

Enforcement of Environmental Law in the Flemish Region

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Abstract

Enforcing compliance with environmental regulations has been on the agenda for many years in many legal systems. The recent European Union directive concerning the protection of the environment through criminal law shows that criminal law is increasingly used as an enforcement instrument. However, recent theoretical Law and Economics literature, as well as scarce empirical literature tend to suggest that, given the high administrative costs of criminal law, administrative law could be the primary enforcement instrument under certain conditions. This paper contributes to this debate by providing some evidence on criminal enforcement decisions made by the environmental inspection agency, the public prosecutor and the judges for the environmental violations in the Flemish Region. The results suggest that legal systems which primarily rely on the use of criminal law to enforce environmental regulations, such as the Flemish Region, do not provide ex ante enough incentives for a violator to comply. This stems from the fact that the probability of being apprehended and prosecuted is relatively small, as well as the average fines imposed by the court. In addition to the low expected sanction a violator faces, more than 60% of cases are dismissed. Even though the reasons for this might be more nuanced, our results cast serious doubts on the effectiveness of criminal law enforcement of environmental regulations.

I. Introduction

Since the 1980s many legal systems have increasingly used criminal law to enforce compliance with environmental regulations.¹ Also the European Union strongly believes in the criminal law as an instrument to protect the environment.² However, little is known on the effectiveness of criminal law to induce compliance with environmental regulations. The scarce empirical literature available seems to indicate that from the many violations which are reported only a few are prosecuted before the criminal courts.³ This casts serious doubts on the effectiveness of environmental criminal law. Therefore, it is important to look

at the behavior of regulators and courts when enforcing these regulations and whether this provides sufficient incentives for those regulated (usually companies) to comply.

Recently Law and Economics scholars have also held that in environmental enforcement too much use is made of the criminal law and that administrative law (particularly the use of administrative fines) may for particular offenses provide a more efficient deterrent.⁴ It is indicated that, given the high administrative costs of criminal law, administrative law could be the primary enforcement instrument in cases where the gain to the offender is modest, probability of detection is reasonable and harm to society not (too) large.⁵

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¹ See Faure, M. and Visser, M., "How to punish environmental pollution? Some reflections on various models of criminalization of environmental harm", *European Journal of Crime, Criminal Law and Criminal Justice*, 1995, Vol. 3, 316 and see also Mandiberg, S.F. and Faure, M., "A graduated punishment approach to environmental crimes: beyond vindication of administrative authority in the United States and Europe", *Columbia Journal of Environmental Law*, 2009, forthcoming, available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1275547.

² See for example the recent directive 2008/99 of 19 November 2008 concerning the protection of the environment through criminal law, *Official Journal* 2008, L328/28.

³ Meinberg, V., "Empirische Erkenntnisse zum Vollzug des Umweltstrafrechts", *Zeitschrift für die gesamte Strafrechtswissenschaften*, 1988, 112–157.

⁴ See Ogus, A.I. and Abbot, C., "Pollution and penalties", in Swanson, T. (ed.), *An introduction to the law and economics of environmental policy: issues in institutional design*, London, JAI Press, 2002, 493–512 and Ogus, A.I. and Abbot, C., "Sanctions for pollution: do we have the right regime?", *Journal of Environmental Law*, 2002, vol. 14, 283–298.

⁵ Bowles, R., Faure, M. and Garoupa, N., "The scope of criminal law and criminal sanctions: an economic view and policy implications", *Journal of Law and Society*, 2008, vol. 35(3), 389–416 and Svatikova, K., "Economic Criteria for Criminalization: Why Do We Need the Criminal Law?" available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1150689.

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Especially for so-called regulatory offences administrative sanctions may be more cost-effective. Although law and economics scholarship thus doubts whether (only) enforcing environmental law through criminal law is effective, the European trend seems to go in another direction. Europe recently promulgated Directive 2008/99 of 19 November 2008 on the protection of the environment through criminal law. In this Directive Member States are largely forced to use criminal law to enforce a large number of environmental directives. This raises the question whether merely relying on the criminal law (as the EU Directive does) can be expected to be effective.

We attempt with this paper to contribute to this debate by focusing on the enforcement of environmental law in one particular legal system, more specifically the Flemish Region in Belgium. The reason for focusing merely on the Flemish Region and not on Belgium as a whole is that competences in environmental matters have, since a variety of constitutional reforms in the 1980s and 1990s, been allocated to the regions.⁶ Since the enforcement of environmental law in Flanders was (until recently) mainly based on criminal law, the Flemish data can provide some interesting information concerning the enforcement of environmental criminal law. Thus the main goal of this paper is to provide some evidence on criminal enforcement decisions made by the environmental inspection agency, the public prosecutor and the judges for this region. The Environmental Inspectorate in Flanders publishes (since 1992) annual reports on its enforcement activities, including the number of inspections undertaken, the number of violations established and the consequences adhered to these violations. We will use two theoretical approaches to look at this Flemish data. First, there is the debate in the legal literature whether to use a deterrence or a compliance strategy.⁷ Some have strongly defended a pure deterrence approach on the basis of which in theory every established violation should be prosecuted. Others have held that it may be more effective to induce offenders towards compliance with informative and consultation strategies. Second, there is the debate on criminal versus administrative sanctions which is to some extent similar to the debate on deterrence versus compliance strategies. The results suggest that legal systems relying primarily on criminal law to enforce environmental regulations, such as the Flemish Region, do not provide *ex ante* enough incentives (at least coming from the legal sanctions) for a company to comply. This stems from the fact that the probability of being apprehended and prosecuted is relatively small, less than 1%, as well as the average fines imposed by the court. In addition to the low expected sanction a violator faces, more than 60% of cases are dismissed. This casts serious doubts on the effectiveness of criminal law enforcement of environmental regulations.

