

## Europe

# Waste Management and Crime – Regulatory, Business and Product Vulnerabilities –

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### Introduction: Vulnerability Studies

Growing awareness of organised environmental crime has led to a political demand for more effective action. Although sometimes described as victimless crimes, environmental crimes are more correctly thought of as unknown crimes, since victims may be unaware of the decrease in quality of life from illegal dumping (or, in the case of generations as yet unborn, unable to complain). Police agencies and criminal justice systems may have more pressing priorities, so that action may be desultory, and data collected may fail to capture the underlying risks. Specialised regulatory agencies sometimes put more effort into soft persuasion than tough action. Information from inspections and discussions with economic operators is not made available in detail. Even if inspectors saw and knew everything (which they do not and cannot), it would still not be any part of their job to put detailed information into the public realm. This article focuses on the economic sector of which the main activity can be considered as “waste management” – the collection, transport and treatment of

waste – and explores its particular crime opportunities.<sup>1</sup>

From what sources, then, can information be gained about criminal opportunities in the waste management businesses? This article reports on a method of scanning economic sectors for vulnerabilities; that is, for potential points of victimisation.

#### *Method for assessment of vulnerability of sectors*

Criminal behaviour always takes place within a context. The project MAVUS, which stands for Method for Assessment of Vulnerability of Sectors,<sup>2</sup> deploys a method to measure the vulnerability of economic sectors to organised crime. MAVUS observes contexts, scanning for vulnerabilities (context-specific opportunities that might be exploited by some and could lead to crime or irregu-

larities). From such a vantage point, it may sometimes be possible to take action to close off loopholes and reduce crime in the corporate context – an aspect of good governance that is appreciated by at least the larger waste management firms. In a study conducted at Gent University in Belgium and funded by the European Commission in 2006, this method was applied to municipal and bulk waste management processes, hazardous waste management, and nuclear waste management.

In applying the MAVUS system, information gathering takes place at three levels.<sup>3</sup> First, the sector and its markets are described. Second, the broader environment – the various contexts of the sector – are pictured. These contexts include the regulatory context, enforcement measures in place, the financial, legal and social environments of the business, and criminals around and within the industry.<sup>4</sup> Third, an analysis is carried out at the level of waste management enterprises, resulting in a “Reference Model”, distilling out common features.<sup>5</sup> By describing these three levels – sector, environment and business structures and processes – the stage is set for the identification of vulnerabilities that may open up the sector to organised crime.

Why is such a method interesting? First, it takes into account the economic reality, both on a broad and a narrow level, in which crimes takes place. It pays attention to the causes of crime within the context of legitimate economic structures and activities. Second, as it does not rely on official crime data, it does not import or reproduce the blind spots of those data. Third, it does not focus solely on the past, but considers current trends within the context, in order to anticipate so far unrecognised and unreported crime risks.

### The Limits of Regulation: Gaps and Incoherencies

Legislation has been adopted in several international bodies and regional institutions, for example the United Nations (UN) and the European Union (EU). The scope of these measures differs, as both the environmental and the economic/social/judicial framework are taken into



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account. On a UN level, the United Nations Environment Programme<sup>6</sup> and the Basel Convention<sup>7</sup> influence the global waste management in various ways. The Convention attempts to prevent situations in which developing countries effectively become huge landfill sites for industrialised countries. Of course, the engagement of developing countries is necessary for its implementation, and the Convention is currently also faced with various levels of opposition<sup>8</sup> and other difficulties including specifically a lack of resources.<sup>9</sup>

For policy reasons, it is necessary to define and classify waste. In the EU, this definition was established in the 1975 Council Directive on Waste (since amended).<sup>10</sup> The key issue in the waste definition is "discarding or the intention or requirement to discard".<sup>11</sup> The Directive leaves room for interpretation, through the evolution of political attention, technical possibilities and opening of new markets for recovery and disposal operations. In the meantime, a set of legislative measures has been taken to further regulate various areas of the waste management industry: hazardous waste,<sup>12</sup> waste statistics,<sup>13</sup> waste shipments<sup>14</sup> and landfill reduction,<sup>15</sup> as well as more specific issues, such as incineration,<sup>16</sup> waste from electrical and electronic equipment (WEEE),<sup>17</sup> end-of-life vehicles,<sup>18</sup> and more.

