

Note

The End-of-Life Vehicle (ELV) Directive: The Road to Responsible Disposal

Raymond J. Konz*

The automobile is often seen as a great liberator of personal autonomy and the freedom of mobility.¹ It has been the subject of novels, music, movies, and television shows,² and in most developed nations is seen as a necessity.³ Yet the automobile has come under serious attack for the environmental threats it poses. The focus of this environmental concern, however, is often limited to vehicle emissions. In fact, motor vehicles at the end of their life create other environmental concerns with regard to the proper disposal and treatment of certain materials and substances that, until recently, were simply disposed of in landfills with regular household waste.⁴ In response to the concerns surrounding end-of-life vehicle disposal, the European Union passed the End-of-Life Vehicle Directive.⁵ The Directive

*Raymond J. Konz is a J.D. Candidate at the University of Minnesota Law School.

1. See generally MICHAEL L. BERGER, *THE AUTOMOBILE IN AMERICAN HISTORY AND CULTURE: A REFERENCE GUIDE* 141–274 (Greenwood Press 2001).

2. *Id.*

3. David J. Andrea & Michael S. Flynn, “The Automobile,” *World Book Online Americas Edition* (Jan. 10, 2002), available at <http://www.aolsvc.worldbook.aol.com/wbol/wbPage/na/ar/co/039020>.

4. Staudinger et al., *Management of End-of-life Vehicles (ELVs) in the U.S.*, CENTER FOR SUSTAINABLE SYS., REP. NO. CSS01-01 at 21. An example of such improper disposal is that of motor oil, one liter of which has the “potential to contaminate up to 1 million liters of water.” DEPT OF THE ENV'T AND HERITAGE, ENV'T AUSTL., *ENVIRONMENTAL IMPACT OF END-OF-LIFE VEHICLES: AN INFORMATION PAPER* 8:39 (2001), available at <http://www.environment.gov.au/settlements/publications/waste/elv/impact-2002/pubs/elv.pdf>.

5. Council Directive 2000/53/EC, art. 4, 2000 O.J. (L 269) 34.

creates standards and targets which actors, including political and economic ones, must comply with, and which individual Member States must transpose into law within their respective borders.⁶

The United States has adopted a markedly different approach.⁷ No national regulation exists for the disposal of automotive waste. Instead, individual States are free to adopt inconsistent regulations, or forego regulation altogether.⁸ Without regulated treatment procedures, ELV disposal facilities in many States are free to irresponsibly dispose of ELV waste that does not create potential revenue.⁹ While the EU ELV Directive has a number of shortcomings, it should serve as an initial model for uniform, federally mandated ELV disposal legislation, dictating the means for responsible recycling, reuse, treatment, and ultimate disposal of automotive waste arising at the end of a vehicle's useful life.

Section I of this Note examines the background of ELV recycling. It discusses the development of Extended Producer Responsibility (EPR) and explores the EU ELV Directive and its provisions. Section II discusses the relevance of ELV disposal, criticizes various parts of the EU ELV Directive, and explores the success of the Directive. Section III examines the feasibility of adopting an EPR-style ELV system in the United States. The Note concludes that while the EU ELV Directive is problematic in some regards, a national EPR system of automotive waste disposal is possible in the United States, and because no national uniformity exists, such regulation is needed.

6. *Id.*

7. See Bill Sheehan & Helen Spiegelman, *Extended Producer Responsibility Policies in the United States and Canada: History and Status*, in GOVERNANCE OF INTEGRATED PRODUCT POLICY: IN SEARCH OF SUSTAINABLE PRODUCTION AND CONSUMPTION 202, 215 (Dirk Scheer & Frieder Rubik, eds., Greenleaf Publishing Ltd., 2005).

8. "In the absence of a uniform, national regulatory policy, advertisers faced a bewildering array of inconsistent state laws which would make it very difficult, if not impossible, to make environmental claims on a national basis." *Letter from Joan Z. Bernstein, Fed. Trade Comm'n, to Michael J. Machado* (April 7, 1997) (quoting the Association of National Advertisers), available at <http://www.ftc.gov/be/v970003.shtm>.

9. See generally *id.*

I. BACKGROUND

A. THE RECYCLING MOVEMENT AND EXTENDED PRODUCER RESPONSIBILITY

Reclamation of products like steel and iron had been profitable for centuries, but interest in recycling non-ferrous materials increased dramatically in the 1960s and 1970s.¹⁰ While recycling had been practiced for decades, the 1987 Marbo 4000 garbage-barge odyssey brought public attention to the problems of shrinking landfill space and the costs of waste management.¹¹ In the United States, the Environmental Protection Agency responded by setting a target of a 25% reduction in municipal trash by 1993, and many states implemented curbside recycling and public education programs.¹²

The response in other parts of the world was Extended Producer Responsibility.¹³ The basic premise of EPR is that a “producer’s responsibility for a product is extended to the post-consumer stage of a product’s life.”¹⁴ EPR seeks to provide an incentive for more environmentally friendly design and promote the effective collection, recycling, reuse, and disposal of waste.¹⁵ These objectives are accomplished using four distinct types of legal liability.¹⁶ First, economic responsibility requires

10. See, e.g. Sheehan & Spiegelman, *supra* note 7, at 213.

11. See John Tierney, *Recycling is Garbage*, N.Y. TIMES, Jun 30, 1996, § 6, at 24. In 1987, a barge filled with 3,100 tons of garbage left New York for North Carolina, only to be turned away. The waste was finally incinerated after remaining afloat for more than 5 months, at a cost of \$6,000 a day. Heather P. Benke et al., Note, *Recycling: Anything But Garbage*, 5 BUFF. ENVTL. L.J. 101, 104–05 (1997). Most of Europe had similar projections for landfill shortages.

12. Tierney, *supra* note 11, at 27. By 1995, curbside recycling programs had increased from 2 in 1970 to 7,000. Benke et al., *supra* note 11.

13. See generally Barbara DeWulf et al., *Overview of Extended Producer Responsibility (EPR)*, available at www.betterregwaste.org/docs/overview_EPR_ENG.pdf (last visited Oct. 3, 2008).

14. *Id.*

15. CHRIS VAN ROSSEM ET AL., EXTENDED PRODUCER RESPONSIBILITY: AN EXAMINATION OF ITS IMPACT ON INNOVATION AND GREENING PRODUCTS: REPORT COMMISSIONED BY GREENPEACE INTERNATIONAL, FRIENDS OF THE EARTH, AND THE EUROPEAN ENVIRONMENTAL BUREAU II (Sep. 2006).

16. Noah Sachs, *Planning the Funeral at Birth: Extended Producer Responsibility in the European Union and the United States*, 30 HARV. ENVTL. L. REV. 51, 62–63 (2006).

manufacturers to pay all or some of the costs of disposal of the product.¹⁷ Second, physical responsibility forces manufacturers to take physical possession of end-of-life products.¹⁸ Third, information responsibility encompasses such acts as labeling products to ease later waste management.¹⁹ Lastly, liability may be imposed for environmental damage and clean-up efforts following improper disposal of the product in question.²⁰ These different forms of responsibility can be further categorized into a collective duty (where all members of a manufacturing class share responsibility), or individual duty (where each manufacturer is only responsible for the product it produces).²¹

One of the earliest and most important implementations of EPR took place in Germany in 1991. ‘Verpackungsverordnung’²² created fixed obligatory rates for the recycling of waste packaging, and imposed physical and collective take-back obligations for producers.²³ In response to concerns voiced by producers, France created its “eco-packaging model,” in which local authorities remained primarily responsible for waste collection, “green dot” fees capped at a few cents were applied to packaging, and financial obligations were only imposed for the extra cost of creating collection systems.²⁴ Collection for these systems could be achieved either by eco-bodies or Producer Responsibility Organizations (PROs), private, semi-private, or government-created entities which would assume partial or complete responsibility on behalf of the producer.²⁵

While Europe may be credited with development of the EPR system, it is not alone in its implementation. Japan, for

17. *Id.* This is the most common form of EPR.

18. *Id.* These types of program face potentially exorbitant logistical challenges.

19. *Id.* Dissemination of critical product information could also facilitate customer informed decision making. See James Salzman, *Sustainable Consumption and the Law*, 27 ENVTL. L. 1243, 1263–66 (1997).

20. Sachs, *supra* note 16.

21. See Michael W. Toffel et al., *Extended Producer Responsibility: An Evaluation Framework for Product Take-Back Policies* 13–16 (Harv. Bus. Sch. Working Paper, Paper No. 09-026); see also ROSSEM ET AL., *supra* note 15, at vii–viii.

22. This term translates to “packaging ordinance.” Dict.cc, English-German dictionary, *available at* <http://www.dict.cc/german-english/Verpackungsverordnung.html>.

