto recycling Nederland (ARN) <http://www.arn.nl/engels/index.php>, established by the Dutch automobile industry, collects all scrap cars and oversees their dismantling and recycling, without cost to the last owner. Financing for this system is

achieved through a waste disposal fee payable as part of vehicle registration. ARN manages vehicle collection and recycling activities by entering into contracts with car dismantling companies and was responsible for recycling 90% of the 234,000 discarded end-of-life vehicles in the Netherlands in 2006.

- United Kingdom (UK). UK ELV requirements <http://www.berr.gov.uk/whatwedo/sectors/sustainability/elv/page30591.html> transpose the EU ELV Directive through regulations passed in 2003 and 2005. The 2003 UK regulations include the use of improved standards for vehicle treatment sites and the establishment of a Certificate of Destruction system. The 2005 regulations require vehicle producers to make available networks of facilities where last owners of vehicle brands may take them free of charge for end-of-life management. CARE <http://www.caregroup.org.uk/> is a collaborative project involving the main UK motor vehicle manufacturers/importers and vehicle dismantlers to research and test materials reuse and recycling processes for reducing the amount of scrapped vehicle waste.

## Asia

- Japan. Under the 2002 ELV Recycling Law <http://www.meti.go.jp/policy/recycle/main/english/law/end.html>, which is based on a “shared responsibility” principle, consumers in Japan pay a fee when they purchase a new car or, for cars sold before the enforcement of the law, at the time of mandated regular inspection. The fee is managed by a third party, the Japan Automobile Recycling Promotion Center (JARC) <http://www.jarc.or.jp/en/recycling/>. An electronic manifest system is used to help ensure that ELVs are properly recycled. Law in Japan also mandates the final disposition of CFCs/HFCs, shredder residue, and airbags from vehicles. The Japan Automobile Manufacturers Association also has established voluntary targets (e.g., see 2006 Toyota progress report [http://findarticles.com/p/articles/mi\\_mORRT/is\\_2006\\_June\\_20/ai\\_n26901854](http://findarticles.com/p/articles/mi_mORRT/is_2006_June_20/ai_n26901854)) to reduce substance of concern in vehicles and achieve recycling goals.
- South Korea. Korea's 2007 Act for Resource Recycling of Electrical and Electronic Equipment and Vehicles <http://www.rsjtechnical.com/WhatisKoreaRoHS.htm> creates a framework to hold producers and importers responsible for their use of resources. The law addresses the use of hazardous substances, recyclability of materials, collection of ELVs, recycling rates, and information exchange through an on-line data base.

## Some U.S. Activities and Additional Resources

There is no federal law governing EPR in the United States. The often-preferred term used in the U.S. for practices related to EPR is “product stewardship” – which calls upon all parties involved a product’s life cycle (i.e., producers, manufacturers, retailers, users, and disposers) to share responsibility for reducing the product’s impacts on the environment. The focus of most product stewardship programs related to vehicles at the national level in the US has been on voluntary measures to address contaminants of particular concern or to further specific recycling goals.

- mercury switches. In 2006 a coalition of federal, State, industry, and environmental nonprofit partners created the National Vehicle Mercury Switch Recovery Program (NVMSRP) <http://www.epa.gov/mercury/switch.htm>, a voluntary effort to promote safe removal of mercury switches from ELVs before they are shredded for recycling. Steel and the auto manufacturers have established a voluntary \$4-million fund to provide incentives for switches returned through the NVMSRP. End of Life Vehicle Solutions (ELVS) <http://www.elvsolutions.org/index.htm>, a national not-for-profit corporation formed by automobile manufacturers, provides educational materials and collects and recycles automotive switches at no cost to dismantlers and recyclers.
- vehicle tires. Policy makers at all levels of government have paid particular attention to issues associated with vehicle tires and have taken actions to support tire recycling and reuse <http://www.epa.gov/osw/conserves/materials/tires/>. At a national level,

these programs include the application of both comprehensive procurement guidelines <http://www.epa.gov/epawaste/conserva/tools/cpg/index.htm> for recycled content products (e.g., retread tires <http://www.epa.gov/epawaste/conserva/tools/cpg/products/retread.htm>) and environmentally--preferable purchasing practices <http://www.epa.gov/opptintr/epp/>.

Although less emphasis has been placed by government in the U.S. on sustainable vehicle design and production than on recycling, life cycle analysis increasingly is an important part of the way US manufacturers develop vehicles. The automobile industry's Vehicle Recycling Partnership [http://www.uscar.org/guest/view\\_team.php?teams\\_id=16](http://www.uscar.org/guest/view_team.php?teams_id=16), formed in 1992 by Ford, Chrysler, and General Motors, is charged with collaborative research and pilot programs to promote integrated and sustainable vehicle recycling practices in North America and globally. A 2006 General Motors corporate responsibility report [http://prod.gm.gmgssm.com/corporate/responsibility/reports/06/400\\_products/6\\_sixty/460.html](http://prod.gm.gmgssm.com/corporate/responsibility/reports/06/400_products/6_sixty/460.html) provides an example of the way life cycle analysis can support sustainability and ELV goals in vehicle design and manufacturing. Ford has teamed with auto manufacturers in Europe and Japan to establish the International Materials Data System [http://www.mdssystem.com/html/en/home\\_en.htm](http://www.mdssystem.com/html/en/home_en.htm), which facilitates reuse and recycling through shared information on materials in vehicles.

A number of States have taken specific actions to prevent pollution associated with mercury in vehicles scrap tires, and lead-acid batteries. The laws for mercury in vehicles include:

- Maine. A Maine law <http://www.newrules.org/environment/mercurymaine.html> effective in 2002 requires automobile manufacturers to pay for the collection and recycling of mercury switches from old cars
- Wisconsin. The Wisconsin Mercury Switch Recycling Program <http://www.dnr.state.wi.us/org/caer/cea/assistance/scrap/switches/index.htm> is a cooperative public-private partnership established in 2001
- New York. New York State law <http://www.dec.ny.gov/chemical/42722.html> requires that shredders and dismantlers remove mercury switches from vehicles prior to processing
- Iowa. The 2006 Iowa <http://www.iowadnr.com/waste/recycling/mercury.html> Mercury Free Recycling Act establishes a program for the recycling of mercury switches removed from end-of-life vehicles, including an incentive payment to vehicle recyclers of \$5 for each switch recovered.

Forty-eight States have laws on the management of scrap tires <http://www.epa.gov/osw/conserva/materials/tires/laws.htm>. Battery Council International has published a summary of State laws for lead-acid batteries: <http://www.batterycouncil.org/LeadAcidBatteries/BatteryRecycling/StateRecyclingLaws/tabid/120/Default.aspx> and provides links for many of these laws <http://www.batterycouncil.org/LeadAcidBatteries/BatteryRecycling/StateLeadAcidBatteryLaws/tabid/121/Default.aspx>.