Waste regulations cover most aspects of waste management; however, there are some blind spots. One of these is the area of "waste brokerage". This practice has come into being to help the trade to cope with the growing costs of stricter environmental regulations.<sup>19</sup> However, as legislation of the possession of waste may not, under some laws, apply to brokers (although they have to fulfil licencing conditions), waste does not legally become their property, hence they escape some legislative requirements.<sup>20,21</sup> Being loosely regulated experts in the subject matter, brokers are in a position to help firms to exploit gaps in regulation.

Internationally, the body of legislation and implementing rules is not neat and tidy: there are national differences concerning waste classifications;<sup>22</sup> indistinctions between waste and related materials (such as digging sites and soil regulations);<sup>23</sup> scope for honest confusion between the reuse of second-hand goods, on the one hand, and recycling<sup>24</sup> on the other; and problems in defining liability for environmental crimes.<sup>25</sup> These difficulties are not new. The EU 2006 Directive<sup>26</sup> brings together and updates the previously dispersed legislative framework on waste, but it does not resolve all the problems.

## Contextual Limits?

### *Implementation of regulations*

National implementation of the waste-related legal framework differs from country to country.<sup>27</sup> The EU Directive creates only a set of minimum rules, and allows EU member states to go further. International companies must therefore be aware of the individual regulations within each of the countries in which they operate. By 2003, however, twelve EU countries had established a national waste management plan or strategy.<sup>28</sup>

The separation of administrative law and criminal law

may hamper environmental crime investigations.<sup>29</sup> Administrative and criminal enforcement bodies often seem to prioritise different areas of operation: criminal enforcement in this area often focuses on transport of waste, while administrative controls frequently focus primarily on activities at static sites. Bottlenecks are encountered during the investigation and control, but also during prosecution and trial.<sup>30</sup>

Environmental crimes are considered by some to be victimless crimes, because specific individual victims are usually not distinguishable for each specific event. The actual victims or affected persons often may not even know of the impacts that they are experiencing. This lack of knowledge clearly reduces the scope for complaints. Environmental crimes are often discovered by accident, or not discovered until long after the fact. From that perspective, criminal law enforcement agencies are in a difficult position. They are not designed to cope with the complexity, ideology and dynamics of environmental regulations.<sup>31</sup> An additional difficulty is finding a balance between penalising companies and penalising employees.<sup>32</sup>

Administrative bodies also face enforcement obstacles. In most cases, they both issue permits and impose permit conditions and are also responsible for enforcing compliance with those conditions. Their procedures, which operate less formally, may be vulnerable to charges of improper decision-making or even corruption.

Perhaps most important, both penal and administrative controls are oriented nationally. However, globalisation has opened up opportunities for waste disposal crime as an international business.

Non-governmental organisations (NGOs) are increasingly engaged in these issues; for example, the European Environmental Bureau aims at sustainable development and monitors the workings of the legislation.<sup>33</sup> Other bodies and associations, situated in the economic field, include the national federations and the European Federation of Waste Management and Environmental Services (FEAD). These actors have their own interests to look after, making their possible influence as controlling bodies unclear.

### *Waste as a vulnerable product*

The risks of crime arising from commercial markets vary according to the type of product.<sup>34</sup> Product-related vulnerabilities within the waste industry can be distinguished for various reasons. For example, waste is a product with an inelastic price, and thus an attractive target for organised crime. In particular conditions, it could result in price fixing, as has been the case in the past in New York.<sup>35</sup> Although the *modus operandi* consisted of bribery, racketeering,<sup>36</sup> deceit and illegal dumping,<sup>37</sup> the huge profits made would not have been possible if the market had been an open, competitive one.

Similarly, the quality, physical nature and appearance of waste streams can be manipulated, so deception becomes possible when transferring waste to third parties, who may, in good faith, accept the waste for disposal. Hazardous wastes can easily be mixed with non-hazardous wastes. Due to the situation with so-called mirror en-

tries,<sup>38</sup> this provides opportunities to mask hazardous waste proportions. These mirror entries define certain waste streams as hazardous only when their concentration in liquids exceeds a certain level. By keeping the hazardous waste gradations under legal limits, collection, transport and treatment become less regulated.