However, as the data concerning the enforcement of environmental law is unfortunately rare, we do realize that there are serious limitations as well. We largely depend on the annual reports of the administrative agencies. The data is not available for all years and not always comparable across years.⁸ There is also a bias with regard to reporting on the follow ups of the violations. This stems from the fact that the information on the follow ups is sent to the Environmental Inspectorate on a voluntary basis by the public prosecutor's office. Hence, some offices report more while others almost never respond. We assume that all violations where we do not know the results from have been treated on average in a similar way as the violations we do know the results from and that these two groups do not systematically differ. What is also missing is the information on the type of sanction (imprisonment or fine) and its amount. Notwithstanding these limitations we believe the Flemish empirical material to be interesting. This is the case since also other research is available where environmental lawyers, criminologists and environmental economists have looked at the enforcement of environmental law in Flanders (using different data sets than ours). In order to improve the reliability of the results we shall compare our findings with these earlier studies.

The remainder of our paper is set up as follows: after this introduction we first sketch the legal background of the enforcement of environmental law in the Flemish Region (II); next we summarize the theoretical literature with respect to law enforcement and enforcement strategies (III). Then we present a summary of the empirical literature available to date on the enforcement of environmental law in the Flemish Region (IV) and we present our own data set and stylized facts (V). An analysis of the data set, also comparing this to other literature and the theoretical framework is provided in section 6. Section 7 concludes.

⁶ As a result of these constitutional reforms Belgium now consists of the Flemish, Walloon and Brussels-Capital Regions. They have large competences in environmental, socio-economic, cultural and education-related areas.

⁷ For a summary of the pros and cons of compliance versus deterrence according to the literature see Van Rooy, B., *Regulating Land and Pollution in China, Law Making, Compliance and Enforcement; Theory and Cases*, Diss. Leiden, Leiden University Press, 2006, 228–233.

⁸ Till 1998, different Flemish provinces calculated the number of violations differently. Some calculated the first and the subsequent violations by a company as "separate" violations, other provinces took all violations by the same company in a given time period as a single violation.

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II. Enforcement of Environmental Law in Flanders: the Legal Background

2.1 Regional competences

Before 1980 environmental criminal law in Belgium barely existed.⁹ Since the Act of 8 August 1980 an important part of the competences for environmental policy in Belgium has been allocated to the regions. This constitutional and legislative change also provided competences to the regions to add criminal sanctions to enforce the so-called decrees they would issue.¹⁰ Since environmental law and its enforcement have therefore become a regional competence, we focus on one of the regions in Belgium, the Flemish Region.¹¹

2.2 Flemish environmental criminal law

It is only after competences were awarded to the regions that “serious” environmental laws were drafted by these regions. The most important one for the Flemish Region was and still is the Flemish Decree concerning environmental permits of 28 June 1985.¹² This decree *inter alia* provides in Article 4 that no one may set up or change an establishment without first having obtained a permit from the competent authority. Article 39 provides that a prison sanction and/or a fine can be imposed on:

1. anyone who sets up or changes a classified establishment without a license;
2. anyone who violates the provisions of this decree or the measures which accompany it or the conditions of the environmental license;
3. anyone who hinders the supervision of classified establishments as ordained in this decree;
4. anyone who does not comply with the compulsory measures which have been imposed.

It is this decree which provides still today the most important legal basis for the enforcement of environmental law in the Flemish Region. It has meanwhile many detailed executive orders, an important one being the Flemish regulations concerning the environmental permit of 6 February 1991. This regulation was important since it also regulated the entry into force of the Flemish decree concerning environmental permits: that decree entered into force on the 1 September 1991.¹³

Many other specific decrees exist: it would take too far to discuss these within the framework of this paper.¹⁴

2.3 Enforcement

The decree concerning the environmental permit provides that violations can be established by “officers of judicial police” within the framework of their general competence. That simply means that any officer of the ordinary police who would find out that a violation of the Decree on Environmental Permit occurred can draft a report establishing this violation. This report, Notice of Violation (NOV) is in Dutch

referred to as a *proces-verbaal* (abbreviated as PV). Second, also some civil servants working for the local police who have a specific certificate can control compliance with the Decree on the Environmental Permit. Most importantly (in practice) are the competences awarded to the civil servants of the Environmental Inspectorate of the Department of Environment, Nature and Energy¹⁵ of the Flemish Environmental Ministry. It is this Environmental Inspectorate, in Dutch referred to as *Milieu-inspectie* (abbreviated MI) that has the most important competences to control compliance with environmental regulations in the Flemish Region, the most important one being the Decree on the Environmental Permit and its executive orders.¹⁶

There are some other civil servants having competences as well in environmental matters, like persons working for the Agency of Nature and Forests (for controlling compliance with the Forest Decree) and servants of the Flemish Land Society (controlling compliance with land regulation), but these are less important within the framework of this paper.

⁹ For an overview see Faure, M., *Umweltrecht in Belgien. Strafrecht im Spannungsfeld von Zivil- und Verwaltungsrecht*, Freiburg im Breisgau, Max Planck Institut for Foreign and International Criminal Law, 1992, 36–64.

¹⁰ See on the competence of the regions to issue criminal sanctions, Faure, M. and Vanheule, J., *Milieustrafrecht*, Mechelen, Kluwer, 2006, 4–9 and 32–74.

¹¹ See on the division of competences in Belgium Lust, S., “Administrative law in Belgium”, in Seerden, R.J.G.H. (ed.), *Administrative law of the European Union, its Member States and the United States. A comparative analysis*, 2nd ed., Antwerp, Intersentia, 2007, 5–60.

¹² See Faure, M. and Heine, G., *Environmental criminal law in the European Union. Documentation of the main provisions with introductions*, Freiburg im Breisgau, Max Planck Institut for Foreign and International Criminal Law, 2000, 36.