23. DeWulf et al., *supra* note 13, at 4.

24. *Id.* at 4–5.

25. *Id.* Numerous factors could affect the cost to producers of utilizing one of these systems. For example, a collective duty, where no sorting by brand name is required, may prove cheaper, but would not allow the producer to capitalize on its environmental design innovations. See generally Toffel et al., *supra* note 21.

example, has adopted laws and waste management policies that adhere to the “producer pays” mentality, and have made considerable capital investments in its future success.²⁶ While the Federal Government of the United States imposes no take-back requirements,²⁷ several states, including Connecticut, Maine, Minnesota, North Carolina, Oregon, Texas, and Washington, have implemented take-back requirements for certain electronic waste, mercury switches, waste oil, lead acid batteries, and tires.²⁸ Even China has a limited form of EPR, albeit voluntary.²⁹

B. THE END OF LIFE VEHICLES DIRECTIVE³⁰

It has been estimated that there are 600 million cars in the world, with 49,886,549 being produced in 2006 alone.³¹ The median age of automobiles in the United States was 9.2 years in 2007,³² while the average age of automobiles in Japan is only about 6.6 years.³³ In the EU, automobile ownership in the original member countries (EU-15) is rather high, and the fleet tends to be relatively new.³⁴ In newer Member States (EU-10),

26. See generally Yasuhiko Ogushi & Milind Kandlikar, *Assessing Extended Producer Responsibility Laws in Japan*, 41 ENVTL. SCI. & TECH. 4501, 4501–08 (2007). See also Toffel et al., *supra* note 21, at 4.

27. See Megan Short, Note, *Taking Back the Trash: Comparing European Extended Producer Responsibility and Take-Back Liability to U.S. Environmental Policy and Attitudes*, 37 VAND. J. TRANSNAT'L L. 1217, 1220 (2004).

28. Toffel et al., *supra* note 21, at 5; Andrew Bockis, Note, *Do You Feel the Breeze? Why the Window of Opportunity to Enact Meaningful Mercury Switch Removal Legislation is Opening . . . and Closing*, 14 PENN ST. ENVTL. L. REV. 85, 92–106 (2005) (discussing Maine's \$3 bounty on recovered mercury switches and resulting litigation); see, e.g., WIS. STAT. ANN. § 283.25 (2008); PA. STAT. ANN. § 4000.1510 (2008); MINN. STAT. ANN. § 325E.32 (2008). Nearly every state and the District of Columbia have some type of oil recycling program. Short, *supra* note 277, at 1226.

29. See George Gao, *China to Issue New Standards of ELV Recycling in 2008*, Gasgoo.com (June 30, 2008), <http://www.gasgoo.com/auto-news/6899/China-to-issue-new-standards-of-ELV-recycling-in-2008.html>.

30. Council Directive 2000/53/EC, *supra* note 5, art. 4.

31. Worldometers, Cars Produced This Year, <http://www.worldometers.info/cars/> (last visited Mar. 8, 2009). The number of cars produced in 2008 was 52,940,559.

32. Viknesh Vijayenthiran, *Average Age of Cars in U.S. Increases*, Motor Authority (Feb. 22, 2008), <http://www.motorauthority.com/average-age-of-cars-in-us-increases.html>.

33. Asia Pulse News, *Japan's Average Car Age up to Record 6.6 Years* (Nov. 16, 2004), http://goliath.ecnext.com/coms2/gi_0199-2785611/JAPAN-S-AVERAGE-CAR-AGE.html.

34. Malcolm Fergusson, *End of Life Vehicles (ELV) Directive: An Assessment of*

vehicle ownership tends to be significantly lower, and the fleet tends to much older.³⁵

While the life cycle of ELVs may not be homogenous, it is not uncommon for a non-functional vehicle to first be sent to some form of dismantler, who will remove valuable parts and then send the remaining "hulk" to a shredder, which will "hammer mill" what remains of the ELV into fist-sized chunks.³⁶ A competitive market exists for metal components, but it is estimated that steel and other valuable metals make up only around 65-75% of ELVs by weight.³⁷ Valuable non-ferrous materials, such as aluminum and zinc alloys, are often removed by post-shredder operations,³⁸ but the remaining Auto Shredder Residue (ASR or "fluff," which consists largely of plastics, glass, rubber, foams, and textiles) is generally worthless, and is traditionally land-filled.³⁹ The environmental burdens associated with this traditional approach to ELV waste management include, but are not limited to, loss of land fill space, contamination of soil from operating fluids, leaching of mercury and other heavy metals, airborne contamination associated with the shredding process, and fire risk, for example from stockpiled tires.⁴⁰

In response to these concerns, the European Union passed the End-of-Life Vehicles Directive on September 18, 2000.⁴¹ In the mid 1990s, national governments pressured automobile manufacturers to voluntarily achieve higher recycling and

*the Current State of Implementation by Member States, I/A/ENVI/FWC/2006-172/Lot 1/C1/SC1 at 57 (Mar. 2007), available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:2000L0053:20050701:EN:PDF> [hereinafter *ELV Directive: An Assessment*].*

35. *Id.* This may be partially explained by the lucrative export of older vehicles from more industrious and wealthy EU-15 to less economically developed EU-10 States. In the Czech Republic, the average car aged reached 13.94 years in 2007. *Second Hand Car Imports Restricted by Prague*, THE EUROPEAN WEEKLY: NEW EUROPE (May 19, 2008), available at <http://www.neurope.eu/articles/86821.php> [hereinafter *Second Hand Car*].

36. See C. Edwards et al., *Implications of the End-of-life Vehicles Directive on the Vehicle Recovery Sector*, 220 J. ENG'G MFG. 1211, 1213 (2006); Staudinger et al., *supra* note 4, at 15-20.

37. DEPT OF THE ENV'T AND HERITAGE, ENV'T AUSTL., *supra* note 4, at 2:4.

38. Staudinger et al., *supra* note 4, at 19.

39. *Id.* at 18, 20. It is estimated that ASR accounts for almost 2% of all land fill material in the United States, and in 2001, .03% of all waste generated in the United Kingdom. DEPT OF THE ENV'T AND HERITAGE, ENV'T AUSTL., *supra* note 4, at 8:37.

40. See Staudinger et al., *supra* note 4, at 21.

41. Council Directive 2000/53/EC, *supra* note 5, art. 4.

recovery rates, but the varying levels of commitments in different Member States incentivized the creation of harmonized automotive recycling procedures.⁴²

In terms of structure, the EU ELV Directive can be broken down into six basic parts: (1) prevention,⁴³ (2) collection,⁴⁴ (3) reuse and recover targets,⁴⁵ (4) treatment,⁴⁶ (5) information gathering and dissemination,⁴⁷ and (6) implementation.⁴⁸ In Article 4, Member States are directed to encourage producers to limit the use of hazardous substances, take into account and facilitate the dismantling, reuse, and recovery of end-of-life vehicles, and to increase the integration of recycled materials into the production of new vehicles.⁴⁹ Article 5 collection provisions create responsibility for both the consumer and producer.⁵⁰ The consumer, in order to deregister their vehicle, must obtain a "certificate of destruction," which certifies that their ELV was brought to an Authorized Treatment Facility (ATF).⁵¹ The Directive states that measures should be taken by Member States to ensure free take-back.⁵² The producer is responsible for all or some of the cost of implementation of the collection systems.⁵³

Article 6 dictates to ATFs that ELVs shall be stored in an environmentally sound way, stripped before further treatment, with special attention being given to hazardous materials and components, and that components shall be removed so as to ensure reusability.⁵⁴ Article 7 provides that by January 1, 2006 the reuse and recovery of End-of-Life Vehicles shall be a

42. Wolfgang A. Reinhardt, *Drive Towards Compliance: Recycling End-of-Life Vehicles in an Enlarged EU*, Waste Management World (July 2, 2005), http://www.waste-management-world.com/articles/article_display.cfm?ARTICLE_ID=273139&p=123.

43. Council Directive 2000/53/EC, *supra* note 5, art. 4.

44. *Id.* art. 5.

45. *Id.* art. 7.

46. *Id.* art. 6.

47. *Id.* art. 9.

48. *Id.* art. 10.

49. *Id.* art. 4. The Directive also sets targets for the elimination of use of such substances as lead and mercury, and provides guidelines in Annex II. *Id.*

50. *See id.* art. 5.