Legislative measures take these product-related vulnerabilities into account, to some extent. However, this does not mean these vulnerabilities have been neutralised. Continuing loopholes could be blocked – for example, the manipulation of waste streams could be tackled by increasing the frequency of sampling. Overall, effective waste management can save money in the long term, by reducing the cost of clean-up operations.

#### *Vulnerabilities of the economic sector*

Every entrepreneur, whether his activities are legal or illegal, must be able to meet certain market conditions if he intends his products or services to enter the legal market<sup>39</sup> – not only legal thresholds, but also practical and economic requirements.

In assessing the sector vulnerabilities, heterogeneity may be the most striking characteristic of the waste management industry. A distinction can be made between the different stages of waste management: collection, transport and treatment. The last factor, treatment, alone constitutes several activities, including reuse, recycling, incineration without energy recovery, incineration with energy recovery and landfill. The value of waste, therefore, is not intrinsic, but depends on how it can be processed.

The growth and internationalisation of markets and competition has provided opportunities for criminals to enter the waste disposal business. Notable variations in the extent of privatisation also exist. Levels of privatisation have grown considerably in the past decades. In most EU member states, privatisation is higher in the treatment stage than in the collection stage. This is particularly the case in Germany and the UK, where treatment privatisation is above 80 per cent, while private waste collection is limited to, respectively, 60 per cent and 35 per cent. In Scandinavian countries, however, this trend is reversed. Finland's waste management is characterised by 100 per cent private waste collection, but only around 5 per cent of its treatment is privatised.<sup>40</sup> The principles of proximity and self-sufficiency may also conflict with the principles of economic efficiency,<sup>41</sup> particularly where facilities are near national borders. Because of laws seeking national self-sufficiency, companies may be required to travel further to fulfil their legislative obligations. All these factors may create incentives to become involved in illegal waste management, in

order to cope with fierce and growing levels of competition.

The formal economic requirements for entering the bulk and local waste management markets are relatively modest. Waste management can be performed within a small company and no minimal financial requirements are set. Yet, informal barriers exist and have been growing over time. The number of stable and regular business contacts needed for success has increased, due to the competitiveness of the market. This reduces the ability of other entities to enter the market, unless they engage the services of waste brokers. Although their role remains unclear and their qualifications vague (see above), brokers are also gatekeepers to the sector for possible new entrants; their vulnerability should not be overlooked.

Although the market is well suited to small companies, however, its potential profitability has made it a target for a large degree of merger activity, resulting<sup>42</sup> in

market concentration, a small club of companies accounting for most of the market share, putting competitive pressure on small players.<sup>43</sup> Despite the absence of minimum requirements in legislation, higher investments are required in terms of capital, technology and staff, as a result of the enhanced focus on environmentally sound development. Criminals thereby find more and more opportunities to cut corners behind the front of a legal waste management company.

Legal and illegal waste management sectors can be connected in several ways. The legal sector may become the victim, the facilitator, or even the beneficiary of illegal waste management.<sup>44</sup> The creation of a recognised quality label would certainly be welcomed by legal companies, as they would see the level of fairness in compe-

tion increase. A minimum financial standard would have the additional advantage that, in case of environmental crime, the clean-up costs could be borne by the polluter, not by the taxpayer.

#### *Beyond legality*

Available estimates indicate that profits from illegal waste management are about three to four times higher than those for legal activities.<sup>45</sup> For hazardous wastes, the profit differential is even higher.<sup>46</sup> It is possible that commercial entities' creative cost reduction beyond what is allowed is encouraged by these factors and that corporate culture considers the environment less important than profits. Beyond this, the growing use of subcontractors may decrease transparency, reducing the risks of detection of illegal waste management practices.

It is not only companies which commit environmental crimes. Some waste management is carried out by the pro-



Courtesy: Die Zeit

ducers of waste, often the general public. Waste-related crime committed by citizens probably accounts for a considerably lower amount.<sup>47</sup> This proportion is not considered within the scope of this article, but should not be forgotten.

