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Globalization and Hazardous Waste Management: From Brown to Green?

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Abstract

This chapter examines the impact of global and economic pressures on hazardous waste management practices during the 1980s and 1990s and into the twenty−first century. It charts four sets of recent changes: first, a shift in the basic regulatory problem, from one of a more local nature to the internationalization of waste management issues, second, changes in the structure of the waste disposal industry worldwide. Third are changes in policies in EU member states, and fourth, changes in policies in emerging economies. It analyzes these changes in the light of the growing involvement of the private sector in international environmental regulation, and of the complex and sometimes contradictory impacts of international regulations on domestic politics. It finds that neither a "race to the bottom" nor a "race to the top" hypothesis fully holds, but that changing public/private and domestic/international balances are a mixed blessing for the issue area − a finding that has relevance for other international environmental issue areas.

KEYWORDS:

THE CHANGING NATURE OF GLOBAL HAZARDOUS WASTE MANAGEMENT: FROM BROWN TO GREEN?

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INTRODUCTION[1]

Safe management of hazardous wastes poses difficult regulatory problems at multiple levels of governance. The major steps - developing more reliable and storage, transportation, and disposal practices and encouraging waste minimization - are costly for industry and difficult and costly for governments to enforce. Changes in recent decades in the problem area, the actors involved and regulatory politics have led to a complex situation, making an overall characterization of whether hazardous waste management is getting better or worse worldwide hard to reach. This chapter, in outlining some of these complex sets of changes, seeks to demonstrate how a more nuanced approach can improve our understanding of this important global environmental issue area.

At least two theses have emerged in the trade and environment literature that aim to shed light on global pollution issues, the examination of which is the subject of this volume. The first of these argues that all else being equal, wastes are likely to be exported to countries with weaker environmental policies than in the home country, and that rich and poor countries alike are less likely to improve regulations as powerful constituencies oppose such moves. In other words, waste makes its way to "pollution havens", and there is a regulatory "race to the bottom" effect as a result - the classic Delaware Effect.[2] Applied to the issue of hazardous waste, as it became more difficult and expensive to site disposal facilities in richer democracies, firms started illegally exporting wastes to poorer countries, rather than minimizing waste generation. For rich countries, exporting wastes to poorer countries solves their problem rather than exacerbating it in the absence of international rules.

A second thesis posits that increased awareness of these risks has created pressures on all governments to control wastes, especially as hazardous wastes are considered among the worst of environmental problems. This in turn leads to the creation of an international regime governing the trade in hazardous wastes, as well as an upward trend in the stringency of national regulations on waste disposal. Competition and tougher regulations advantage larger, multinational corporations who specialize in compliance and may even ally with environmental groups to push governments to adopt stricter rules that they have a comparative advantage in complying with. Unlike the first thesis, this view holds that there is in effect a "race to the top" and a lack of pollution havens.[3]

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[1] The author is an assistant professor in the Department of Environmental Science, Policy and Management, University of California at Berkeley. A similar version of this article was published as "The Changing Nature of Global Waste Management for the 21st Century: A Mixed Blessing?" *Global Environmental Politics* 1(1): 77-98 (2001). The author would like to thank Jennifer Clapp, Bob Kagan, David Sonnenfeld and David Vogel, other participants in the Globalization workshop, and various reviewers for their invaluable comments on this chapter.

[2] Vogel, 1995

[3] Vogel 1995

In this chapter I argue that neither of these theses holds firmly in the case of global hazardous waste management. On the one hand, there is empirical support for upward trends in hazardous waste management regulations across many countries, especially in the rich countries, but also to an extent in poorer countries. Multinational waste management firms have made considerable effort to be seen as a "green" industry, part of the environmental technology solution, not part of the problem, and have taken advantage of their expanded global reach to push for stronger regulations in many cases. More importantly, international governmental organizations - the UNEP and the EU - have been able to develop strong institutional responses to these problems, notably towards restricting the waste trade and modernizing national regulatory systems. At the same time, while stronger regulations are being formulated at national and international levels, serious issues remain about implementation and enforcement, especially but far from exclusively in less developed countries. These include long delays in implementation, weak enforcement capacities of governments and of international agencies and the possibility of regulatory capture in international negotiations over the waste trade. These problems are by no means confined to hazardous waste trading as a global issue - they also afflict many other international environmental regimes. The increased possibility, too, that global waste trading rules could be struck down by the World Trade Organization has helped highlight some of the possible conflicts between the economic and environmental global governance orders.[4]

The reason for the lack of clarity on this debate is linked to changes in global hazardous waste management that make the issue more complex than ever before. In this chapter I outline these changes. They are first, a shift in the basic "regulatory problem" - from one of a more local nature to the internationalization of waste management issues. Second, there has been a change in the structure of the waste disposal industry worldwide. Third are changes in policies in EU member states. Finally, I outline changes in policies in less developed (emerging) economies. I analyze these changes in the light of the growing involvement of the private sector - namely firms - in international environmental regulation, and of the complex and sometimes contradictory impacts of international regulations on domestic politics. These changing public-private and domestic-international balances in environmental regulation can be seen across many international environmental issue areas - the incorporation of market-based policy mechanisms into the climate change regime is but one example. In the arena of hazardous waste management, I argue in the final sections of this chapter that these changes are a mixed blessing, neither all good nor all bad. In this, I seek to step back from the heated debates, in particular over the role of the private sector in international environmental regulation, and demonstrate the real complexities of these trends and their effects when applied to different policy areas. At the same time, this chapter raises questions about the possible vulnerability of the global system of multilateral environmental agreements to regulatory capture by private interests.