¹³ De Pue, E., Lavrysen, L. and Stryckers, P., *Milieuzakboekje*, 22nd ed., Mechelen, Kluwer, 2008, 358.

¹⁴ For a more detailed account of environmental criminal law in the Flemish Region see Faure, M. and Vanheule, J., *Milieustrafrecht*, 2006 and for an account in English: Deketelaere, K., “Public environmental law in Belgium in general and in the Flemish Region in particular”, in Seerden, R.J.G.H., Heldeweg, M.A. and Deketelaere, K.R. (eds.), *Public environmental law in the European Union and the United States. A comparative analysis*, The Hague, Kluwer Law International, 2002, 76–78.

¹⁵ Departement Leefmilieu, Natuur en Energie.

¹⁶ See for a full account of their competences the website of MI: www.milieu-inspectie.be. They are also competent to verify violations of other environmental decrees. However, in practice the Decree on the Environmental Permit is definitely the most important one. This is also confirmed by Billiet, C. and Rousseau, S., ‘De zachte rechtshandhaving in het bestuurlijke handhavingsspoor: de inspectiebeslissing en het voortraject van bestuurlijke sancties. Een rechtseconomische analyse’, *Tijdschrift voor Milieurecht*, 2005, 5.

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It is important to notice that in these specific decrees control competencies are awarded to the civil servants of MI: they are hence competent to verify compliance with environmental regulation even without any suspicion. That is the main difference with the regular police: they would not normally verify compliance with environmental regulation if there were not already a suspicion of a violation. It is hence usually as a result of inspection visits by the MI that a violation will be established.

2.4 Structure of the enforcement

2.4.1 Inspections and targeting

As we already indicated, there are various ways in which a violation of the regulation can be established.¹⁷ The Environmental Inspectorate works with so-called environmental inspection programs, where they balance between specific *ex ante* enforcement campaigns, routine controls and reactive controls (after a complaint). Specific enforcement campaigns belong to what is referred to in the literature as targeting. Depending upon the years concerned the yearly reports indicate that specific companies (e.g. heavy industry) will be specifically targeted during an enforcement campaign. It simply means that additional efforts are spent to target a specific sector of industry. The routine controls mostly consist of samples that are taken of waste, soil, ground- or waste water to control compliance with the regulation (more specifically emissions standards in permits). Usually the most important part of these routine controls concern waste water. Routine controls also relate to air and noise and to specific conditions in permits. Reactive controls are controls that take place as a result of complaints, usually by third parties (e.g. neighbours, potential victims or non-governmental organisations). It is at the occasion of one of those inspections by the Environmental Inspectorate (MI) that a violation of the regulation can be established. The MI hence follows a combination of targeting, routine controls and reactive control.

2.4.2 Post-detection discretion?

When a violation has been established, MI has a legal obligation to issue a NOV and send it to the public prosecutor.¹⁸ In addition to NOV being issued, the Environmental Permit Decree of 1985 refers also to other options for the Inspectorate.¹⁹ One possibility is that the Inspectorate issues a recommendation (“*aanmaningen*”). This is in practice used for minor administrative violations. A second possibility is that a warning is used. This is an instruction to the violator to end the present situation of non-compliance.²⁰ The legal basis of these recommendations and warnings is not very clear.²¹ Even though the legal basis may be unclear, in practice these so-called soft enforcement instruments are often used. In addition, the Inspectorate can under certain circumstances impose adminis-

trative sanctions, like the suspension or withdrawal of the permit.

As soon as such a NOV has been drafted, Article 29 of the Belgian Code of Criminal Procedure forces everyone (hence also a civil servant of the Environmental Inspectorate) to forward it to the public prosecutor. Within this model, environmental inspectors hence have limited discretion to “deal” with a case themselves as soon as a NOV has been drafted. The possibilities for following a so-called compliance strategy hence mainly exist in addition to a NOV.²²

The only exception concerns the case where the legislator himself explicitly deviates from this obligation to inform the public prosecutor of every violation. That would for example be the case where the legislator gave authority to inspectors to dispose of the case themselves by imposing an administrative fine on the perpetrator. However, the possibility to impose administrative fines in environmental law in the Flemish Region is rare. In a recent doctoral dissertation Billiet shows that administrative fines are in fact only used when fiscal obligations (payment of environmental levies) are violated.²³ The Decree on Environmental Permits does not provide a possibility for inspectors who established an environmental crime (not being a violation of a fiscal obligation) to dispose of the case via an administrative fine.

An important exception constitutes the manure legislation. The Flemish Region already had manure decrees since 1991 and 1995.²⁴ Also the environmental inspectors are competent to control compliance with the Manure Decree. That decree provides for the

¹⁷ For a more detailed account of the inspection efforts by the agency see Billiet, C.M. and Rousseau, S., ‘De zachte rechtshandhaving in het bestuurlijke handhavingsspoor: de inspectiebeslissing en het voortraject van bestuurlijke sancties. Een rechtseconomische analyse’, *Tijdschrift voor Milieurecht*, 2005, 2–33.

¹⁸ In Dutch referred to as a *proces-verbaal van overtreding* (PVO).

¹⁹ See Article 30 of the Environmental Permit Decree and Article 64 of the Regulation of 1 September 1991.

²⁰ See Rousseau, S., *Economic empirical analysis of sanctions for environmental violations: a literature overview*, Working Paper Series Center for Economic Studies, Katholieke Universiteit Leuven, Nr. 2007–03, p. 8.