51. *Id.*

52. *Id.* However, the Member State may provide that take-back is not free if essential components are not contained in the ELV. *Id.*

53. *Id.* art. 10. It is worth noting that the Directive strongly encourages creating systems for collection of waste used parts removed when an automobile is repaired. *Id.*

54. *Id.* art. 6. Article 6 also provides for yearly inspections. *Id.*

minimum of 85%, or 80% reuse and recycling, and by January 1, 2015, those targets will be increased to 95% and 85%, respectively.⁵⁵ Articles 8 and 9 relate to information and disclosure. Article 8 provides for code standards and dismantling information to be provided by the producer.⁵⁶ Article 9 instructs Member States to provide the Commission with a progress report, and also instructs relevant economic operators to publish information with regard to design changes, development of procedures, and progress achieved.⁵⁷ Article 10 provides that all Member States shall transpose the Directive by April 21, 2002.⁵⁸ The EU ELV Directive was amended three times to allow extension of the use of certain hazardous substances⁵⁹ and to empower the Commission to amend certain requirements and rules.⁶⁰

End-of-life vehicle disposal is not dictated by the ELV Directive alone, however. The Waste Electrical and Electronic Equipment (WEEE) Directive, for example, provides guidelines for electronics waste disposal.⁶¹ The Directive on Restriction of Use of Certain Hazardous Substances (RoHS) bars use of materials like lead, mercury, and cadmium in the production of electrical and electronic equipment.⁶² Furthermore, the REACH regulation dictates the proper handling and disposal of certain chemical substances.⁶³ These legislative acts are relevant to end of life vehicles because ELVs contain both electronic equipment

55. *Id.* art. 7. There is an exception for vehicles produced before January 1, 1980. For those vehicles, targets should not be lower than 75% for reuse and recovery, 70% for reuse and recycling. *Id.*

56. *Id.* art. 8. These measures should avoid undermining confidentiality regarding trade secrets and other privileged information. *Id.*

57. *Id.* art. 9.

58. *Id.* art. 10.

59. Council Decision 2005/673, 2005 O.J. (L 254) 69 (EC) (amending Annex II of Directive 2000/53/EC); Commission Decision 2002/525, 2002 O.J. (L 170) 81 (amending Annex II of Directive 2000/53/EC).

60. Council Directive 2008/33, 2008 O.J. (L 81) 62. This amendment also changed some of the wording of the original ELV Directive. *Id.* art. 1.

61. Council Directive 2002/95, 2003 O.J. (L 37) 19 (EC); see Brady et al., *Extended Producer Responsibility, Integrated Product Policy and Market Development: Lessons from Europe and the U.S.*, http://www.fivewinds.com/uploadedfiles_shared/CRUISE.pdf; see generally Phoenix Pak, *Haste Makes E-Waste: A Comparative Analysis of How the United States Should Approach the Growing E-Waste Threat*, 16 CARDOZO J. INT'L & COMP. L. 241 (2008).

62. Council Directive 2002/95/EC, *supra* note 61, art. 4.

63. See Council Regulation 1907/2006, 2006 O.J. (L 396) 10 (EC).

and hazardous operating fluids.⁶⁴ The EU also promulgated a Landfill Directive that dictates the composition of landfill waste.⁶⁵ Like the Landfill Directive, the ELV Directive is subject, at least in principle, to the Waste Framework Directive.⁶⁶

II. ANALYSIS

The United States Council for Automotive Research (USCAR)⁶⁷ has recently claimed that 84% of every automobile recovered in the United States is recycled.⁶⁸ This statistic may create the impression that automotive scrap recycling is a dead issue.⁶⁹ However, while the landfill crisis of the early and mid-1990s has been largely averted in the United States,⁷⁰ the limited availability of landfill space in other countries requires reductions in all land-filled wastes, including those arising from ELVs.⁷¹ Furthermore, modern landfills, while commonly lined

64. See generally T.P. NEWCOMB & R.T. SPURR, A TECHNICAL HISTORY OF THE MOTOR CAR 68 (IOP 1989).

65. See Maria Lee, *Implementation of the Landfill Directive and the End-of-Life Vehicles Directive in England*, 235, 238–39, in SCIENTIFIC EVIDENCE IN EUROPEAN RULE-MAKING: THE CASE OF THE LANDFILL AND END-OF-LIFE VEHICLES DIRECTIVES (Andrea Biondi, et al., eds., Kluwer Law International 2003).

66. *Id.* at 239. This Directive requires Member States to promulgate a licensing system, under which “permits are required by anybody who wishes to carry out disposal or recovery operations on waste.” *Id.* at 235–36.

67. USCAR is “the umbrella organization for collaborative research among” the Big Three American auto manufacturers. Press Release, USCAR’s VRP Contracts with ECO2 Plastics to Explore ‘Rinse and Recycling’ Applications (June 25, 2007), http://www.uscar.org/guest/article_view.php?articles_id+146 [hereinafter USCAR’s VRP Contracts]. The Vehicle Recycling Partnership (VRP), managed by USCAR, “addresses shared technology and environmental concerns related to sustainable and environmentally friendly vehicle recycling practices.” *Id.*

68. *Id.* Arguably, USCAR has an incentive to inflate the relative success of recycling programs thus far, as they are essentially the voice of the Big Three auto manufacturers in the United States.

69. It is important to note that the automotive recycling in the United States is generally more complete than in other countries. See, e.g., Edwards et al., *supra* note 36, at 1213 (explaining that in the United Kingdom in 2006, only 79% of ELVs by weight were being *recovered*, let alone recycled).

70. In the United States, privatization opened landfill space that was not available under municipal programs. See generally NAT’L CTR. FOR POLICY ANALYSIS, AFTER PRIVATIZATION, LANDFILL CRISIS DISAPPEARED, <http://www.ncpa.org/pd/private/pd091200c.html> (last visited Jan. 26, 2009).

71. See Lee, *supra* note 65, at 237 (noting that there are indications that the UK is running out of landfill space); see, e.g., Joe Turner, *Britain, the Dustbin of Europe, is Running Out of Landfill Space*, Celsias.com (Feb. 25, 2008), available at <http://www.celsias.com/article/britain-the-dustbin-of-europe-is-running-out-of-la/>;

with clay and plastic to create an impermeable barrier for protection against leaching of harmful substances⁷² may still create environmental risks,⁷³ and as a logistical matter, the costs of repairing landfill leachate collection systems after the fact would probably be substantial.⁷⁴ By analyzing the successes and failures of the EU ELV Directive, countries without a cohesive ELV disposal system, such as the United States, can determine the need for such a system and design regulations that provide the benefits of an EU styled ELV system while avoiding its shortcomings.

A. CRITICISMS OF THE EU ELV DIRECTIVE

The EU ELV Directive raises concerns about fiscal capability, enforcement, and exploitive behavior. A lesson drawn from the use of catalytic converters was that “technology-forcing regulation may sometimes be successful but that it will always remain a risky strategy.”⁷⁵ This sentiment applies to the EU ELV Directive. While the Directive has been successful in a number of key areas, it has also had its share of relative failure, and several risks still threaten to jeopardize future targets and the continued viability of the European automotive recycling model.

One of the ELV Directives biggest initial hurdles was the transposition of its provisions by Member States of the

Jim Bender, *Italy Runs Out of Landfill Space: PM Prodi of Italy Orders Schools to Re-Open Despite Mountains of Garbage*, Woodstock Ont. Indep. News (Jan. 7, 2008), available at <http://jimbenderoxford.blogspot.com/2008/01/italy-runs-out-of-landfill-space.html>. Because landfill space is at a premium, “heavy emphasis is placed on the efficient management of” ELVs in Europe and Japan. Vishesh Kumar & John W. Sutherland, *Sustainability of the Automotive Recycling Infrastructure: Review of Current Research and Identification of Future Challenges*, 1 INT. J. SUSTAINABLE MANUFACTURING 145, 146 (2008).

72. See JOYCE MUNIE, ILL. ENVTL. PROT. AGENCY, *A STUDY OF THE MERITS AND EFFECTIVENESS OF ALTERNATE LINER SYSTEMS AT ILLINOIS LANDFILLS 2* (Jan. 2003), <http://www.epa.state.il.us/land/regulatory-programs/permits-and-management/alternate-landfill-liner-study/alternate-landfill-liner-study.pdf>.

73. See generally *id.*

74. See *id.* at 10. While the removal of operating fluids is commonly performed, a lack of supervision may allow many hazardous chemicals and substances to make their way into landfills. See DEP'T OF THE ENV'T AND HERITAGE, ENV'T AUSTL., *supra* note 4, at 10:48–9.

75. ONNO KUIK, ENVIRONMENTAL INNOVATION DYNAMICS IN THE AUTOMOTIVE INDUSTRY: A CASE STUDY IN THE FRAMEWORK OF THE PROJECT ‘ASSESSING INNOVATION DYNAMICS INDUCED BY ENVIRONMENTAL POLICY’, report commissioned by the European Commission, DG Environment, at 17 (Nov. 3, 2006), http://ec.europa.eu/environment/enveco/policy/pdf/2007_automotive.pdf.