A. REGULATING HAZARDOUS WASTES: FROM LOCAL TO GLOBAL

The first of the changes in international waste management is the shift of the problem and its regulation from one of a local nature to one of a more global nature. The OECD reported in 1994 that its member states collectively generated around 258,266 thousand tonnes of hazardous

[4] See Wirth 1998, O'Neill and Burns, 2001.

wastes, a figure that reached 323,411 thousand tonnes in 1997.[5] Incorrectly managed wastes can lead to long term and irreversible damage to human health and local environments. Hazardous wastes disposed in landfill or incinerated can, for instance, lead to harmful releases into groundwater, rivers, oceans, the soil and the atmosphere; and they can remain toxic for hundreds of years. Of particular concern is that many of the wastes categorized as hazardous contain persistent organic pollutants, which remain in the ecosystem for a long period of time and can accumulate in human tissue. Several crisis events, notably Love Canal, in Northern New York State in the 1970s and 1980s and Minamata Syndrome in Japan in the 1950s and 1960s have heightened public perceptions of the dangers posed by hazardous wastes and worsened the siting problem.

Early efforts to regulate waste disposal, both industrial and municipal, were justified on grounds of public goods provision, externality minimization and anti-corruption measures. In many developed countries national framework legislation was passed in the early 1970s, and reflected the view that waste disposal was highly localized in terms of its effects and therefore best dealt with on that level. It was clear in these early years that waste disposal generated significant negative externalities, not only through the effects imposed on communities and ecosystems, but also in terms of the incentive structures facing the key private actors. Waste disposal is unlike many services in that generators, once they have paid to have the waste removed from their hands, and in the absence of liability laws, have no incentive to see that it is disposed of safely as long as they never see it again.[6] Also, many national hazardous waste regulatory programs are considered expensive and unwieldy.[7] In most countries, the regulatory systems that emerged in the 1970s are seen by practically all concerned as complex, arcane, costly and controversial; and many important waste management decisions such as siting new facilities deadlock because communities distrust both industry and government.[8]

Rising costs of waste disposal in most developed countries along with growing social resistance to waste facilities led to the emergence of the international trade in hazardous wastes in the 1970s and 1980s. While caused most directly by domestic economic pressures, the trade was most definitely enabled by the growth of world trade and the opening of domestic markets not only to goods, but also to "environmental bads" from other countries, and an associated fall in global transportation costs.[9] According to one analysis, "the UNEP estimates that the Western European countries annually trade 700,000 tons of hazardous wastes among themselves, and that the USA and Canada each export 200,000 tons, primarily to each other. Moreover, until the new ban's implementation, European countries legally exported about 120,000 tons of hazardous waste to developing countries every year."[10] These are legal transfers; the illegal trade has never been properly quantified, although Greenpeace and the Basel Action Network have documented cases of illegal dumping extensively.[11] It seems likely now that given the blaze of publicity these cases have aroused and the action taken unilaterally or in groups by less developed countries to

[5] See OECD 1997, Table 2. Countries reported wastes defined as hazardous under national regulations, based on generation figures reported to the OECD for different years. Hazardous wastes are here defined as waste products, often but not exclusively the result of industrial and agricultural activities - which pose particular risks to human health and environments through being reactive, toxic, corrosive or flammable. Nuclear and municipal wastes are mostly excluded from this discussion.

[6] Wynne 1987

[7] Wynne 1987, Piasecki and Davis 1987, O'Neill 1998

[8] Munton 1996.

[9] Strohm 1993.

[10] Montgomery 1995, 4. On the emergence and extent of the waste trade, see also O'Neill 2000.

[11] See Vallette and Spalding 1990, and the website of the Basel Action Network at www.ban.org

ban such imports that the illegal dumping is in fact declining, although this is hard to know for certain.

The international institutional response to the waste trade has been led by the UNEP, the OECD and the EU and facilitated by the work of NGOs, such as Greenpeace International, and the global media. Three main problems triggered this response. First, in the 1980s growing and publicized evidence emerged of "midnight dumping" from wealthy to vulnerable, poorer countries in the global south or Eastern Europe, and dumping of wastes at sea. Second, as the EU expanded its authority, concern grew over the movement of wastes across EU boundaries. It was feared that the creation of the Single Market would create a single market in wastes, and that the weaker southern EU states, such as Spain and Portugal, as well as poorer areas within the richer states would be vulnerable to dumping. Some were also concerned about Germany's continued role as waste exporter, and Britain and France's as importers. Third, but less important on the international agenda, there is an evident lack of capacity in emerging and transitional economies to adequately manage industrial, including hazardous, wastes generated domestically.

The main plank of the international response to the waste trade is the 1989 Basel Convention on the Transboundary Movement of Hazardous Wastes and Their Disposal, one of several UNEP-sponsored multilateral environmental conventions that seek to govern transboundary pollution and pollution of the global commons. These agreements mark a new phase in international cooperation, one that signifies much deeper interaction among states than in earlier eras, and where they have ceded more of their national sovereignty than previously they were willing to do. At the same time, there are strong concerns about the ultimate effectiveness of these agreements: will states comply by changing their national policies, will treaty measures be effectively implemented and monitored, and are they even the right measures to solve the problems?[12] The best progress the Convention has made to date is to help reinforce an international norm against waste dumping on poor countries.[13] How entrenched that norm will become is an issue for future research.

The Basel Convention came into effect in May 1992. Under the original terms of the convention, exportation of wastes should only occur if the exporting country does not have the facilities to dispose of the wastes properly or if the wastes are to be used as raw materials by the importing nation AND if exporters have written consent from government officials in the importing nation under the principle of Prior Notification and Consent. There are several other treaties also seeking to restrict the waste trade. The 1991 Bamako Convention bans waste importation into most of Africa from outside; similar agreements exist in the Caribbean and Pacific.

In 1994, parties agreed voluntarily to ban all exports of wastes from OECD members to non-members, for both disposal and recycling purposes. However, controversies remained. At the 4th Meeting of the Parties, in Malaysia in February 1998, delegates made some progress on drawing up comprehensive lists of hazardous wastes for the purposes of the Convention. They disagreed over which countries should be allowed to belong to continue importing wastes (the Annex VII countries, primarily OECD members), and the availability of bilateral agreements between Annex VII and non-Annex VII countries to continue trading in hazardous wastes. At the 10th Anniversary Meeting of the original convention, held in Basel in December 1999, delegates adopted a draft protocol on liability and compensation for illegal waste dumping. Progress

[12] On compliance and implementation issues see Weiss and Jacobson 1998 and Victor, Raustiala and Skolnikoff 1998.