In addition to waste management by citizens, two other alternative waste-related markets can be distinguished. First, the second-hand market is often used as a cover for international waste shipments to Third World countries.<sup>48</sup> This has been made possible because of different living standards and formal requirements. As a legal – or semi-legal – alternative, this provides opportunities to avoid application of waste management regulations.<sup>49</sup> Although strictly not illegal, the trademark of “second-hand goods” is often used or abused, making it an important focal point and a vulnerable aspect. Current controls on end-of-life products<sup>50</sup> are not sufficient to stop market abuse. Maximisation of the pool of recovered and recycled materials may require further legislative and regulative changes.<sup>51</sup> Similar abuse of the cover of “recycling” occurs in the area of ship-breaking, where developing countries become the dumping grounds for shipwrecks from all over the globe.<sup>52</sup>

Second, a substantial black market exists. From that perspective, a line can be drawn between improper actions in relation to waste itself and, on the other hand, the use of commercial structures in the waste industry to commit other crimes. In the first case, the purpose may be to illegally get rid of waste in the cheapest possible way, to make as much profit as possible.<sup>53</sup> In the second case, the waste sector may be used to commit financial crimes (for example, tax evasion). In some cases, the two aspects are combined.<sup>54</sup> For reasons of space, here we focus on the first of these.

Waste management constitutes a legal activity, undertaken by specialised waste management companies or general manufacturing companies. Due to the hidden nature of environmental crime, it is not always clear at what stage the transition from legal to illegal has occurred. For example, this transition might occur during national or international transport, where the company may cut corners relating to the factors listed above. Another is that waste could become illegal owing to the manner in which it is stored or dumped. In Italy, almost one-third of specialised waste is disposed of illegally.<sup>55</sup> Criminal organisations have complex relationships with corporations, businessmen and (local) authorities, affected by the growing demand for cheaper services, the business ethic of some industry segments, low public awareness, and delay in policy implementation.<sup>56</sup> The physical impact of this behaviour on local populations is considerable: in the so-called “triangle of death” (formed by Nora, Marigliano and Acerra), people suffer from considerably higher rates of cancer, leukaemia and lymphoma.<sup>57</sup>

The drivers behind all environmental black markets are threefold: substantial cost or value differentials, regulatory failures, and failure of enforcement.<sup>58</sup> Countries and regions most vulnerable to corporate crime are characterised by a weak economy, low wages, inefficient controls and poorly paid (and sometimes desperate) local officials.<sup>59</sup>

As applied to waste-related crime, these factors are all generally present. Both relative deprivation and transporting possibilities have grown. Increased mobility has augmented the possibilities for transporting waste to Third World countries. Although the Basel Convention has considerably reduced the licit possibilities to engage in the so-called “waste colonialism”,<sup>60</sup> unstable political situations reduce both the number of controls and their effectiveness. Differences among national financial standards create opportunities to corrupt local law enforcement officers. Until proper international cooperation between industrialised and developing countries has been established, political and economical differences will provide opportunities for international (illegal) waste transport and dumping.

## Conclusion

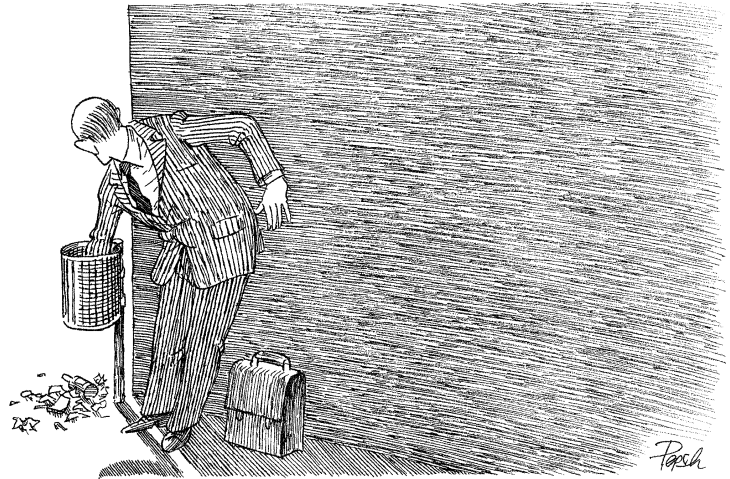
Waste-related crime remains an important political issue. Regulatory, enforcement and industry data on known events have generally not been made public, and the ability to assess waste-related crime is consequently limited. Like an iceberg, most waste-related crime issue lies beneath the surface. This article has explored a number of the vulnerabilities of the waste management sector, which may open the door for high levels of criminal activity.