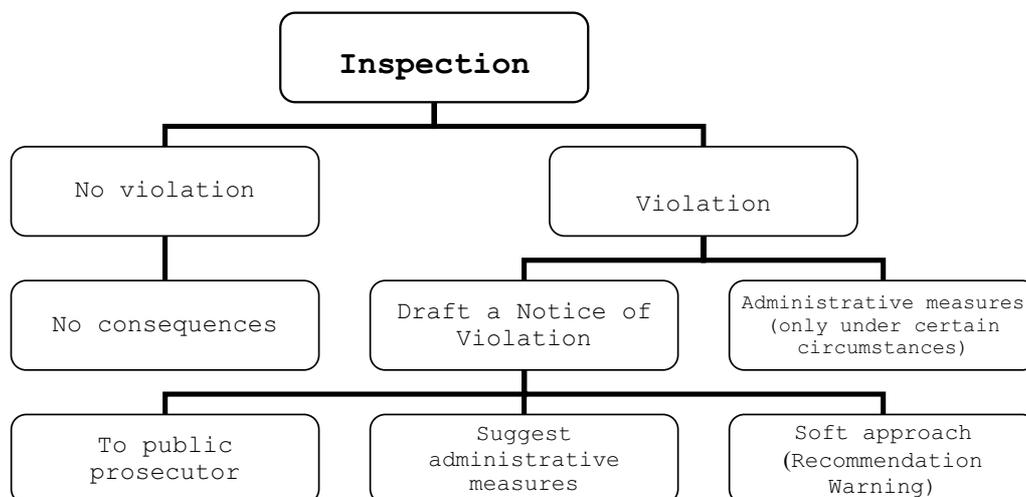
²¹ For a detailed discussion see Billiet, C. and Rousseau, S., *Tijdschrift voor Milieurecht*, 2005, 12–16.

²² Although in practice there is a large grey zone since sometimes a *pro justitia* is established and at the same time recommendations are given as well. For details see Billiet, C. and Rousseau, S., 2005, 16–19. However, with the drafting of a *pro justitia* the case comes in principle in the hands of the public prosecutor.

²³ Billiet, C.M., *Bestuurlijke sanctionering van het milieurecht*, Antwerp, Intersentia, 2008, 693.

²⁴ The most recent Manure Decree is of 22 December 2006 (see De Pue, E., Lavrysen, L. and Stryckers, P., *Milieu-zakboekje*, 2008, 484–499).

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possibility to impose administrative fines in case of a violation. It is the inspectors who are competent to impose the administrative fine.

Schematically the choice of the environmental inspector could be presented as above.

In practice the three approaches can also be combined: a NOV can be sent to the public prosecutor, but at the same time MI can also formulate a recommendation or warning and suggest administrative measures.

Since a ministerial letter of 26 June 2002,²⁵ specific priorities in the enforcement of environmental law have been identified. This document holds that particular violations must be considered as having priority. The criteria relate *inter alia* to the consequences of the violation (irreparable damage, serious environmental damage or damage to human health), to the fact that the violation caused serious gains to the offender or was committed in a professional capacity. Also acting against the enforcement efforts and prior convictions make a violation a priority.

The inspector should indicate in his Notice of Violation whether a violation should be considered as having priority and for what particular reasons. The idea is that enforcement would more particularly focus on the so-called priority violations and that the public prosecutor would deal with those types of violations with priority as well.

2.4.3 Options for the public prosecutor

After the NOV has been received by the public prosecutor in the district where the violation occurred, the public prosecutor has a variety of options:

1. He can judge that more information is needed before taking a decision. In that respect he could e.g. ask the environmental inspectors to follow up on the violation, for example by controlling whether the perpetrator changed his violating behavior and stopped the infringement.
2. The prosecutor could also decide to discharge the

violin without taking any formal step. Since in Belgium the so-called opportunity principle applies, it means that the public prosecutor is not obliged to prosecute every violation. He can hence judge that it is not “opportunistic” to prosecute this particular violation. In the ministerial letter concerning the priorities of environmental enforcement it was agreed that in case of a dismissal (discharging the violator), the public prosecutor would inform the inspectorate of the reasons for the dismissal. When the inspector had qualified the particular violation as having priority, he can request the public prosecutor to reconsider his decision.²⁶

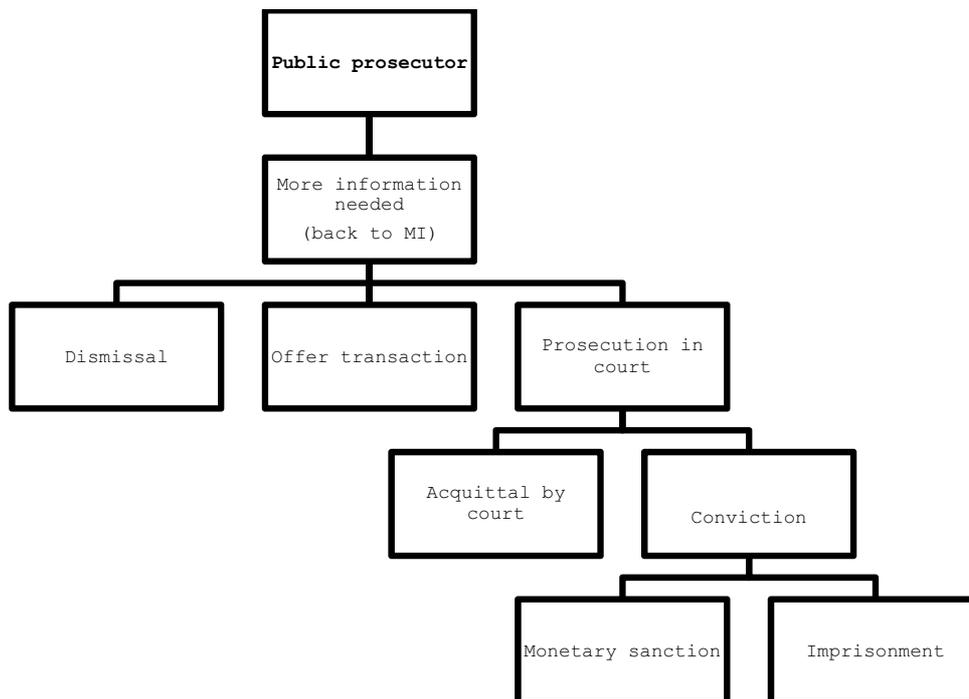
The effect of such a dismissal would be that no sanction whatsoever is imposed on the perpetrator. The reasons for such a dismissal can be diverging: it can relate to the fact that the violation is considered as minor, or to the fact that the violator repaired the damaging consequences or that capacity of the criminal courts are limited.