[13] Krueger 2000

remains slow and disagreements have yet to be resolved. In fact they could lead to the Basel Convention being challenged under World Trade Organization rules as a trade restriction.[14] The ban amendment had by early 1999 been ratified by less than a quarter of parties required for it to come into force; it is likely to be a long time before this happens. As later sections show, the ban is even less likely to be adopted in the near future because it is effectively opposed by a powerful coalition of industry and state actors.

B. CHANGES IN THE WASTE DISPOSAL INDUSTRY

The second important set of changes in international waste management revolves around the structure of the waste disposal industry. Like the problem and its regulation, the waste disposal industry has become more global in its scope. In addition it has become more privatized and concentrated. As these changes have occurred, the industry has also become a political actor in the domestic and international arenas in an attempt to influence the direction of regulations on their operations. Each of these is discussed more fully below.

1. Changes in Industry Structure

Despite conventional definitions, hazardous wastes are hardly “superfluous, refuse, no longer serving a purpose, left over after use".[15] Often they can be reprocessed to obtain valuable “raw” materials or can be highly profitable for firms able to dispose of highly toxic elements.[16] The waste disposal industry has a colorful history.[17] In the USA, it was historically the province of rival ethnic groups, as well as certain organized crime elements; in the UK it began with the rag and bone men, and the first companies were the result of the entrepreneurial skills of lone operators. By the 1970s in most developed countries waste collection and disposal became the responsibility of municipal authorities and a multitude of small local operators either owned by local authorities or contracted to them.[18]

Within the same time frame over which the waste trade emerged, the structure of the waste disposal industry changed in fundamental ways. Three industry-wide trends can be identified most obviously in the US, UK and France: privatization, globalization and concentration. They have followed on more or less chronologically from each other, and were very much facilitated by broader political changes in the 1980s. Globalization of the waste disposal industry began around 1990, and since then, most if not all of the large private firms have established multinational connections. For example, some firms import wastes, while operating within their country of origin, and some (these are not exclusive categories) are horizontally integrated, owning and operating waste disposal plants and collection services in several different countries. Most recently, concentration in global industry structure has been noted since about 1992. Several high-profile mergers in recent years of the bigger firms attest to this fact.[19] This move has been triggered in part by the economies of scale associated with high-end disposal techniques. Many of the main firms are highly diversified, too: concurrent

[14] Krueger 1999
[15] Oxford English Dictionary, Concise Edition
[16] See Gourlay 1992 and Wynne 1987 for relevant discussions.
[17] On the history of the industry, see Crooks 1993, B. Clapp 1994
[18] Brusco et al 1996.
[19] Cooke and Chapple 1996, 13

involvement in the construction, energy and water industries is common. This process has left a world market dominated by only a few major players, as Table 1 shows:[20]

Table 1: Waste Companies, World Ranking 1997

Company		Sales ($m)
Waste Management, Inc	USA	9200
BFI	USA	5400
Suez-Lyonnaise	France	2600
USA Waste	USA	2300
Vivendi	France	2450
RWE	Germany	1900
Rethmann	Germany	1700
Republic Waste	USA	900
Allied Waste	USA	900
FCC	Spain	700

Source: "Waste Management Inc: Update on Company Structure, Finances and News", Report for PSI/EPSU (Public Services International/European Federation of Public Service Unions) Meeting, January 29 1999, at www.psiru.org/ipspr/forums/wmiewc/restrict/wmijan99.htm

Of the group, WMI is the most global. Its parent company, WMX Technologies Inc. is one of the largest North American waste disposal firms. In 1998 WMX was taken over by USA Waste - becoming Waste Management Inc., controlling 22% of the US market.[21] The firm has a 49% interest in Wessex Water Plc. and Waste Management International Plc.[22] In 1996, Waste Management International derived 79% of its revenue from operations in European countries (24% from Italy alone), 14.3% from the Asia-Pacific region, and 6% from Latin America. Recently it has extended its activities to Hong Kong and Australia, with some success. Many of its UK operations have been carried out by UK Waste, a 1991 joint venture between WMI and Wessex Water, one of the new companies, which emerged from the privatization of the water industry in Britain. Suez-Lyonnaise (SITA), following its purchase of all assets held by the US firm, Browning Ferris Industries Inc. in 1997 became Europe's largest waste service provider.[23] Finally, the big waste multinationals have taken a lead role in less developed countries, siting and building facilities and working with government actors to establish regulatory infrastructures.[24]

2. The Waste Industry as Political Actor

Firms in the waste industry, as well as expanding economically, have organized as political actors, with the aim of affecting national and international policies regarding waste

[20] These firms deal with both hazardous and non-hazardous wastes; the sales figures reflect overall sales for these firms, including hazardous waste management.
[21] "Waste Management and USA Waste To Merge", *Haznews* 121, April 1998, 1
[22] *Financial Times* Company Brief, Waste Management Inc., October 2 1999
[23] "SITA to be global no. 3 on $1,450m BFI assets purchase", *Haznews* 117, December 1997, 1.
[24] See discussion below, and Probst and Beierle 1999.

management and disposal. As shall be discussed below, various sectors of the industry have played an active role around the negotiation of the Basel Convention and subsequent protocols, and in the evolution of EU waste management policy. They are represented by a number of trade associations at the national and transnational levels, including the European federation of waste management trade associations (FEAD), and the Brussels-based Bureau International de la Recuperation (BIR), the largest international recycling peak association, representing 600 members in over 50 countries.[25]

These activities are in addition to continued lobbying at the national level. They have met with some, though not complete, success in achieving their goals. Their main concerns are to maintain the trade in wastes for recycling purposes, and to advocate the building of new integrated facilities utilizing the advanced technologies for energy and materials recovery. In doing this, they are starting to realize the need to involve public actors.[26] Further, in response to public pressure, a "critical mass" of firms in the industry, at least in the UK, is now seeking certification under recognized environmental management systems, such as ISO14001 or The EU's Environmental Management and Auditing Scheme (EMAS).[27] In the EU the influence of the high-end of the waste disposal industry has been key: some have argued that the EU might have tightened regulations because some firms can meet them, and they are lobbying for tighter restrictions.[28] These firms provide specific sorts of hazardous waste disposal services, including recycling, incineration, and waste collection over a wide area. This strategy also suits the EU's environmental policy mandate, which is as much as possible to harmonize and improve its members' practices.