Our general conclusion is that some of these vulnerabilities could be reduced, if policy makers paid more attention to issues such as national differences of waste definitions, liability issues, international cooperation, waste brokers, and the relationship between administrative and penal law. From a technical point of view, it might be possible to make it more difficult to mix certain waste streams. Finally, efforts are required to weed out criminal waste management companies that use legal companies as a “front”. Crime policy and the prospects for prevention cannot be separated from environmental policy, economic policy and good governance.

## References

- 1 Van Daele, S., Dorn, N. and Vander Beken, T., The European waste disposal sector, study (JLS/2005/AGIS/064), to be published under the AGIS programme of the European Commission.
- 2 Vander Beken, T., ed., *Organised crime and vulnerability of economic sectors: The European transport and music sector*, Antwerp, Maklu, 2005.
- 3 Vander Beken, T., Defruytier, M., Bucquoye, A. and Verpoest, K., Road map for vulnerability studies, in: *Organised crime and vulnerability of economic sectors: The European transport and music sector*, Vander Beken, T. (ed.), Antwerp, Maklu, 2005, 7–56.
- 4 Smith, D., Paragons, pariahs and pirates: a spectrum-based theory of enterprise, *Crime and Delinquency* 26 (1980), 358–386.
- 5 Scholze-Reiter, B. and Stickel, E., eds, *Business process modelling*, Berlin, Springer, 1996.
- 6 United Nations Environment Programme, UNEP Annual Report 2005, United Nations, 2006.
- 7 Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, United Nations – Treaty Series 1673 (1992), I-28911, 126–161.
- 8 Chasek, P., *Earth negotiations: analysing thirty years of environmental diplomacy*, Tokyo, United Nations University, 2001, 110–116.
- 9 Brack, D., The growth and control of international environmental crime, *Environmental Health Perspectives* 112 (2004), 80–81.
- 10 Council Directive 75/442/EEC on waste, *Official Journal* L194, 25/07/1975, 39–41.
- 11 Art. 1 of the Council Directive 91/156/EEC of 18 March 1991 amending Directive 75/442/EEC on waste, *Official Journal* L078, 26/03/1991, 32.