3. A third option for the public prosecutor is to offer the payment of a sum by the perpetrator which will extinguish the criminal prosecution. This “transaction” (or a deal) is not an administrative fine, since it is proposed by the public prosecutor, but it is rather a financial imposition which will end the case upon payment by the perpetrator. Again, this practice will not have a formal legal basis, but is considered as a

²⁵ Ministerial letter of 26 June 2002: the ‘Prioriteitennota vervolgingsbeleid milieurecht in het Vlaamse Gewest’ was adopted by the College of Prosecutors General on 30 May 2000.

²⁶ This is again based on the ministerial letter concerning the priorities of environmental enforcement, but has no formal legal basis in a statute or decree.

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consequence of the opportunity principle. The amount which the public prosecutor can propose is hence not regulated and will depend upon the seriousness of the offence.

- The fourth option for the prosecutor is to proceed to prosecute the perpetrator in court. Note that since Belgium has since the Act of 4 May 1999 also the criminal liability of legal entities, both the physical person as well as the legal entity can be prosecuted.

2.4.4 Decision of the court

When the public prosecutor proceeds to prosecute, the case comes before a criminal court in first instance. The court can either acquit or convict the perpetrator and then impose a sanction. The sanction in case of a violation of the Decree on Environmental Permits can consist of a fine between €100 and €100.000 (multiplied with 5.5 to account for inflation) and/or an imprisonment of 8 days up to 1 year.

The figure above shows schematically what could happen with a NOV.

expected sanction a violator might face when caught. The expected sanction (ES) is determined by multiplying the probability of detection and sanctioning (p) with the severity of the actual sanction (S).²⁷

$$ES = p.S$$

Based on this deterrence hypothesis, the rich and abundant literature on economics of crime and law enforcement suggests that potential offenders respond to the incentives created by the criminal justice system and crime rates hence inter alia depend on risks and benefits of crime.²⁸

Assuming that potential criminals are rational utility maximizers who base their decisions to commit or not to commit a crime on an expected utility calculation, they will comply with the law as long as their benefits of compliance outweigh their costs of compliance. This assumption of rationality has been highly criticized in literature²⁹ and might not be plausible in relation to many criminal activities of individuals. However, within the context of environmental regulation, it is much more useful since potential wrongdoers are corporate actors who seem to very well base their decisions on a cost-benefit

III. Enforcement of Environmental Regulation: a Brief Literature Review

3.1 Optimal enforcement: Inducing companies to comply

The economic approach to law enforcement goes back to the seminal paper by Becker who argues that using a cost-benefit model a violation can be deterred when the expected costs of a violation are higher than the benefits. The expected costs of a violation refer to the

²⁷ Becker, G.S., 'Crime and Punishment: An Economic Approach', *Journal of Political Economy*, Vol. 76, No. 2, 1968, 169–217.

²⁸ Garoupa, N., 'The Theory of Optimal Law Enforcement', *Journal of Economic Surveys*, Vol. 11, No. 3, 1997, 267–295.

²⁹ Korobkin, R.B. and Ulen, T., 'Law and Behavioral Science: Removing the Rationality Assumption from Law and Economics', *California Law Review*, Vol. 88, No. 4, 1053–1144.

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analysis³⁰ and carefully assess the possible consequences of illegal behaviour. As such, polluters are expected to comply with the environmental regulations if the probability of being apprehended and sanctioned coupled with the penalty imposed will be sufficiently high.

The costs of non-compliance may be raised through increasing the probability of detection, the sanction or by variations of both.³¹ Raising the probability of being caught requires more and better inspection and is costly. Increasing the expected maximum punishment, to the contrary, requires less effort from the government.³² Therefore, an argument has been made in literature that the maximisation of social welfare requires applying maximal fine since fines are costless to apply whereas detection is costly.³³ There is, however, a problem with using fines as an effective deterrent, since this only works in case of full solvency of the polluter, at least assuming that the polluter is able to pay the optimal fine. In case of a low probability of detection, requiring higher sanctions, fines may lead to under-deterrence as a result of insolvency. In that case, non-monetary sanctions will have to be applied.³⁴ However, empirical evidence has shown that it may be much more effective to raise the probability of detection instead of combining low probability of detection with a high sanction.³⁵ Therefore, particularly given the risk of insolvency, raising the probability of detection may give better results than merely adopting a policy of high fines.

After all, policymakers will have to balance the costs of enforcement against the advantages of reducing contraventions. Higher costs of enforcement may be justified if it leads to stronger deterrence or educational effects. Preventing all breaches is, however, neither possible nor desirable, since the costs of achieving it would inevitably outweigh the benefits.³⁶ The desired outcome is thus a high level of compliance at least social cost, an approach referred to as cost-effectiveness.³⁷ Given this, the regulators might want to decide which strategy and instrument is the most efficient to use in order to induce compliance.