European Union. As noted by Professor Eric Stein:

In the context of company law, the Directive has become a rather controversial device. On the one hand, it has the advantage of being less rigid than uniform law in that it often allows states to maintain stricter requirements and other peculiarly national idiosyncrasies as long as they meet the prescribed minimum standard, and it also gives national parliaments a choice of the legal form of implementation into domestic law. In reality, however, most rules, as in the first Directive for example, are so detailed as to leave national parliaments little leeway, if any. This has been the cause of some irritation among the parliamentarians; yet the Directive as a whole fails to achieve the advantages inherent in a truly uniform law.⁷⁶

The ELV Directive could serve as a model for these concerns. It lists specific targets and minimum requirements for certain economic actors,⁷⁷ but fails to take into account varying abilities to comply.⁷⁸ This has been reflected by the failure of many Member States to accomplish transposition of the Directive into law by April 21, 2002.⁷⁹ For example, Ireland did not transpose the Directive until 2006.⁸⁰ Moreover, many countries were forced to make adjustments to their legislation.⁸¹ Non-compliance with this first task of the Directive undoubtedly creates credibility issues; if a Member State cannot even transpose the law, one could reasonably question whether that state can implement it.⁸²

Another concern is that the Directive, by its very nature,

76. Eric Stein, *Harmonization of European Company Laws*, 37 LAW & CONTEMP. PROB. 318, 325–26 (1972).

77. Council Directive 2000/53/EC, *supra* note 5, art. 4.

78. For example, the small number of countries that already had a “good level of resource, effective administrative systems, and early experience of operating a highly regulated system of car disposal, have been able to implement the Directive relatively smoothly.” *ELV Directive: An Assessment*, *supra* note 34, at v. Many others have experienced significant delays. *Id.*

79. *See generally id.* In fact, all of the EU-15 Member States failed to meet this first deadline. Reinhardt, *supra* note 42.

80. *ELV Directive: An Assessment*, *supra* note 34, at 59.

81. *Id.* Even the Netherlands, where introduction of the system was mellifluous by comparison, suffered legal proceedings, albeit on technical points. *Id.*

82. For example, sentiments such as “[e]xamining the objectives of the ELV Directive and comparing them with the reality . . . suggests that the ELV Directive has not really met its expectations and needs adjustment and ‘clearing up’ to overcome the obstacles to progress” suggest that the credibility of the Directive is strained. Reinhardt, *supra* note **Error! Bookmark not defined.** In fact, the ELV Directive demonstrates a lack of concern for the ability of countries with less infrastructure and resources to implement the provisions, evincing a disregard for these countries in favor of more established Member States. Such a hypothesis, however, is beyond the scope of this Note.

does not provide resources for the implementation of the ELV Directive, but rather thrusts the responsibility on the Member State to create and implement the Directive's provisions within its respective borders.⁸³ Particularly in countries with limited governmental resources, the ELV Directive arguably takes resources away from other national expenditures.⁸⁴ For example, the monitoring of authorized treatment facilities' procedures⁸⁵ diverts at least some law enforcement resources away from other forms of crime prevention.⁸⁶

Fiscal problems are not limited to Member State governments. Manufacturers, for example, face a number of risks regarding their ability to comply with their responsibilities.⁸⁷ Because the ELV Directive takes advantage of steel reclamation markets that have existed for decades,⁸⁸ its success depends partly on market prices for various recycled materials.⁸⁹ For example, the current financial crisis is bound to have negative effects on these markets,⁹⁰ as the automotive

83. See EEC Treaty, art. 189, reprinted in ERIC STEIN ET AL., EUROPEAN COMMUNITY LAW AND INSTITUTIONS IN PERSPECTIVE: TEXT, CASES AND READINGS 33 (2nd ed., Bobbs-Merrill Co., Inc. 1976) (1967) ("A directive shall be binding, as to the result to be achieved, upon each Member State to which it is addressed, but shall leave to the national authorities the choice of form and method."). This is, of course, without regard to the responsibilities of automotive manufacturers, which is an issue in and of itself.

84. These resources include not only money, but the time and attention of law makers, political and economic actors, and regulatory entities in general. However, once implementation is achieved, far less capital, at least in theory, will come from the Member State, and more from the actual producer.

85. See Council Directive 2000/53/EC, *supra* note 5, art. 6.

86. See Reinhardt, *supra* note 42, at n. 5 (hypothesizing that resources spent on ELV Directive enforcement could be seen as 'waste'). However, although the Directive does not specify how thorough an inspection should be, it is entirely possible that the monitoring of ATFs would not require many resources at all, especially if conducted infrequently.

87. See *generally Managing Your Recycling Responsibilities*, THE MARSH TOPIC LETTER No. 17 (Marsh Ltd., London, England 2004), available at http://www.marsh.co.uk/media/Recycling_TL_04.pdf.

88. See *generally* DEP'T OF THE ENV'T AND HERITAGE, ENV'T AUSTL., *supra* note 4. That is to say that the ready market and infrastructure for metal reclamation has acted as a starting point for the creation of markets and infrastructure for other recyclable automotive waste.

89. See *Managing Your Recycling Responsibilities*, *supra* note 87, at 3-4. Markets for newly recyclable materials (such as plastics and rubber) are more vulnerable than the reclaimed steel markets to which they relate. Because these markets and the technologies they necessitate are so new, they may be more vulnerable to fluctuations than venerable recycled metal markets.

90. See, e.g., Nick Mann, *Warning of "Dramatic" Increase of Abandoned Cars*, Lets Recycle.com (Oct. 29, 2008),

industry is already facing an enduring sales slump, which reduces demand for raw materials without necessarily reducing the supply of ELVs.⁹¹ This means automotive producers are still responsible for the management costs of ELV disposal, but are not able to offset these costs with sales of new cars. An idiosyncratic characteristic of EPR waste management is that because the cost of a product's disposal will not be realized until the end of its useful life, producers run the risk of underestimating those costs.⁹² Processors also have these risks, but in addition, must contend with the possibility that future design changes will render existing procedures or standards either costly or obsolete.⁹³ Furthermore, the ELV Directive may necessitate large scale operations, which could face significant licensing problems, as they will likely be unattractive to local communities.⁹⁴

The financial risks of automotive manufacturers are exacerbated by inconsistent legislation among Member States. The ELV Directive was promulgated in part to harmonize automotive waste management across the EU.⁹⁵ Yet, by its nature, the Directive only supplies a minimum standard for compliance; each Member State is free to add additional provisions and regulations to its transposition.⁹⁶ A manufacturer may incur enormous expenses in an attempt to

http://www.letsrecycle.com/do/ecco.py/view_item?listid=37&listcatid=217&listitemid=10584 (explaining that falling metal prices could trigger irresponsible ELV disposal).

91. See Bukk Vlasik & Nicj Bunkley, *Tighter Credit Only Adds to Auto Industry's Troubles*, N.Y. TIMES, Sep. 30, 2008, at C1. Because of the unavailability of credit, car dealers in the United States cannot even sell to customers who otherwise want to buy. *Id.* The effect of the credit crisis is not limited to U.S. markets. See generally Kenneth Anderson, *The Credit Crisis is not Limited to the U.S.*, OPINIO JURIS (Sep. 27, 2008), <http://opiniojuris.org/2008/09/22/the-credit-crisis-is-not-limited-to-the-us/>.

92. See *Managing Your Recycling Responsibilities*, *supra* note 87, at 4. Most producers, however, are sufficiently risk-averse to regard those costs as too high, and emerging technologies are more likely to reduce future recycling costs. On the other hand, if market values of recycled materials are lower than expected at the time of ELV disposal, they will not be able to offset the costs of material reclamation.

93. *Id.* at 5–6.

94. Lee, *supra* note 65, at 267.

95. See Reinhardt, *supra* note 42.

96. See EEC Treaty, *supra* note 83, art. 189. In a number of countries, the national commitment to compliance with environmental standards is questionable, partially because they consider economic considerations superior to environmental ones. Clifford Rechtschaffen, *Shining the Spotlight on European Union Environmental Compliance*, 24 PACE ENVTL. L. REV., 161, 163 (2006).

ensure compliance with the regulations of 27 different Member States.⁹⁷ These costs translate into increased costs to consumers.⁹⁸

Financial risks are not the only issue arising from the ELV Directive. A particularly controversial quagmire is the take-back provision,⁹⁹ which makes Member States and producers responsible for collecting ELVs at no cost to the last consumer.¹⁰⁰ The take back and disposal of vehicles produced before the implementation the ELV Directive is problematic,¹⁰¹ partially because manufacturers cannot yet reap the benefits of design improvements in currently produced models to offset the costs of disposal of older models, but mostly because the Directive implicates “cars that were built up to 15 years ago. These were built with materials according to legislation in force at the time. Manufacturers were not building cars in accordance with legislation compelling them to recycle.”¹⁰² Ex post facto application of the Directive implicates legal uncertainty as to manufacturer and treatment facilities’ ability to responsibly treat materials that were never intended to be recycled. In addition, many Member States have instituted collective take backs.¹⁰³ Collective take-back duties are problematic because

97. See generally *Managing Your Recycling Responsibilities*, *supra* note 87. Of course, the ELV Directive provides a baseline, so that if a producer is in compliance with its basic principles, it will likely be in compliance with most transposed forms of it. Furthermore, a study of the current state of implementation suggests that most Member States’ transposed versions do not significantly differ from one another, and many of the differences that do exist are continuations of laws or policies that predate the Directive. *ELV Directive: An Assessment*, *supra* note 34, at 57–58.