- <sup>12</sup> Council Directive 91/689/EEC of 12 December 1991 on hazardous waste, Official Journal L377, 31/12/1991, 20–27.
- <sup>13</sup> Regulation (EC) No 2150/2002 of the European parliament and the council of 25 November 2002 on waste statistics, Official Journal L332, 9/12/2002, 1–36.
- <sup>14</sup> Council Regulation (EEC 259/93) on the supervision and control of shipments of waste within, into and out of the European Community, Official Journal L030/1, 06/02/1993, 1–28.
- <sup>15</sup> Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste, Official Journal L182, 16/07/1999, 1–19.
- <sup>16</sup> Directive 2000/76/EC of the European parliament and of the Council of 4 December 2000 on the incineration of waste, Official Journal L332, 28/12/2000, 91–122.
- <sup>17</sup> Directive 2002/96/EC of the European parliament and of the Council of 27 January 2003 on waste electrical and electronic equipment (WEEE), Official Journal L37, 13/02/2003, 24–38.
- <sup>18</sup> Directive 2000/53/EC of the European parliament and of the Council of 18 September 2000 on end-of-life vehicles, Official Journal L269, 21/10/2000, 34–42.
- <sup>19</sup> Wright, S.A. (book review), Dangerous grounds: the world of hazardous waste crime, Rebovich D.J., *Social Science Quarterly* 74 (1993), 452–453.
- <sup>20</sup> Van den Anker, M.J.J. and Snels, W.C.E., *Wie betaalt, bepaalt: over intermediaire organisaties, milieucriminaliteit, organisatiecriminaliteit en integriteit in het complexe milieuveld*, 's Gravenhage, Elsevier bedrijfsinformatie, 1999, 36–38.
- <sup>21</sup> Bruinsma, G., De afvalverwerkingsbranche, in: *Inzake opsporing: enquêtecommissie opsporingsmethoden*, Deel II onderzoeksgroep Fijnaut: branches, Bruinsma, G. and Bovenkerk, F., eds, The Hague, SDU, 1996, 283–284.
- <sup>22</sup> Ermaroca, F., Community legislation and jurisprudence in the area of waste management: recent developments, *Reciel* 7 (1998), 274–282.
- <sup>23</sup> Amendola, G., Need for a strengthening of criminal environmental law? The Italian case, in: *Environmental crime in Europe: rules of sanctions*, Comte, F. and Krämer, L., eds, Groningen, Europa law publishing, 2004, 177–195.
- <sup>24</sup> Puckett, J., *The Basel plan: a triumph over business-as-usual*, Basel action network, 1997, 4.
- <sup>25</sup> Bandi, G., Liability and sanctions, criminal liability in Hungary, in: *Environmental crime in Europe: rules of sanctions*, Comte, F. and Krämer, L., eds, Groningen, Europa law publishing, 2004, 127–142.
- <sup>26</sup> Directive 2006/12/EC of the European Parliament and of the Council of 5 April 2006 on waste, Official Journal L114, 27/04/2006, 9–21.
- <sup>27</sup> Lindström, M., Attila, M., Fitch, T. and Pennanen, J., *Waste-related Conditions in Environmental Permits*, Amsterdam, IMPEL European Union Network for the Implementation and Enforcement of Environmental Law, 2005.
- <sup>28</sup> European Environmental Agency, Europe's environment: the third assessment, Luxembourg, Office for Official Publications of the European Communities, 2003, 162.
- <sup>29</sup> Faure, M.G. and Heine, G., *Criminal Enforcement of Environmental Law in the European Union*, The Hague, Kluwer International, 2005, 89–90.
- <sup>30</sup> Veldkamp, A.M.E., Grensoverschrijdende overbrenging van afvalstoffen, in: *Strafrechtelijke aanpak van grensoverschrijdende milieucriminaliteit, capita selecta*, Hendriks, L.E.M., Biezeveld, G.A. and Van Rijswijk, H.F.M.W., eds, Zwolle, Tjeenk Willink, 1996, 56–58.
- <sup>31</sup> Fortney, D.C., Thinking outside the “black box” tailored enforcement in environmental criminal law, *Texas Law Review* 81 (2003), 1609–1635.
- <sup>32</sup> Earnhart, D., Environmental crime and punishment in the Czech Republic: penalties against firms and employees, *Journal of Comparative Economics* 28 (2000), 379–399.
- <sup>33</sup> Hontelez, J., EEB Work Programme 2006, Brussels, European Environmental Bureau.
- <sup>34</sup> Clarke, R.V. and Newman, G., Secured by design: a plan for security coding of electronic products, Draft produced for the Foresight Crime Prevention Panel by the Jill Dando Institute of Crime Science, UCL, 2002, 31.
- <sup>35</sup> Jacobs, J.B., Friel, C. and Radick, R., *Gotham unbound: how New York City was liberated from the grip of organised crime*, New York, New York University Press, 1999, 86–95.