C. NATIONAL POLICY CHANGES: THE EU AS CASE STUDY

A third set of changes in global waste management has been the shift in national and regional policies in industrialized countries regarding hazardous waste. These have included changes in both policy goals and policy instruments. The goal of waste regulation has evolved from one focused mainly on treatment and disposal to one, which encompasses definitions of hazardous waste and waste minimization. The policy measures used have branched out from reliance on command and control regulations to include market measures, a focus on waste minimization and administrative reorganization. The discussion below outlines these shifts in national policy in industrialized countries with a focus on the European Union, as a diverse and innovative set of national and transnational political and state actors that demonstrates a high degree of divergence from traditional norms of environmental regulation.

1. Regulating Hazardous Wastes: Main Policy Goals

Modern hazardous waste regulation policy has evolved into a highly complex set of rules, norms and practices, affecting large numbers of actors and increasingly crossing many jurisdictional borders. Waste-related policy has a number of goals:[29]

1. Defining, listing or otherwise identifying hazardous wastes.

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[25] See BIR's website, www.bir.org, for information on their stance regarding the Basel Convention.

[26] "Finding an ally in public opinion: A strategy for the waste sector", *Environmental Data Service (ENDS) Report* 296 (September 1999), 24-28.

[27] "Facing up to continuous improvement in the waste sector", *ENDS Report* 299 (December 1999), 21-24.

[28] Brusco et al 1996

[29] See also Probst and Beierle 1999.

2. Ensuring safe on-site storage, treatment and disposal (T&D) of wastes, following the waste management hierarchy: waste prevention, reduction, recycling, treatment, incineration and lastly landfill and ocean dumping.
3. Ensuring environmentally safe transportation, storage and T&D by the waste disposal industry. Rules for licensing or permitting of sites are important, as are liability laws and processes.
4. Moving industry (i.e. waste generators) towards waste minimization, for example through the adoption of new, cleaner technology or other production process change and reuse and recycling initiatives. These can be both within the actual production process and through the wider product cycle, for example, through packaging material recycling. Usually waste minimization policies do not involve actually reducing industrial production.
5. Setting up appropriate national, local and, increasingly, transnational regulatory infrastructures agencies to monitor waste management and mitigate harmful externalities, including clean up of contaminated sites.

The first three are the central planks of the traditional approach to waste management, based on the twin philosophies of dealing with wastes after generation (treating their generation as outside the scope of regulatory authority) and as a local problem.[30] The fourth goal, waste minimization, is much more recent and a more fundamental change. Another defining shift in waste regulation in recent years has been a move to more centralized regulation, and regulation covering larger geographic areas, often transnational. Finally, regulations covering controls on disposal technology have benefited from recent technological advances.

International organizations now provide a main impetus for national change across many aspects of waste management policies and have thus become a regulatory target for actors wishing to influence policy. The pressures vary according to regime: the Basel Convention and associated agreements explicitly governing the illegal waste trade from North to South were initially quite shallow in their impacts on national policies. Ostensibly they deal only with the trade in, not generation of, hazardous wastes. However, as explained below, the regime now has profound implications for the global recycling industry. EU regulations penetrate much more deeply into the policies of members and would-be members, affecting most aspects of waste management, from cradle to grave, including transfrontier movement of wastes. This fits with the EU's desire to expand its role into environmental policies of the member states as part of the overall integration project. The following sections outline these institutional developments, focusing on their desired impacts on the extent and direction of national policy changes, and their likely effectiveness. While the Basel Convention and related agreements remain weak, the EU is proving to be a potent force in modernizing the waste politics of its member states.

Current EU waste policy is based on the 1975 Waste Framework Directive (75/442/EEC) and the 1991 Hazardous Waste Directive (91/689/EEC).[31] These directives have established the framework for waste management structures, along with two types of daughter directives, those dealing with requirements for the permitting and operations of waste disposal facilities, and those dealing with specific types of wastes, such as oils, persistent organic pollutants such as PCBs and titanium dioxide, packaging and batteries. Directives concerning facilities include Municipal Waste Incineration (89/429/EEC), Hazardous Waste Incineration (94/67/EEC) and the Proposal

[30] On traditional waste regulation policies and structures, see Wynne 1987, Forester and Skinner 1987 and Piasecki and Davis 1987.
[31] "The DG XI Guide to the Approximation of EU Environmental Legislation Part 2C: Waste Management", at http://europa.eu.int/comm/dg11/part2c.htm

on Landfill (COM(97)105). Finally, the 1993 Directive on the Shipment of Waste (EEC/259/93) deals with transport, import and export of wastes.

Debates over EU waste management policy are occurring within this framework, and affect member state rules and practices much more fundamentally than UNEP regulations. Overall, the EU is concerned with encouraging prevention or reduction of wastes and associated harmful effects through the adoption of clean technology and the recovery of waste and its use as a source of energy. Member states must establish an integrated and adequate network of disposal facilities, and must draw up waste management plans designating the national legislative framework, competent authorities, legal checkpoints, permit procedures, stakeholder involvement and financial considerations.