98. See DeWulf et al., *supra* note 13, at 6.

99. *ELV Directive: An Assessment*, *supra* note 34, at 5.

100. Council Directive 2000/53/EC, *supra* note 5, art. 5.

101. The Directive does not indicate where funding for disposal during the transitional period of 2002-2007 will come from. *Id.*

102. *End-of-Life Vehicles Directive “Threatens European Car Industry”*, EDIE (June 2, 2000), http://www.edie.net/news/news_story.asp?id=2789&channel=0 (quoting Thierry Proteau, European Automobile Manufacturers Association’s spokesperson).

103. See, e.g., *ELV Regulation Implemented from 1 January 2007* (Feb. 1, 2007), <http://www.morethanwaste.com/Site/Default.aspx/A01D2C5F7F8A2DEBECE1>.

This could be a relative necessity; an object as large as an automobile requires fairly complicated collection procedures. An individual duty would necessitate either that each auto-maker retrieves the ELV from the location the last owner left it, or restrictions on the last owners requiring them to bring their vehicle only to a specified location. The costs associated with either would undoubtedly be significantly greater than that of a collective system. See Sachs, *supra* note 16, at 77.

they remove much of the incentive for environmentally beneficial design improvements.¹⁰⁴ A collective duty means that design improvements that facilitate greater recyclability will not directly benefit the producer who implements those improvements to the exclusion of others, further agitating producers.¹⁰⁵

Beyond the fiscal apprehensions created by the ELV Directive, the lack of authority of the European Commission creates a potential obstruction to successful implementation.¹⁰⁶ The Commission “cannot directly sue facilities within a Member State, penalize individual facilities, issue compliance or other orders directly at regulation entities, or exercise criminal enforcement authority.”¹⁰⁷ Its only recourse is to institute infringement proceedings against a Member State.¹⁰⁸ Therefore, if a Member State takes a lax approach to the implementation of the ELV Directive, there is little that can be done about failures to meet targets. Furthermore, the automotive industry has significant power with which to contest ELV law implementation and development.¹⁰⁹

Related to implementation problems is the problem of information gathering. The Directive provides for a report on the implementation of the ELV Directive to be sent every three years to the Commission.¹¹⁰ This is problematic for two reasons. First, much can happen in three years; information that may have been useful at an earlier date may become moot with the passage of time.¹¹¹ Second, the Commission is essentially

104. Sachs, *supra* note 16, at 77; *see also* DeWulf et al., *supra* note 13, at 13.

105. While the producer will see a return in the form of cheaper disposal costs, its return would be smaller than a rival producer who invests much less in the development of environmentally beneficial designs. *See generally* Toffel et al., *supra* note 21, at 13–15 (discussing how, in a collective responsibility model, reduced costs will not accumulate exclusively to investing producers). No reasonably prudent producer would want to subsidize the production costs of a rival.

106. Rechtschaffen, *supra* note 96, at 163–64.

107. *Id.* at 164.

108. *Id.* Even this authority is fairly weak. The Directorate General Environment only has 450 staff, which could easily be overwhelmed by actions brought for enforcement of a plethora of environmental provisions. *Id.* at 164–65. Only about ten percent of environmental cases are referred to the European Court of Justice, and citizens cannot challenge decisions not to refer a matter. *Id.* at 165.

109. *See, e.g.*, Corporate Europe Observatory, *Car Industry Flexes its Muscles, Commission Bows Down*, Briefing Paper (Mar. 16, 2007), <http://www.corporateeurope.org/carlobby.html>.

110. Council Directive 2000/53/EC, *supra* note 5, art. 9.

111. On the other hand, the three year interval may evince concern for those countries that do not have the resources to commission a report every year.

relying on the trustworthiness not only of Member States, but also of the facilities within them that provide the facts and figures from which a report will be constructed.¹¹² If the Commission does not receive timely and fully accurate information,¹¹³ it will be unable to assess the effectiveness of the Directive and make corollary adjustments.¹¹⁴

Administrative problems of the EU ELV Directive are not the only concerns raised; it has also been argued that the Directive promotes certain illegal activities. For example, while the reported number of abandoned cars has dropped by 83 percent in some regions, this has been linked in part to an increase in illegal dismantling.¹¹⁵ Illegal dismantlers escape regulation for responsible treatment of ELVs, and as such, illegal dismantling increases the risk of environmental detriment.¹¹⁶ These activities undermine the purpose of the ELV Directive.¹¹⁷

Another deleterious consequence of the Directive is exploitation of other countries. The export of second-hand cars

112. Though from a practical perspective, there may not be an alternative; if the Commission lacks the resources to sanction non-compliance, it certainly does not have the manpower to conduct studies of compliance in each of the 27 Member States without some level of reliance.

113. Indeed, the study requested by the Committee on the Environment, Public Health and Food Safety conceded that as of March 2007, many countries did not have reliable reporting systems, and even "advanced" countries were likely to experience some difficulties in this task. *ELV Directive: An Assessment*, *supra* note 34, at vii.

114. However, part of the purpose for requiring these reports may be to allow Member States to make these considerations on their own. For them, such detailed reports may not be necessary to gather all relevant information, as economic and political actors within each Member State will likely voice their concerns with the legislation.

115. *Scrapping Cars Now a Problem*, BURY TIMES, Sep. 12, 2008, available at http://www.burytimes.co.uk/search/3742550.Scrapping_cars_now_a_problem/.

116. See *ELV Directive: An Assessment*, *supra* note 34, at 57–58. As of 2006, it was still more profitable to dispose of ELVs illegally than through an ATF. *Id.* This illegal activity is often masked by legitimate second hand trade markets. *Id.*

117. After all, an illegal dismantler has little incentive to comply with other environmental legislation if it is already breaking the law. In fact, they may have an incentive to dispose of certain hazardous substances, such as operating fluids, in an irresponsible manner for fear that responsible management, such as storage and delivery to proper recycling and disposal facilities, may draw attention. See, e.g., Research and Markets, *Non-Metallic Recycling Market Report, 2008*, Keynote Publications (Sept. 2008), available at http://www.researchandmarkets.com/reportinfo.asp?cat_id=0&report_id=655531&q=non-metal%20recycling%20market%20report%202008&p=1 (noting a problem with 'rogue recyclers' dumping collected waste in illegal sites).

is a well established practice.¹¹⁸ Even in good-faith situations, the ELV Directive has arguably incentivized the export of automotive waste from wealthier European countries to poorer ones by way of increased export of intact ELVs.¹¹⁹ The export market, in turn, masks the export of stolen vehicles.¹²⁰ More directly, incentives also exist for dismantlers and treatment facilities to export automotive shredder residue to less developed countries, such as China.¹²¹ Though the Basel Convention on the Control of Transboundary Movement of Hazardous Waste and their Disposal bans export of hazardous waste, “[n]ow, despite the regulations, there is more evidence of death and disease from waste trade than ever before.”¹²² Modern vehicles contain a number of electronic components, and electronic waste raises particular concerns.¹²³ “[T]housands of laborers burn, smash and pick apart electronic waste to scavenge for the precious metals inside, unwittingly exposing themselves and their surroundings to innumerable toxic hazards.”¹²⁴ Many less-developed countries lack organized systems of waste management, and dangerous waste streams often flow undetected.¹²⁵

B. SUCCESSES OF THE EU ELV DIRECTIVE

While the ELV Directive raises some concerns regarding fiscal capacity, enforcement, and exploitive behaviors, it has

118. See *ELV Directive: An Assessment*, *supra* note 34, at 57–58.

119. See *Second Hand Car*, *supra* note 35.

120. *ELV Directive: An Assessment*, *supra* note 34 at v. However, such activities would likely exist, to some degree, without the ELV Directive. It could be argued that the increased export of secondhand vehicles caused by the Directive creates a greater cover for such activities. Yet the de-registration provisions of the ELV Directive could hinder such activities as “rebirthing” (by which the VIN number of a wrecked vehicle is used on a stolen vehicle) because all wrecked vehicles would be accounted for. See DEP’T OF THE ENV’T AND HERITAGE, ENV’T AUSTL., *supra* note 4, at 5:20.