3.2 Optimal enforcement strategy: Post-detection discretion?

The question arises whether agencies and prosecutors should be granted discretion when during an inspection a violation would be established. In case of minor violations officials often use discretion by e.g. warning the violator or requiring compliance within a certain period of time without filing an official report. The question of whether one allows agency discretion or not is strongly linked to the type of strategy which has to be followed to induce compliance. It is an issue which has received a lot of attention in general economic literature with respect to enforcement styles and also in literature dealing with enforcement of environmental regulation. The literature makes a distinction between two enforcement styles: the

economic approach is qualified as the deterrence style based on the idea that authorities should go hard on perpetrators and should prosecute in all cases, preferably resulting in severe sanctions. A deterrence model therefore, does not rely on agency discretion. A cooperation enforcement style relies more heavily on negotiations between the perpetrator and the agency whereby the agency, through persuasion and by providing information tries to bring the perpetrator to compliance.³⁸ Within this cooperation model punishment is not the appropriate instrument, but rather a method of last resort if other instruments (persuasion and information) have failed.³⁹

³⁰ Faure, M.G. and Visser, M., 'Law and Economics of Environmental Crime', in Sjögren, H. and Skogh, G. (eds.), *New Perspectives on Economic Crime*, Cheltenham, Edward Elgar Publishing, 2004, 57–75. See also Braithwaite, J. and Geis, G., 'On Theory and Action for Corporate Crime Control', *Crime & Delinquency*, Vol. 28, 1982, 292–314.

³¹ Polinsky, A.M. and Shavell, S., 'The optimal trade-off between the probability and the magnitude of fine', *American Economic Review*, Vol. 69, No. 5, 1979, 880–891.

³² Faure, M.G. and Visser, M., 'Law and Economics of Environmental Crime', in Sjögren, H. and Skogh, G. (eds.), *New Perspectives on Economic Crime*, Cheltenham, Edward Elgar Publishing, 2004, 57–75.

³³ Kobayashi, B.H. and Lott, Jr., 'Low-Probability-High-Penalty Enforcement Strategies and the Efficient Operation of the Plea Bargaining System', *International Review of Law and Economics*, Vol. 12, 1992, 69–78. See also Polinsky, A.M. and Shavell, S., 'A Note on Optimal Fines when Wealth Varies Among Individuals', *American Economic Review*, Vol. 81, 1991, 618–621.

³⁴ Shavell, S., 'Criminal Law and the Optimal use of Non-Monetary Sanctions as a Deterrent', *Columbia Law Review*, Vol. 85, 1985, 1232–1262.

³⁵ Ehrlich, I., 'Participation in Illegitimate Activities: A Theoretical and Empirical Investigation', *Journal of Political Economy*, Vol. 81, No. 3, 1973, 521–552; Polinsky, A.M. and Shavell, S., 'The Optimal Trade-Off between the Probability and the Magnitude of Fines', *American Economic Review*, Vol. 69, No. 5, 1979, 880–891; Posner, R. (1980), 'Optimal Sentences for White Collar Criminals', *American Criminal Law Review*, Vol. 17, 400–418. Posner, R., 'Optimal Sentences for White Collar Criminals', *American Criminal Law Review*, Vol. 17, 1980, 400–418.

³⁶ Ogus, A., Faure, M. and Philipsen, N., 'Best Practices for Consumer Policy: Report on the Effectiveness of the Enforcement Regimes', Paris, OECD, 2006 and Faure, M., Ogus, A. and Philipsen, N., 'Curbing Consumer Financial Losses: The Economics of Regulatory Enforcement', *Law & Policy*, Vol. 31, No. 2, 2009, 161–191.

³⁷ Garber, A.M. and Phelps, C.E., 'Economic Foundations of Cost-Effectiveness Analysis', *Journal of Health Economics*, Vol. 16, No. 1, 1997, 1–31.

³⁸ Reiss, A.J., Jr., 'Selecting Strategies of Social Control over Organizational Life', in Hawkins, K. and Thomas, J.M. (Eds.), *Enforcing Regulation*, Kluwer-Nijhoff Publishing, 1984.

³⁹ Van Rooy, B., *Regarding Land and Pollution in China, Law Making, Compliance, and Enforcement; Theory and Cases*, Dissertation, Leiden, Leiden University Press, 2006.

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At first inspection, the cooperation model does not fit into the economic approach to enforcement. The classic Becker model assumes that the optimal mix of sanctions and the probability of detection will provide incentives to the perpetrator for compliance. In addition, there are many problems with the cooperation model. Deterrence fails if the employer, after being detected, will merely have to invest in technology preventing health and safety risks which he had to do on the basis of regulation anyway. Secondly, when a cooperative strategy has failed and the administrative agency has to change its position to a deterrence style, the agency's "hands might be tied". The cooperation strategy has therefore the inherent risk that powerful and knowledgeable companies will de facto be able to control and "capture" the agency.⁴⁰

However, notwithstanding these limits of the cooperation model, in certain circumstances there is an economic explanation of why administrative agencies often follow the compliance strategy.⁴¹ It has been argued that a strict deterrence approach which does not take into account the fact that compliance might be practically impossible or extremely difficult may lead to a refusal to comply because the deterrence approach is felt as unreasonable.⁴² Moreover, enforcement agents may be unwilling to act as "policeman" in an adversarial relationship with the firms,⁴³ whose cooperation and good will is crucial for the success of enforcement. Another reason to follow the cooperation model is related to the high costs for the enforcing agency to bring a case to court.⁴⁴ Those high costs may also explain why in some cases there is a seemingly high tolerance of the enforcing agency to non-compliance; this can be a strategic response by the agency to a difficult enforcement environment.⁴⁵