Regarding hazardous waste specifically, the EU aims to formulate a common definition of hazardous waste across the member states, based on OECD classifications, and to introduce greater harmonization of the management of such wastes.[32] Permitting, packaging and labeling must meet international standards, and inspection is very important. The Shipment of Waste Directive implements the Basel Convention, the OECD Council Decisions on transfrontier movements of waste and the Lomé IV Convention. Therefore export of hazardous waste out of the EU to less developed countries is very difficult. Despite long struggles, there seems to be no final position on the self-sufficiency principle versus the proximity principle in internal (intra-EU) waste trading. This debate is key in understanding EU waste trade politics: if national self-sufficiency were mandated, then the trade would in effect be banned among the member states. Under the proximity principle, supported by Germany, the main exporting state, trade could continue. At the moment, it seems that the EU leadership prefers the latter.[33]

The incineration directive and the proposed landfill directive lay down strict technological standards for new and existing facilities. In particular, all hazardous wastes must be treated prior to landfill, co-disposal - the disposal of hazardous along with non-hazardous wastes in the same site - must be phased out (despite opposition from the UK) and disposal prices must reflect costs of closing the landfill site and at least 50 years of after-closure care.

2. Policy Trajectories in Member States: Market Measures, Minimization and Reorganization

After years of heavy criticism, national regulations within the member states are finally becoming stronger over time as governments and firms adopt more advanced regulatory mechanisms and views of waste disposal problems. While waste management regulations are unlikely to converge towards identity, or in identical ways across countries any time soon, there is convergence along different national paths, responding to particular national needs, prerogatives and demands towards a common set of goals which have been framed by the EU. For example, while Britain is centralizing waste management, Germany is not.[34] Conversely, Germany has made much more progress in reducing the amount of waste generated by its firms. Nonetheless, both the UK and Germany are following the goals set by the waste management hierarchy, and both are responding to EU policy demands.

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[32] The OECD classifies wastes into red, green and amber lists. Green-listed wastes are non-hazardous recyclable wastes that can be traded among states most easily; amber and red listed wastes come under much more stringent controls on movement, consent and disposal requirements: red-listed wastes, including many persistent organic pollutants are considered "intrinsically hazardous" (Kummer 1995, 162-3).

[33] For a history of this debate, see Jupille 1996.

[34] O'Neill 2000, Probst and Beierle 1999

Trends towards superior disposal technology are also evident across most industrialized countries. These have taken on a number of forms: introducing technology into production processes to minimize waste generation or to recycle materials back through the process; improving existing treatment and disposal technology, often towards integrated treatment processes in large-scale facilities, and the development of new disposal technologies (often more environmentally sound and/or portable).[35] These technological changes have in turn been enabled large multinational companies and European regulators to push for further, and more stringent regulatory change.

The next sections examine more closely three main changes in regulatory practice as they are playing out across select EU member states, illustrating the argument that states are moving upwards, towards stricter regulation, but along different paths.[36] The three on which the chapter focuses - the use of market measures such as taxes, the implementation of waste minimization measures and administrative changes - are indicative of the sorts of regulations often directly affected by transnational influences. They also illustrate well the main differences in national approaches to policy reform.

a. Market Measures

One area of variance among EU states is the extent to which they employ market measures - here, taxes - to move firms up the waste management hierarchy, most especially to re-route wastes away from landfill and instead towards incineration or other techniques. Britain and France have employed landfill taxes - Britain at a much higher level than France - while Germany, for instance, has not. [37]

In March 1995 the British Chancellor announced a new tax to be imposed on landfill sites - Britain's first Green Tax - expected to raise disposal costs by 50%.[38] In its final form, the tax, implemented in October 1996, was levied at £7 per tonne for special wastes and £2 per tonne for inactive wastes.[39] In April 1999 it was raised to £10 per tonne for active wastes, to be raised to £15 by 2004. It is unclear, however, what the final effect will be on the relative use of landfill compared with incineration. Early reports on the effects of the tax suggested that evidence that hazardous wastes have been diverted to illegal disposal routes (or reclassified as "inactive") and gave few signs that the tax has boosted practices of waste minimization or recycling. For instance, reports in *The Guardian* newspaper in early 2000 talk of scandal and regulatory capture by waste operators.[40] Demands have been made that it be raised to £30 per tonne and that more of its revenues be diverted directly to waste minimization or alternative management measures.[41] In Germany, conversely (and perhaps unexpectedly, as Germany has traditionally advocated green taxes), a tax not on specific disposal routes but on hazardous waste disposal in general applied by two German states, or Länder, Hessen and Baden-Württemburg was struck down by the Supreme Court in 1998 on the grounds that it runs counter to the federal government waste management

[35] See O'Neill 1998 for a brief discussion, extended to the case of Australia.
[36] Following Coleman and Grant 1998.
[37] Litvan 1995.
[38] Reported in *The Daily Telegraph*, March 22 1995.
[39] *ENDS Report* 258, July 1996
[40] "£1bn waste scandal as green tax flops", *The Guardian*, April 5 2000.
[41] "MPs press for landfill tax increases and reform of tax credits scheme", *ENDS Report* 294, July 1999, and "Less waste than expected leaves £80m hole in landfill tax revenue", *ENDS Report* 274, November 1997.

concept, which puts more emphasis on cooperation with producers. This decision has far-reaching consequences for the states, who now need to pay the revenues back.[42]

b. Waste minimization policies

Waste minimization policies are an article of faith of the new pollution prevention and control policy frameworks.[43] Most often they are designed as part of the set of voluntary approaches to pollution control, where solutions are arrived at through close cooperation with waste generating firms. On the whole, they are not popular, hardly surprisingly, with the waste disposal firms, who feel threatened by potential reduction of their main input. The OECD, which has taken a leading role in coordinating such measures, defines waste minimization as including waste prevention, reduction at source, reuse of products, quality improvements (e.g. reduction of hazard), and recycling.[44] The concept, as a policy measure, does not include energy recovery or pre-treatment of wastes.[45] Policy discussions of waste minimization cross the entire range of waste types, from municipal through industrial to hazardous.