121. See *ELV Directive: An Assessment*, *supra* note 34, at 62. It should be noted, however, that evidence of such activities is purely anecdotal. *Id.*

122. Julio Godoy, *Environment: Waste Headed for a Third World Bin*, IPS (Sep. 21, 2006) (quoting Jim Puckett, Basil Action Network), <http://ipsnews.net/news.asp?idnews=34818>.

123. See Karim Nice, *How Car Computers Work*, HOW STUFF WORKS, <http://auto.howstuffworks.com/car-computer.htm> (noting that a modern automobile may have as many as 50 microprocessors) (last visited Mar. 10, 2009).

124. Associated Press, *U.S. Waste is a Third World Hazard*, Feb. 25, 2002, available at <http://www.wired.com/politics/law/news/2002/02/50645>.

125. *Id.*

three redeeming qualities. First, the automotive manufacturers have met the targets for recyclability of each vehicle produced.¹²⁶ In fact, empirical evidence suggests that “the anticipation of EPR law has been central for specific design changes” in cars, for example, in Japan and Sweden.¹²⁷ It appears a number of current models already reach the 2015 targets.¹²⁸ Given the automotive industry’s historic opposition to regulatory legislation and its litigative might, this is no small accomplishment.¹²⁹ Not only are manufacturers not fighting the Directive mandates, they are embracing the idea of diminishing their ‘ecological footprints’ through the use of recycled materials.¹³⁰ This mindset may be partially attributable to market demands, in that no producer wants to be labeled as environmentally unfriendly,¹³¹ but the ELV Directive provides for municipal accountability, as accusations of environmental disregard will originate from an objective, non-interested source.¹³²

Second, while the establishment of authorized treatment facilities must have been a daunting task, the Committee on the Environment, Public Health and Food Safety’s study suggests

126. The ELV Directive requires only 80% of the average weight per vehicle be recycled by January 1, 2006. Council Directive 2000/53/EC, *supra* note 5, art. 7. If most European countries have achieved the 84% recycling rate of the United States, they have exceeded the target by 4%. USCAR’s VRP Contracts, *supra* note 67.

127. ROSSEM ET AL., *supra* note 15, at v. In fact, impending ELV Directive provided the incentive to design for disassembly, though the Directive did not directly call for this behavior. *Id.* at vi. Furthermore, EPR type legislation can provide a tool to gain market shares through compliance. *Id.*

128. As early as 2005, four Nissan models achieved possible recovery rates of 95%. Ogushi & Kandlikar, *supra* note 26, at 1503.

129. See, e.g., Alliance of Auto. Mfrs. v. Gwadosky, 304 F.Supp.2d 104, 106 (2004) (referring to the long history of litigation between states and automobile manufacturers as an “elaborate and contentious game of economic, political, and legal chess”); see generally RALPH NADER, UNSAFE AT ANY SPEED: THE DESIGNED IN DANGERS OF THE AMERICAN AUTOMOBILE (Grossman 1965).

130. See, e.g., Gary Hoffman, *Ford Looks to Use More Recycled Materials in Cars and Trucks of the Future*, AUTOMOTIVE FLEET, July 7, 2005, available at http://media.ford.com/newsroom/feature_display.cfm?release=21112.

131. See, e.g., Associated Press, *Hybrid Car Sales Up by 49 Percent*, LIVE SCIENCE, Sept. 17, 2007, http://www.livescience.com/environment/070917_ap_hybrid_sales.html (noting that the rise in sales is partially attributable to consumers’ environmental concerns).

132. While it is true that ineffective reporting systems may skew levels of compliance, automobile manufacturers sell their products trans-nationally, so if one country does not detect non-compliance by a manufacturer, another surely will. Cf. Sachs, *supra* note 16, at 85 (noting that recycling policies promulgated by the EU have a global reach).

that most Member States have been successful in reaching recycling targets.¹³³ This success may have been supplanted by the common preexistence of automotive recycler and disposal facilities, such that old facilities could be updated instead of new facilities constructed.¹³⁴ The second-hand parts industry,¹³⁵ in particular, provides a useful structure for the dismantling of ELVs. Because the ELV will be dismantled for valuable parts, it is likely the shredder stream will contain a higher concentration of recyclable materials. On the other hand, the removal of parts is not limited to those that would not be valuable as recyclable material. Furthermore, there is no market incentive to dismantle beyond the point of valuable part removal, though this may be where the ELV Directive becomes effective.¹³⁶ Additionally, the reuse of certain automotive parts provides a resource savings of material and energy otherwise required to produce new replacement parts.¹³⁷

Lastly, the ELV Directive limits the use of hazardous substances in automobile manufacturing.¹³⁸ While the prohibition of some hazardous materials was delayed by amendment,¹³⁹ the proscription of lead, mercury, cadmium and hexavalent chromium use was implemented in 2005.¹⁴⁰ Indeed, the use of mercury was trans-nationally abandoned as early as 2002.¹⁴¹ Moreover, the ELV Directive has accelerated developments in such arduous processes as tire recycling.¹⁴² In

133. Though this suggestion is somewhat speculative; the report suggests that it “seems likely that a number of other countries [besides those that have reached the 85% reuse and recovery target] will have met the 80% reuse and recycling target, or at least will do so soon.” *ELV Directive: An Assessment*, *supra* note 34, at viii.

134. See Edwards et al., *supra* note 36, at 1212 (“As a result of the Directive, the old style ‘scrapyards’ now require authorized treatment facility (ATF) accreditation, guaranteeing the environmental treatment of vehicles in their care.”).

135. See generally DEP’T OF THE ENV’T AND HERITAGE, ENV’T AUSTL., *supra* note 4, at 6:25–30.

136. See Council Directive 2000/53/EC, *supra* note 5, art. 6 (“Member States shall take the necessary measures to ensure that . . . end-of life vehicles shall be stripped before further treatment or other equivalent arrangements are made . . .”).

137. However, these resource savings may be somewhat offset by the costs of removing, storing, and ultimately selling those parts. See DEP’T OF THE ENV’T AND HERITAGE, ENV’T AUSTL., *supra* note 4, at 6:25–30.

138. Council Directive 2000/53/EC, *supra* note 5, art. 4.

139. See Commission Decision 2002/525/EC, 2002 O.J. (L 170) 81.

140. Commission Decision 2005/438/EC, 2005 O.J. (L 152) 19.

141. Bockis, *supra* note 28, at 90. However, the existence of mercury in vehicles produced before 2002 continues to be problematic. *Id.*

142. Tire disposal is a particularly difficult problem. DEP’T OF THE ENV’T AND HERITAGE, ENV’T AUSTL., *supra* note 4, at 11:55–56. The automotive industry is now

addition, while infrastructure and facility upgrades have certainly raised the costs of ELV disposal, most countries have been successful in implementing these upgrades.¹⁴³ While further efforts are needed to improve the recycling and reuse of glass, plastics and other materials,¹⁴⁴ recycling of ELV waste has increased significantly in the last several years.

Finally, the specter of regulation may be more beneficial than literal regulations themselves. While the ELV Directive may have its fair share of shortcomings, the bottom line to a producer or disposal facility is that they have certain requirements to abide by.¹⁴⁵ While they will undoubtedly have lawyers to advise them on their regulatory duties,¹⁴⁶ few of these economic actors will inquire into the specifics of the particular regulation beyond some ciphered distillation.¹⁴⁷ Regardless, a somewhat flawed environmental policy is better than no harmonized policy at all.¹⁴⁸

III. EPR-STYLED ELV LEGISLATION IN THE UNITED STATES

Countries like Canada and Japan have also adopted EPR

able to comply with E.U. scrap tire directives thanks to a breakthrough in nanotechnology. *European Union Recycle Tire Test Results Announced*, MOTOR TREND, May 7, 2007, available at <http://www.motortrend.com/features/newswire/28400/index.html>. Advancements in plastic recycling have also recently been made. See Jean M. Hoffman, *New Life for Shredded Plastic Waste*, MACHINE DESIGN, Feb. 2, 2008, available at <http://machinedesign.com/ContentItem/72057/NewLifeforShreddedPlasticWaste.aspx>.

143. See generally *ELV Directive: An Assessment*, *supra* note 34.

144. *Id.* at 62. Only a few Member States have so far implemented systems for greater recycling capacity of these materials, and if capability is not improved in other countries, they may risk non-compliance with 2015 targets, despite potential recyclability of ASR components.