- <sup>36</sup> Carter, T.S., Ascent of the corporate model in environmental-organised crime, *Crime Law and Social Change* 31 (1999), 1–30.
- <sup>37</sup> Simon, D.R., Corporate environmental crimes and social inequality: new directions for environmental justice research, *American Behavioural Scientist* 43 (2000), 635.
- <sup>38</sup> Commission Decision of 3 May 2000 replacing Decision 94/3/EC establishing a list of wastes pursuant to Article 1(a) of Council Directive 75/442/EEC on waste and Council Decision 94/904/EC establishing a list of hazardous waste pursuant to Article 1(4) of Council Directive 91/689/EEC on hazardous waste, Official Journal L226, 06/09/2000, 1–32.
- <sup>39</sup> Levi, M. and Naylor, T., Organised crime, the organisation of crime and the organisation of business, Paper published by the UK DTT's Office of Science and Technology Foresight Directorate Crime Prevention Panel, 2000, 31.
- <sup>40</sup> Hall, D., Waste management companies in Europe, Public Services International Research Unit, European Federation of Public Service Unions, 2006. See [http://www.epsu.org/IMG/pdf/EN\\_PSIRU\\_waste\\_management\\_in\\_EU\\_Feb\\_06.pdf](http://www.epsu.org/IMG/pdf/EN_PSIRU_waste_management_in_EU_Feb_06.pdf).
- <sup>41</sup> Buclet, N. and Godard, O., Municipal waste management in Europe: a comparison of national regimes, in: *Municipal waste management in Europe: a comparative study in building regimes*, Buclet, N. and Godard, O., eds, Dordrecht, Kluwer, 2000, 222.
- <sup>42</sup> Cooke, A., and Chapple, W., Merger activity in the waste disposal industry: the impact and the implications of the Environmental Protection Act, *Applied Economics* 32 (2000), 749–755.
- <sup>43</sup> Waste Market Council, Waste market: public companies and developments, Utrecht, AOO, 2003, 8–9.
- <sup>44</sup> Vander Beken, T. and Balcaen, A., Crime opportunities provided by legislation in different sectors, *European Journal on Criminal Policy and Research*, 2006 (in press).
- <sup>45</sup> Bruinsma, G., *ibid.*, 266.
- <sup>46</sup> Szasz, A., Corporations, organised crime and the disposal of hazardous waste: an examination of the making of a criminogenic regulatory structure, *Criminology* 24 (1986), 1–27.
- <sup>47</sup> Situ, Y., Public transgression of environmental law: a preliminary study, *Deviant Behaviour* 19 (1998), 137–155.
- <sup>48</sup> Dutch ministry of housing, spatial planning and the environment, Twintig procent afvaltransporten illegaal, VROM, 16/07/2004.
- <sup>49</sup> Porter, G., Brown, J.W. and Chasek, P., *Global environmental politics*, 3<sup>rd</sup> ed., Boulder, Westview Press, 2000, 107.
- <sup>50</sup> Toffel, M.W., The growing strategic importance of end-of-life product management, *California Management Review* 45 (2003), no. 3, 102–129.
- <sup>51</sup> Lisney, R., Riley, K. and Banks, C., From waste to resource management, *Management services* 47 (2003), no.12, 8–14.
- <sup>52</sup> Paul, K., Exporting responsibility: shipbreaking in South Asia: international trade in hazardous waste, *Environmental Policy and Law* 34 (2004), 73–78.
- <sup>53</sup> Situ, Y. and Emmons, D., *Environmental crime: the criminal justice system's role in protecting the environment*, Thousand Oaks, Sage, 2000, 69–82.



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- <sup>54</sup> Gobert, J. and Punch, M., *Rethinking corporate crime*, London, Butterworths, 2003, 27–28.
- <sup>55</sup> Di Lello Finely, G., Crime environnemental organisé: l'exemple de l'Italie, in: *Environmental Crime in Europe: rules of sanctions*, Comte, F. and Krämer, L., eds, Groningen, Europa law publishing, 2004, 103–109.
- <sup>56</sup> Massari, M. and Monzini, P., Dirty businesses in Italy: a case-study of illegal trafficking in hazardous waste, *Global Crime* 6 (2004), 285–304.
- <sup>57</sup> Senior, K. and Mazza, A., Italian “triangle of death” linked to waste crisis, *Lancet Oncology* 5 (2004), 525–527.
- <sup>58</sup> Brack, D., Combating international environmental crime, *Global Environmental Change: Human and Policy Dimensions* 12 (2002), 144.
- <sup>59</sup> Gilbert, M.J. and Russel, S., Globalisation of criminal justice in the corporate context, *Crime Law and Social Change* 38 (2002), 213.
- <sup>60</sup> Porter, G., Brown, J.W. and Chasek, P., *Global environmental politics*, 3<sup>rd</sup> ed., Boulder, Westview Press, 2000, 10.