Such measures have been embraced most heartily in Germany, through its *Kreislaufwirtschaft*, or closed-circle economy, ordinance and its emphasis on producer responsibility for waste generation and disposal.[46] However, waste minimization measures are now in place across OECD countries. The majority is voluntary or displays a mix of voluntary and mandatory characteristics. A recent report shows strong similarities in policy priorities across countries, for example for onsite recycling, and for material recycling over energy recovery - energy generation energy from waste incineration.[47] Overall, however, and despite evidence of extensive legislative change, few definitive results are yet out as to the extent to which these measures have been effectively implemented and the impact they are having on waste generation in practice. A study by the German-based Institute for Applied Ecology of EU waste minimization initiatives reported encouraging results in hazardous and industrial waste minimization initiatives by industry and horizontal measures by government. As its results outline "success stories" rather than quantitative data across industrial sectors, there remains room for more extensive analysis.[48]

c. Administrative Reorganization

Many countries - Britain the exemplar - have long recognized that the administrative structures set up in the 1970s for managing hazardous waste regulation were both inefficient and

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[42] See Stefan Speck, "A Database of Environmental Taxes and Charges: Germany, 1998", from The Eco-Tax Database of Forum for the Future at Keele University, UK.

[43] Munton 1996, 4.

[44] On OECD approaches to waste minimization see, for instance, “Waste Minimization in OECD Member Countries”, Group on Pollution Prevention and Control, Environment Directorate, OECD (ENV/EPOC/PPC(97)15/REV2), released May 1998 and "Waste Minimization Profiles of OECD Member Countries", Group on Pollution Prevention and Control, Environment Directorate, OECD (ENV/EPOC/PPC(97)16/REV2), released May 1998. These documents are available on-line through www.oecd.org

[45] This definition came out of the OECD Workshop on "Building the Basis for a Common Understanding of Waste Minimization" held in Berlin in October 1996.

[46]For a full discussion of the measures contained within the Kreislaufwirtschaft in its final version, see Stede 1996, and "New German waste law in force", *Haznews* 104, November, 1996, p. 12. The passage of this legislation was by no means smooth. However, the law was in full force by January 1, 1999.

[47] See "Considerations for Evaluating waste Minimization in OECD Member Countries", Group on Pollution Prevention and Control, Environment Directorate, OECD (ENV/EPOC/PPC(97)17/REV2), released May 1998.

[48]"EU Waste Minimization Initiatives Surveyed", *ENDS Environment Daily*, October 20 1999. Full report available from http://www.oeko.de/english/depart.htm

unwieldy. Therefore, administrative reorganization has been evident in Britain, and France, but less so elsewhere. In Britain, overall responsibility for hazardous waste disposal has been removed from the hands of roughly 200 local authorities to the center, with the removal of Waste Regulation Authorities to the supervision of the Environmental Protection Agency, the establishment of stricter inspection policies, and the much anticipated publication of an overall waste management strategy.[49] Plans have also been laid for a National Transfrontier Shipment Service, to be based in Manchester and run by the Environment Agency.[50] This is a particularly significant development as heretofore the local authorities have been the ones issuing the waste importation permits. These changes have been welcomed by the British waste disposal industry, whose primary concern in the past had been the government's refusal to centralize waste regulation, which would create a "one-stop shop" for industry. France, too, further centralized its regulatory structure beginning in 1982 with the creation of a new tier of government, the Regions. The regions have been slowly, and under conditions of high uncertainty, taking over functions of environmental regulation, but further research is needed to ascertain how this new approach has worked in France.[51]

D. THE "TEMPLATE MODEL" OF POLICY DEVELOPMENT IN LESS DEVELOPED COUNTRIES

The fourth set of changes to global waste management has been the tightening of hazardous waste regulations in the emerging economies of the developing world. It appears as though a model for hazardous waste regulation is being applied, in particular in Southeast Asia. But it is still unclear as to the impact it will have in practice.

A recent study from Resources for the Future examined waste management policies across eight developed and developing countries, yielding results that are generally consistent with the notion that a waste management "template" is being adopted across emerging economies (in this case, Malaysia, Thailand, Indonesia and Hong Kong).[52] This template is characterized by roughly concurrent legislation, national regulatory agencies, public-private partnerships (often with foreign firms) and the construction of modern, integrated disposal facilities, which offer a range of disposal techniques. For example, the Kualiti Alam plant in Malaysia opened in November 1998, with an annual capacity across the different disposal methods of around 50,000 tonnes.[53]

Activity by the big Western firms has been long apparent, and in apparently constructive ways, helping countries with expertise, funding and facility construction. The differences between the programs lie in the extent of foreign involvement and the basic institutional or political structure of the country. For example, Danish firms and environmental consultants have been involved in Malaysia, while Waste Management International has been active in Indonesia.

In addition to these common practices, these countries share a long time frame for policy development, around 10-15 years, and some common problems with waste policy implementation and illegal export. For example, in summer 1998 a Taiwanese firm illegally shipped hazardous wastes to Cambodia, where the drums were dumped in a populated area. This

[49] Department of the Environment, *Waste Management Planning: Principles and Practice,* London: HMSO 1995. See also *ENDS Report* 234, July 1994, and *Haznews* Number 104 (November 1996).
[50] *ENDS Report* 271, August 1997, 11
[51] Bodiguel and Buller 1994
[52] Probst and Beierle 1999.
[53] "Malaysia's hazwaste facility official launch" *Haznews* 129, December 1998.

debacle, and the resultant impasse in repatriating and dealing with the wastes sparked a waste management overhaul by Taiwan's EPA and the eventual shipment of the wastes to the Netherlands after several countries, including France and the US refused to take them in.[54]