145. "Among the most important drivers for innovation are . . . environmental objectives and regulations." KUIK, *supra* note 75, at 8.

146. See, e.g., *Managing Your Recycling Responsibilities*, *supra* note 87.

147. That is to say, few economic actors will even realize the ELV Directives shortcomings, let alone employ them to somehow avoid their obligations. However, where these shortcomings become an issue is when Member States do not enforce the provisions, or their enforcement is fatally flawed. While the Directorate General Environment has limited resources, this is exactly the situation it has been created to address. See Rechtschaffen, *supra* note 96, at 163–64.

148. Indeed, while some E.U. Member States had enduring environmentally sound waste disposal policies in place prior to the ELV Directive, a number were essentially starting from scratch. See generally *ELV Directive: An Assessment*, *supra* note 34.

programs that shift responsibility for waste management from municipalities to producers.¹⁴⁹ However, the United States has diverged from international norms in waste management.¹⁵⁰ There are several problems with the current American model of automotive waste treatment and disposal. While the EU ELV Directive could not be transferred to the United States verbatim, an EPR-styled system of ELV disposal has many benefits.

In the early 1990s, federal legislation, in the form of proposed National Recycling Act, would have imposed a uniform, national obligation on producers.¹⁵¹ However, supporters, such as the non-governmental National Resources Defense Council, were no match for overwhelming industry opposition.¹⁵² Since the failure of the National Recycling Act, developments in waste management have had two defining characteristics. First, states have now taken the initiative of increased waste responsibility.¹⁵³ Second, “product responsibility,” which had been defined as “a *voluntary system* that ensures responsibility for the environmental effects throughout a product’s life cycle *by all those involved in the life cycle*” was replaced by the “Product Stewardship” model, a compromise between amorphous shared responsibility and focused producer responsibility.¹⁵⁴ By the late 1990s, most federal legislative pressure for waste disposal responsibility had waned,¹⁵⁵ perhaps in large part because of the abatement of the

149. See *id.* at 205–12 (noting that government management is minimal; rather, producers are responsible for implementation and management of waste facilities); see also JAPANESE EXTERNAL TRADE ORG. (JETRO), CAR RECYCLING BUSINESS IN JAPAN (2006) (discussing Japan’s End-of-life Vehicle Recycling Law).

150. Sheehan & Spiegelman, *supra* note 7, at 215.

151. *Id.* at 213. This legislation did not impose take backs, but rather focused on standards that obligated producers to develop end markets for recycled materials.

152. *Id.*

153. *Id.* at 213–15. Specific examples of state legislation can be found above. See also Short, *supra* note 27, at 1242–44.

154. Sheehan & Spiegelman, *supra* note 7, at 214–16. In fact, the defining characteristic of most state legislation is the absence of legal responsibility, financial or physical, assigned to producers. *Id.* at 214. This setup is sometimes referred to as ‘Environmental Federalism’. See generally R. Daniel Keleman, *Environmental Federalism in the United States and the European Union*, in GREEN GIANTS? ENVIRONMENTAL POLICIES OF THE UNITED STATES AND EUROPEAN UNION 113 (Norman J. Vig & Michael G. Faure, eds., The MIT Press 2004).

155. See Sheehan & Spiegelman, *supra* note 7, at 215. However, in the early part of the new millennium, grass roots organizations reignited public attention for EPR, especially in the fields of hazardous and electronic waste. *Id.* at 216–19. It appears this pressure is being felt in the legislature. See generally U.S. GAO,

land-fill crisis and availability of land fill space.¹⁵⁶ Legislative pressure for responsible ELV managements is similarly lacking.¹⁵⁷

In this country, the implementation of EPR-style ELV disposal systems should not be premised upon landfill shortages, but on effective waste management practices at ELV shredders and dismantlers. "In the United States, it is stated that 'motor vehicles salvage facilities, the infrastructure through which cars are recycled, are extremely polluted . . . At least 50 of Minnesota's 436 facilities were found to be polluted enough to require intense clean-up efforts.'"¹⁵⁸

The estimated 7,000 vehicle recycling operations in the United States process over 11 million ELVs a year.¹⁵⁹ While many states have legislative protections against activities such as improper operating fluid disposal, some states do not.¹⁶⁰ Even where legislative protections do exist, they are often ad hoc maneuvers designed to address one form of pollution, not ecumenical measures designed to promote responsible disposal as a whole.¹⁶¹ At the federal level, the Resource Conservation and Recovery Act (RCRA)¹⁶² regulates the disposal of solid, liquid and gaseous waste, but it does not cover substances like used motor oil.¹⁶³ Moreover, the RCRA exempts "small quantity

ELECTRONIC WASTE: EPA NEEDS TO BETTER CONTROL HARMFUL U.S. EXPORTS THROUGH STRONGER ENFORCEMENT AND MORE COMPREHENSIVE REGULATION, GAO-08-1044 (2008).

156. Sachs, *supra* note 16, at 89.

157. It is worth noting that in 1991, the proposed Automotive Recycling Study Act would have required the EPA to study potential increases in automotive recycling, but the Act was never referred out of committee. Staudinger et al., *supra* note 4, at 36.

158. DEPT OF THE ENV'T AND HERITAGE, ENV'T AUSTL., *supra* note 4, at 10:50 (quoting ALISON ALTSCHULLER, AUTOMOBILE RECYCLING ALTERNATIVES: WHY NOT? 10 (1997)). Since this statement was made, Minnesota has enacted regulation for responsible fluid disposal. MINN. STAT. ANN. § 115A.916 (2008).

159. NAT'L RISK MGMT. RESEARCH LAB., TECHNICAL APPROACHES TO CHARACTERIZING AND CLEANING UP AUTOMOTIVE RECYCLING BROWNFIELDS, EPA/625/R-02/001, at 4 (2001).

160. *See generally* Staudinger et al., *supra* note 4. This situation, as well as relative difference between state regulations that do exist, risk concentration of environmentally detrimental substances and pollution in states without such regulation (or more relaxed regulation), as lower disposal costs may incentivize export of these substances.

161. *See id.* at 36–37 (listing state-level legislative enactments relevant to ELV disposal). However, an exhaustive regulation of automotive waste disposal risks creating generic rules that are inelastic and totalitarian.

162. 42 U.S.C. §§ 6901-6992k (2003).

163. *See* 40 C.F.R. § 261.4.

generators,” so that small ELV facilities will not be regulated.¹⁶⁴ The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)¹⁶⁵ is similarly ineffective. CERCLA applies only retrospectively; it provides no protection against pollution other than the specter of possible litigation to recover clean-up costs.¹⁶⁶ In addition to these regulatory problems, the United States system of automotive recycling is entirely profit driven,¹⁶⁷ creating greater susceptibility to economic fluctuations.

Another justification for an EPR-styled system of automotive waste recycling is resource conservation.¹⁶⁸ As early as 1999, the feasibility of recycled material markets for such products as plastics, glass, and rubber was being touted.¹⁶⁹ In fact, the market for non-metal recycling in the United Kingdom increased 40% in 2007.¹⁷⁰ Furthermore, recycling yields energy savings over virgin material use.¹⁷¹ However, as long as virgin materials are available for less, notwithstanding the environmental costs of their extraction, refinement, and subsequent disposal, private actors have little incentive, without regulation, to develop sustainable raw material acquisition.¹⁷²

The situation is particularly troublesome given the seeming willingness of automotive manufacturers to participate in elevated recycling efforts.¹⁷³ Bill Ford, Chairman of Ford Motor

164. Sachs, *supra* note 16, at 57.

165. 42 U.S.C. §§ 9601–9675 (2005). CERCLA provides for the cleanup of industrially polluted sites through the use of the “Hazardous Substance Superfund,” which may be replenished by suits brought under § 107 of the Act. *United States v. Bestfoods*, 524 U.S. 51, 55–56 (1998).

166. *See generally* 42 U.S.C. §§ 9601–9675. Furthermore, new legislation has tended to mitigate CERCLA’s strict assignment of liability. NAT’L RISK MGMT. RESEARCH LAB., *supra* note 159, at 19.

167. Kumar & Sutherland, *supra* note 71, at 146. This means facilitators of ELV disposal may forego responsible treatment when it is economically infeasible.

168. One justification for EPR-type waste management is “increase[d] . . . availability of recyclable and recycled materials to encourage substitution for virgin materials.” Toffel et al., *supra* note 21, at 4.

169. *See generally* SAE INT’L, VEHICLE RECYCLING, REGULATORY, POLICY, AND LABELING ISSUES (Soc’y of Auto. Eng’rs, Inc. 1999).