There may hence not be such a strict distinction between the deterrence and cooperation style. Proponents of the cooperative approach realize that coercion is necessary also in a cooperation model. Applying these insights to the case of post-detection discretion after establishment of a violation of environmental regulation one can argue that there are, except in the case when there are justified fears that officials might abuse discretion, strong reasons in favour of allowing post-detection discretion. It can allow a cost-effective differentiation by agencies focussing enforcement efforts on those employers who (e.g. as repeat offenders) continue to violate the regulation whereas scarce resources should not be wasted on polluters who can be induced towards compliance after a warning. Moreover, especially in those cases where violations take place out of ignorance rather than wilful conduct, post-detection discretion can lead to a cooperative strategy whereby the inspectorate can induce the uninformed polluter towards compliance.⁴⁶

3.3 Optimal enforcement instrument: Administrative or criminal law?

Monetary sanctions can in principle have both a criminal and an administrative nature. All things being equal the administrative procedure has the major advantage that it is far less costly than the criminal procedure. Administrative fines can, within what is sometimes referred to as administrative law, be imposed by administrative authorities after a relatively simple procedure and require usually a relatively low threshold of proof. Compared with criminal law, the costs of the administrative procedure are substantially lower. All things being equal, it can therefore be argued that if optimal deterrence can be achieved through fines, it seems desirable to use the less costly administrative law instead of the relatively more costly criminal procedure. This has led many scholars to argue that the imposition of relatively modest fines through the criminal procedure is inefficient since a similar result could be achieved at lower costs through administrative law. More particularly, Ogus and Abbot have therefore argued that in the U.K. more use should be made of administrative fines (and other administrative sanctions for that matter) to enforce violations of

⁴⁰ Garoupa, N. and Klerman, D., 'Corruption and the Optimal Use of Non-monetary Sanctions', *International Review of Law and Economics*, Vol. 24, 2004, 219–225.

⁴¹ Fenn, P. and Veljanovski, C., 'A Positive Economic Theory of Regulatory Enforcement', *Economic Journal*, Vol. 98, 1988, 1055–1070; Rousseau, S., 'The use of warnings in the presence of errors,' *International Review of Law and Economics*, Vol. 29, 2009, 191–201.

⁴² Hawkins, K., *Environment and Enforcement, Regulation and the Social Definition of Pollution*, Oxford, Clarendon Press, 1984; Bardach, E., and Kagan, R., *Going by the Book: The Problem of Regulatory Unreasonableness*. Philadelphia, Temple University Press, 1982.

⁴³ Aalders, M. and Wilthagen, T., 'Moving Beyond Command and Control: Reflexivity in the Regulation of Occupational Safety and Health and the Environment', *Law & Policy*, Vol. 19, 1997, 415–444 and Aalders, M., 'Self-Regulation and Compliance with Environmental Law from a Global Perspective', in Niessen, N. and Bedner, A. (eds.), *Towards Integrated Environmental Law in Indonesia*, Leiden, CNWS, 2003, 21–36.

⁴⁴ Ogus, A. and C. Abbot, C., 'Sanctions for Pollution: Do We Have the Right Regime?', *Journal of Environmental Law*, Vol. 14, 2002, 283–298.

⁴⁵ Heyes, A. and Rickman, N., 'Regulatory Dealing – Revisiting the Harrington Paradox', *Journal of Public Economics*, Vol. 72, 1999, 361–378.

⁴⁶ Ogus, A., Faure, M. and Philipsen, N., 'Best Practices for Consumer Policy: Report on the Effectiveness of the Enforcement Regimes', Paris, OECD, 2006 and Faure, M., Ogus, A. and Philipsen, N., 'Curbing Consumer Financial Losses: The Economics of Regulatory Enforcement', *Law & Policy*, Vol. 31, No. 2, 2009, 161–191.

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environmental regulations.⁴⁷ A clear normative conclusion from this literature is therefore that in many more instances than is the case today, administrative law could be used to deter environmental pollution, especially when the penalties consist of relatively low fines or other (not too infringing) administrative sanctions.⁴⁸

However, there are important reasons why not all efficient penalties necessary to deter environmental pollution can be imposed through administrative law and why criminal law therefore remains necessary. Since the probability of detection of environmental pollution can in practice often be very low, the optimal sanction to deter pollution may become very high as well. The likelihood that this optimal fine might outweigh the individual wealth of an offender is relatively high. Environmental polluters are often organised as corporate entities that benefit from limited liability.⁴⁹ Hence, there is always a risk of insolvency where the optimal fine (to outweigh a low detection rate) will be much higher than the assets of the firm. Indeed, the optimal monetary sanction required for deterrence so frequently exceeds the offenders' assets that non-monetary sanctions, such as imprisonment, are necessary. The major advantage of the fine (lower administrative costs) therefore only leads to favouring this type of sanction when the risk of insolvency can be controlled. It should also be recalled that the probability of an administrative fine being imposed will be much higher (given a lower procedural threshold) than that of a criminal fine. As a result the administrative fine should not necessarily be nearly as large as the criminal fine. This can again reduce the insolvency problem.

The policy lesson from this economic literature is therefore rather straightforward: in cases where optimal deterrence of environmental polluters can be achieved through relatively modest sanctions (like not excessively high administrative fines or other administrative sanctions), the use of the less costly administrative law may be warranted. However, in cases where the probability of detection is relatively low, social harm and the potential gain to the polluter is high and thus a more severe sanction is needed, it may be warranted to use the more costly criminal procedure, also in order to reduce error costs. This is certainly the case when the optimal fine would reach the insolvency limit and non-monetary sanctions are thus needed for deterrence, but equally where for the same reason very high administrative fines would have to be imposed.

IV. Summary of Empirical Literature

There have been some interesting studies addressing the enforcement of environmental law in the Flemish Region. These merit to be summarised to be later compared with our own empirical results.