These practices are comparable to policy adjustments being made in the East and Central European countries that seek to join the EU and are implementing the acquis communautaire, and the more peripheral EU member countries such as Ireland, Spain, and Portugal.[55] However, the question now becomes, how effective is this template model at actually achieving goals of safe waste management in these countries? Preliminary answers to these questions are not encouraging: new facilities rarely operate at full capacity, it is often the case that wastes never reach their destination, and, as Probst and Beierle point out, many less developed countries have yet to develop the "culture of compliance" necessary to effectively manage such schemes. This in turn is not terribly encouraging the argument that less developed countries should try to adopt even minimal standards as a way of escaping being "stuck at the bottom" - as these new plans are above and beyond the sorts of minimum one should expect, and still are not effective.[56] On the other hand, these are long-term projects still at early stages of development. Finally, work remains to be done in this context on two expanding hazardous waste markets: China and India. For example, India's recent policy shifts were cataloged above, in the discussion of the Basel Convention. Also, Tredi, a French-based hazardous waste transport company, which ships around 3,000 tonnes of non-European hazardous waste to France each year is showing interest in China, providing technical advice to the Basel Convention representatives there.[57]

E. ANALYSIS: DOES HAZARDOUS WASTE MANAGEMENT FIT THE THEORETICAL DEBATE?

Three factors define the context facing today's global waste disposal industry and its regulators. First, the hazardous waste management problem and its regulation have become truly global. The international regulatory regime - primarily managed by the UNEP, the EU and the OECD - is quite weak and still in its developmental stage, though, as is the case in the EU, international authorities are now setting regulatory agendas in many places. Second, the industry itself has evolved from a highly competitive, localized industry dominated by small firms with a high level of government involvement to a more concentrated, privatized and indeed global industry which considers itself on the cutting edge of environmental service provision. Third, national regulation specifically of hazardous waste generation and disposal is in transition in most countries, either reforming older practices or developing waste regulations for the first time. This is particularly evident in the EU and in emerging economies.

Under these circumstances, one would expect the "race to the bottom", or pollution haven hypothesis (PHH) to be borne out. In general terms, this would mean firms take advantage of these national and international vulnerabilities to locate their waste disposal activities in poorer, or more venal countries and communities, and to be lobbying relevant authorities to weaken, rather than strengthen national and international regulatory regimes.[58] The PHH is one aspect of the environment and trade literature, and studies examine the extent to which "dirty" industries locate factories or export wastes or environmentally damaging technologies to poorer countries

[54] "Taiwan proposes waste management overhaul", *Haznews* 134, May 1999, 1
[55] Lynch 2000.
[56] See Porter 1999 for the "stuck at the bottom" argument.
[57] "Tredi International expanding business?", *Haznews* 130, January 1999, 15.
[58] See Copeland 1991

on the basis of their lower levels of environmental regulation. The extent to which this happens is hotly contested in the field, although empirical studies mostly show that the strong version of the PHH - deliberate factory relocation in response to regulatory differences - does not occur.[59]

In much of the activist and scholarly literature on the waste trade, however, the trade is seen as a poster child for a weaker version of the hypothesis: that though firms in developed countries might not want to actually relocate to LDCs, they are willing to illegally export wastes - a cheaper and less labor intensive way of skirting domestic regulations.[60] Data that this is a serious, pervasive and frequent pattern remains inconclusive. Further, such accounts tend to downplay the extent to which poorer countries have organized to resist waste dumping, under the Bamako and Waigani Conventions, for instance.[61]

Many emerging economies are developing models of waste management and regulation, where previously none existed. There are strong similarities across these schemes, leading to the second claim made in this paper, that a "template" of waste management is being applied across many countries, with varied results. However, while waste disposal firms rarely deliberately relocate to take advantage of weak environmental laws, given the level of regulatory capacity and infrastructure in many countries, we could see *unintentional* PHH results, as technologies and practices are put into place without much thought as to how well they will travel.[62] This is a vitally important question that needs further empirical study as these systems evolve.

In the EU cases discussed above, there are many reasons to be optimistic that governments are getting the message about needed reforms. However, again, there is some cause for concern. There are at least three barriers to effective policy implementation across nearly all cases. First, waste disposal costs have increased across EU member states as a result of greater technical stringency. On the one hand, this has advantaged the lead firms in the waste industry. On the other, it can lead to diversion of wastes to illegal disposal routes, including waste dumping within countries (along British motorways for instance) or across borders (to Eastern or Southern Europe). A 1998 report in *The Independent* listed wastes dumped by truck drivers from Germany and Holland along the M-25 motorway in England, including industrial and chemical solvents, low-level radioactive wastes, and human body parts from hospital operations.[63]

Second, policy transformation has also been hampered by slow implementation. Control and monitoring mechanisms are not yet firmly in place in many countries, and the demands of the new policies have diverted regulatory attention from other problems.[64] As one analyst put it, “British players have suffered, not from legislative overkill, but by the void between legislation and its timely, orderly and effective enforcement”.[65] A more recent report notes that this is changing: as the EU takes over the reins of waste policy, efforts to fulfill directives are forcing the UK government, for instance, to start setting goals and working out how to meet them, efforts the waste industry appears to be meeting halfway.[66] However, across Europe, slow

[59] Thompson and Strohm 1996, Clapp 1998 and Porter 1999.
[60] See Adeola 2000
[61] The 1995 Waigani Convention bans waste imports into the Pacific Island region.
[62] There are arguments that we are seeing other, weaker versions of the PHH playing out in North-south transfers, including continued export of wastes and of risky technologies. See Clapp 1998.
[63] "Waste dumped secretly on motorways turns Britain into dustbin of Europe", *The Independent*, August 6, 1998. The M25 is the motorway that rings London.
[64] "Agency still not transparent on regulatory performance", *ENDS Report* 295, August 1999, 6
[65] Dr. David Owen, leading waste industry analyst, quoted in *ENDS Report* 248, September 1995, 14
[66] "Signs of Life in the slow-moving world of waste policy", *ENDS Report* 294 (July 1999), "Waste classification scheme takes shape with industry cooperation", *ENDS Report* 295, August 1999.