170. Research and Markets, *supra* note 117.

171. For example, energy savings for non-ferrous metals are aluminum, 95%; copper, 85%; lead, 65%; and zinc, 60%. DEPT OF THE ENV’T AND HERITAGE, ENV’T AUSTL., *supra* note 4, at 7:33. It is estimated that the recycling of ELV metals alone in the United States produces a savings of 3 days worth of national energy consumption. *Id.* at 16.

172. *See* Short, *supra* note 27, at 1237.

173. *See* Staudinger et al., *supra* note 4, at 39–40 (reviewing the recycling efforts of Ford, Daimler-Chrysler, General Motors, and Toyota). Some of this amenability

Company, has said:

We see [ELV management] as an opportunity in the US where we are getting into the recycling business. We're presently considering the European situation. And there will be major changes. Future transportation may not involve owning a car. Instead, you may own the right to transportation. We will make vehicles and either lease or loan them to you. We'll end up owning a vehicle at the end-of-life and have to dispose of it. We will treat it as a technical nutrient, making it into a car or truck again. We're getting ourselves ready for a day when this is truly a cradle-to-cradle. We're not fighting it, we're embracing it.¹⁷⁴

Indeed, 'closed-loop' recycling offers potential cost savings to the producer, as all components in a new vehicle may be made from the same materials as a particular ELV.¹⁷⁵ If manufacturers are to be primarily responsible for ELV management, they will have control over exactly what happens to recyclable materials, but currently, the availability of recycled materials depends on the capacity of the dismantler or shredder, and their willingness to provide these materials.¹⁷⁶

Unfortunately, there are a number of impediments to successful adoption of EPR-styled ELV legislation. First, the specter of "big government" interfering with traditional state activities may raise federalism concerns.¹⁷⁷ Indeed, over-nationalized waste collection systems would be systemically difficult in a country with such vast distances between population centers.¹⁷⁸ Second, the United States is more susceptible to policy challenges than parliamentary systems.¹⁷⁹

may arise from the fact that most of the producers that sell their models within the United States also sell the same or similar models in Europe and Japan, where the manufacturer is responsible for ELV management.

174. *Id.* at 55.

175. See P. Deutz, *Environmental Regulation as a Driver for Change in the Value Chain: EU End of Life Vehicle Directive and its Impact on the Automotive Value Chain* (to appear in SUPPLY CHAINS AND TOTAL PRODUCT SYSTEMS: A HOLISTIC PERSPECTIVE, 2004) (describing 'closed loop' as recycling that occurs when a recovered material is put back into the same products as its original use); see also Sachs, *supra* note 16, at 64.

176. With several producers' vehicles going into the same unsegregated waste stream, separation of different materials, used by different manufacturers, is particularly resource consuming. See, e.g., DEP'T OF THE ENV'T AND HERITAGE, ENV'T AUSTL., *supra* note 4, at 2:10 (noting that mixtures of different plastics from shredder residue make it economically difficult to reproduce valuable recycled material).

177. See Short, *supra* note 2727, at 1238.

178. See *id.* at 1243-44.

179. *Id.* at 1235. Three branches of government allow challenges to be brought through different venues. See *id.* at 1242.

Third, national political attention may be too distracted by current economic and foreign policy issues for public consideration of waste management issues.

Likewise, implementation of the technology needed for processing of waste traditionally not recycled would be costly,¹⁸⁰ and regulation of 7,000 waste facilities would put a strain on the Environmental Protection Agency and environmental agencies of various states.¹⁸¹ However, given the environmental security that concise and harmonious ELV legislation would afford, in addition to the potential economic viability of these markets¹⁸² once the lethargy of capital investment is overcome, a national scheme loosely based on international EPR models is appealing. In fact, many of the building blocks that are necessary for an effective EPR ELV management system already exist, and simply need to be aligned.¹⁸³

Given its advantages, lawmakers in the United States should reconsider the issue of ELV disposal. They should adopt minimum environmental standards that reflect the technical and economic conditions that ELV management in both the U.S. and E.U. reflect, and implement these standards through some level of responsibility by automotive manufacturers.¹⁸⁴ This would ensure that the potential recyclability of new automobiles is not wasted by a lack of incentive and infrastructure. Such legislation would allow consolidated considerations of both economic efficiency and environmentally sound procedures at ELV facilities. Furthermore, the legislation could entail a framework for so called "white goods," household appliances

180. See generally Ogushi & Kanlikar, *supra* note 26, at 4507 (discussing the substantial capital expenditures needed for implementation of Japanese ELV law).

181. See *supra* Part II (discussing the EU ELV Directive).

182. See, e.g., *European Union Recycle Tire Test Results Announced*, *supra* note 142.

183. For example, the American Recycler Association has a Certified Automotive Recycler program, which is in part based on adherence to environmental requirements. An ELV management law could effectively commandeer this system by requiring certification in order to dismantle or process ELVs. Currently, only around 200 facilities are fully certified. See Staudinger et al., *supra* note 4, at 38–39.

184. Financial responsibility would be the easiest to implement. Manufacturers would be responsible only for the excess costs of effective ELV disposal, such that manufacturers will have an incentive to lower these fees by technological developments and reuse of recycled material. See Toffel, *supra* note 21, at 12 ([F]inancial responsibilities will result in lower costs than those that impose physical responsibilities."). Physical take-back responsibilities may be difficult to implement, but the EU ELV Directive suggests that if such take-back provisions can be implemented across the EU, a similar system can be created in the United States.

that are often shredded along with automobiles. A consolidated framework would ease the implementation of regulation, as fewer legal resources are spent on interpretation of multiple pieces of legislation regarding various economic actors.

One advantage of an EPR-styled ELV legislation is its potential popularity on both sides of the political aisle. On the right, this legislation would take some waste management expenditures off the tax base, and would allow the market to drive more efficient programs.¹⁸⁵ On the left, EPR-style ELV legislation would satisfy the notion that producers should be responsible for pollution prevention, and would ultimately further environmental goals.¹⁸⁶ In addition, the implementation of an EPR-style program would be eased by the technological developments necessitated by ELV laws in other countries.

Specifically, an American ELV law should emulate Article 6¹⁸⁷ of the ELV Directive by dictating the procedures by which an ELV is treated. Pursuant to this provision, U.S. law should encourage manufacturers to publish disassembly manuals. The law should also loosely mirror Article 4¹⁸⁸ in banning or limiting the use of hazardous substances and incentivizing the integration of recycled materials into the production of new vehicles,¹⁸⁹ while taking full account of practicalities surrounding the dismantling, reuse, and recovery of ELVs. In addition, the United States should adopt similar recycling targets as the ELV Directive Article 7,¹⁹⁰ to ensure that vehicles with lower recyclability are not sold domestically. Relative to Article 5,¹⁹¹ a system by which dealerships take repossession of ELVs on behalf of producers would alleviate some of the inherent difficulties of individual take-back responsibility. Article 10,¹⁹² however, need not be followed, as the American law would provide uniform guidance to all states, rather than

185. See Sheehan & Spiegelman, *supra* note 7, at 219.

186. *Id.*

187. Council Directive 2000/53/EC, *supra* note 5, art. 6. An American law should also require certification for a facility to process ELVs.

188. *Id.* art. 4.

189. These incentives need not be overly intrusive. For example, the federal government can dictate that any vehicles it purchases must meet certain recyclability targets.

190. *Id.* art. 7.

191. *Id.* art. 5. As far as consumer responsibility, the implementation of a "certificate of destruction" regime would be feasible, but given the prevalence of individualism and personal autonomy in the U.S., such responsibility would likely be unpopular, and could jeopardize the success of the bill.

192. *Id.* art. 10.

requiring these states to loosely transpose a national directive. By following these approaches, the benefits and necessary elements of an EPR-styled ELV program can be secured, while the detriments of the EU ELV Directive can be avoided.

IV. CONCLUSION

The EU ELV Directive has accomplished the monumental task of subjugating the recycling of automotive waste and incentivizing the increased reclamation of traditionally non-recycled materials. Furthermore, despite the potential for systemic confusion, it removes the responsibility for waste management from municipal entities and puts responsibility for these processes on the actors that place these products on the market. However, there are a number of problems which undermine its credibility, impose risks upon Member State governments and economic actors, and impede successful interpretation. Yet these problems can serve as admonitions for nations formulating their own ELV disposal regulations and policies.

In the United States, management of this particular form of waste has been within the traditional purview of the states, leaving them to forego responsible waste legislation. The situation creates the potential risk of excessively polluted brownfields in states that do not have environmental protection, leaving the Environmental Protection Agency, and the American taxpayer, to foot the bill for clean-up efforts. While the EU ELV Directive could never be transposed in the United States, many of its basic principles, such as regulation of proper disposal procedures, setting targets for recovery and recyclability, and responsibility of producers for the disposal of an ELV, as well as the technologies developed for their implementation, could serve as a starting point for national waste management legislation and policy.