implementation of EU Directives remains a serious problem. Monitoring too in many countries is weak and often comes under fire, as over-stretched and under-staffed agencies cut back on important regulatory functions, such as on-site inspections.[67]

Further, one of the biggest problems facing waste regulators remains unresolved: communities in most industrialized countries remain unwilling to host new and existing hazardous waste disposal facilities, especially if wastes are to be transported from outside the immediate region.[68] Most countries have internalized at least a minimal consultative approach in siting new facilities. However, and despite some innovative work on voluntary approaches, progress in building new community-based approaches is slow, although in this case it is possible to find the waste industry taking some action.[69]

It is still too early to tell most of the effects of the Basel Convention and associated agreements on national regulatory practices. Some positive trends are discernable. First, public opinion opposes the illegal waste trade. Governments realize they are less likely to get away without bearing some liability, and therefore have in recent years disassociated themselves from these practices. Halting legal waste imports and exports remains, however, far from simple, even for strong governments, as the British failure to implement a ban on legal waste imports shows.[70] Second, the Basel Convention and the work of the OECD Waste Management Group have made many countries take a more technocratic and systematic approach to listing, classifying and publishing data on hazardous waste generation and disposal.

However there is also cause for concern about the extent to which the Basel Convention can change national policies.[71] There are few effective monitoring devices or rules in place to prevent illegal trade. While many actors are concerned with the move towards prohibition among convention supporters, others are concerned with various limits on its scope. For instance, it only tackles the trade, not waste reduction, and it does not cover trading practices among less developed nations. Perhaps most serious is the opposition posed in the on-going negotiation process by the international scrap metal industry and its national/governmental allies to the ban on waste trading for recycling. This cuts at the heart of the issue as to whether recyclable metals are goods or "bads", and represents a different sort of power of globalization in the international sphere: the power of firms and industries to unite across borders and influence inter-state negotiations.

Many industry representatives have lobbied hard against the imposition of the recycling ban.[72] The strategy of directly lobbying the main negotiations, failed at first primarily because the tide of public opinion flowed against it. In recent years, this situation and the political opportunity structure facing these firms has changed. According to Jennifer Clapp, the recycling industry has been able to take advantage of two features of the negotiating structure of the Basel Convention: the technical working group (TWG), which focuses on debates over the definitions and listing of wastes, and the process of ratification of the ban by individual states (the US, for example).[73] The waste and scrap metal industries have been heavily involved at all stages of the

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[67] On the UK Environment Agency, see "Agency makes a mess of waste", *ENDS Report* 280, May 1998; on the EU, see Jordan 1998.

[68] Munton 1996.

[69] "Finding an Ally in Public Opinion: A Strategy for the Waste Sector", *ENDS Report* 296, September 1999

[70] O'Neill 2000.

[71] See also Kellow 1999.

[72] For the views of industry opponents of the ban, see John C. Bullock, "Hurting Development and Business" *International Herald Tribune*, October 4, 1995 and Alter 1997.

[73] Clapp 1999.

negotiations of the Basel Convention, represented by trade associations and the International Chamber of Commerce.

Getting involved in particular in the relatively isolated and specialized TWG marks a significant departure from firms' usual tactics of lobbying their governments to take particular positions, and has proved an effective tool for firms' representatives, who typically have the expertise and the resources to make their voices heard at this level, more so than NGOs. Industry interests have also been able to ally with countries threatening to break ranks - India, for instance, which ended a five year ban on zinc ash imports in August, and is currently considering allowing lead scrap imports - by units with proper recycling and disposal facilities.[74] At stake are large revenue flows: the worth of net exports of scrap metals from the US, excluding iron, is estimated at $2.5bn annually. The TWG meets about twice a year and industry presence is high. In September 1996, of the total 159 representatives there, including government representatives, 49 were from industrial organizations.[75] Their main task has been to lobby to include materials they trade in on List B of the Basel Convention – those wastes that can be freely traded - and redefining their product as "recycled raw materials". They also lobby the waste management policy group of the OECD to change its rules – an important tactic, as the OECD has directed the whole list-building process, affecting both UNEP and EU waste definitions. According to Clapp and to the main NGO following this process, the Basel Action Network, the industry has achieved a good deal of success in this.[76] Indeed, it is looking increasingly unlikely that the waste trade ban will be implemented in its proposed form any time soon.

CONCLUSIONS

The above analysis ends on a negative note, about the vulnerability of the international environmental governance system to regulatory capture by private interests. However, the overall picture it paints of hazardous waste management in this global era is considerably more nuanced. First, hazardous waste regulation needs to be understood at several levels of governance - here, we considered national, regional and global, and how directives from higher levels of government filter down to lower, and are interpreted in different ways. Second, it is evident that the private sector - waste disposal and recycling firms - have become increasingly powerful economic and political actors, both in international negotiations, in working with governments and the EU, and in creating market opportunities in emerging economies. Their activities have on the one hand helped strengthen and modernize national regulatory practices. On the other, they are acting to weaken international regulations governing the international waste trade, especially in recyclable wastes.

The regulatory playing field in hazardous waste management has been irrevocably altered by changes in domestic/international and private/public balances in this arena. Various forces of globalization have evidently had important impacts on this sector, though these are complex and multidirectional. Our theoretical understanding of these processes has yet to catch up with empirical observations, but remains crucial for future analyses of global environmental politics and the effectiveness of global regulation. This piece mostly omitted one particular group of actors from the analysis, namely NGOs and environmental groups. A study of how they ally with or resist private economic actors in this field would be well worth undertaking. The issue of

[74] "India government reviews lead scrap proposal", EnviroLink News Service, October 27, 1999.
[75] Clapp 1999, 14.
[76] See www.ban.org

adequate hazardous waste management has by no means been resolved cross-nationally. Further, some of the insights of this chapter could well be applied or compared with other international environmental issue areas, to enhance our understanding of the interaction of multiple levels of governance with newly emerging and strengthened private economic actors.

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