4.1 Data on criminal enforcement

A first interesting study to mention is one executed by Paul Ponsaers and Saaske De Keulenaer of Ghent University concerning the enforcement activities of environmental inspectorate, but especially of public prosecutors.⁵⁰ They *inter alia* provide data on the behaviour of the public prosecutor when receiving the above mentioned *pro justitias* for violation of specific statutes (not the criminal code).⁵¹ They *inter alia* found that the public prosecutor of the district of Ghent dismisses (in their sample) 33.3% of all cases, whereas the number of dismissals in Brussels is almost twice as high with 60.4%.⁵² They therefore conclude that the probability to be prosecuted in Ghent is almost twice as high as in Brussels. However, they equally found that the average number of dismissals for criminal law in general is around 74%. Hence, the probability of being prosecuted in cases involving specific legislation is higher.⁵³ Their research also showed that the district of Ghent had a high number of transactions (14.8%)

⁴⁷ Ogus, A. and Abbot, C., 'Pollution and Penalties', in Swanson, T. (ed.), *An Introduction to the Law and Economics of Environmental Policy: Issues in Institutional Design*, Elsevier, 2002a, 493–516 and Ogus, A. and Abbot, C., 'Sanctions for Pollution: Do We Have the Right Regime?', *Journal of Environmental Law*, 2002b, Vol. 14, 283–300.

⁴⁸ The fact that the imposition of administrative fines is cheaper than the imposition of fines through the criminal procedure seems realistic even though also in administrative law (mainly as a result of requirements following from the European Convention on Human Rights) rights of the defence have to be followed. Still, the procedural costs for society of applying the criminal procedure seem larger than of applying the administrative law, although this could be subject of further empirical research. However, this statement is mainly true when referring to administrative fines and may be different when remedial measures are imposed as administrative sanctions (the execution of those may be costly as well).

⁴⁹ Hansmann H. and Kraakman, R.H., 'Toward Unlimited Shareholder Liability for Corporate Torts', *Yale Law Journal*, Vol. 100, 1991, 1879. Cortenraad, W.H.F.M., *The Corporate Paradox, Economic Realities of the Corporate Form of Organization*, Boston, Kluwer Academic, 1999.

⁵⁰ Ponsaers, P. and De Keulenaer, S., 'Met strafrecht tegen milieudelicten? Rol en functie van bijzondere inspectiediensten in de strijd tegen milieucriminaliteit', *Panopticon*, 2003, 250–265.

⁵¹ Their research focuses on the activities of specific investigation agencies that have control powers to verify compliance with specific statutes. It is normally these specific statutes (which can relate to the protection of Financial, labour, environmental or other specific interests) that allocate these competences to the inspectorates.

⁵² Ponsaers, P. and De Keulenaer, S., *Panopticon*, 2003, 258.

⁵³ Remember that with specific legislation is meant all legislation (other than the criminal code) which contains criminal sanctions and which hence can be enforced through the criminal law. This includes environmental statutes, but is of course much broader than that.

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whereas in 8.8% of cases a judicial decision (judgment) was pronounced. The data referred to the year 1998. Whereas these data related to various cases involving specific legislation, they also provide data concerning the environmental inspectorate. Again, the number of dismissals in environmental cases is substantially lower in Ghent than in Brussels (28.1% versus 46.96%), but their data equally show that in environmental cases the number of dismissals is lower than in other cases involving violations of specific statutes.⁵⁴

Also Carole Billiet and Sandra Rousseau have studied enforcement decisions of the environmental inspectorate. In a study of 2005 they report on enforcement actions in the textile industry in Flanders and found that only in 20–30% of inspections during which a firm was found to be non-compliant some enforcement action (either a NOV, warning without a NOV or a recommendation) followed. The other 70–80% of these inspections where a violation was observed did not lead to an action because they were part of the further investigation (if more than one visit was necessary to prove a violation) or because they were follow up visits (and hence a NOV was already sent to the public prosecutor).⁵⁵ They found that the Inspectorate used the recommendation in almost all cases where a violation took place in good faith and argued that these recommendations are highly effective since they lead to increased compliance.⁵⁶ However, quoting an annual report of the environmental inspectorate, they equally hold that the probability to be inspected is statistically relatively small: once every ten years.⁵⁷ Similar data appear from different and more recent studies of the same authors.⁵⁸

In yet another recent study Rousseau reports that overall in 55% of inspection visits firms were reported to be compliant, meaning that one or more violations were detected for 45% of inspection visits.⁵⁹

4.2 Data on criminal sanctions

The same authors have equally published studies examining the fines imposed either as a result of a transaction by the public prosecutor or as a formal criminal fine by the court. In a study of 2003 analysing the fines imposed by courts within the competence of the Court of Appeals of Ghent in the period 1990–2000, they found an average fine of €5.000 imposed both in first instance and in appeal.⁶⁰

A study of 2005 addressing specifically the textile sector presents the following average fines:

- in case of transaction: €260;
- imposed by the criminal court in first instance: €2.869;
- imposed in appeal: €7.165.⁶¹

Interestingly they also mention that in the almost 200 files they examined, never a formal administrative sanction (e.g. suspension of the permit) was proposed or imposed.

These average fines are also presented in more recent studies whereby also a calculation is added of

the average expected sanction for a potential perpetrator. The estimates vary from €87.7⁶² to €176⁶³ to €181.⁶⁴ Given the low sanctions which are imposed and the low expected sanction, Rousseau qualifies it “a miracle” that companies still decide to comply and provide some explanations why, notwithstanding low expected sanctions there is still such a relatively high level of compliance.⁶⁵ She equally found that there is a higher probability of finding a firm in compliance in a second period when there was compliance as well before. The reverse was true as well: firms that had to pay a monetary sanction during the previous two years were more likely to be violators when inspected than firms that did not have to pay a fine or settlement. The firms that did not have to pay a fine recently may hence overestimate the expected fine, whereas firms that were recently fined have a more accurate impression of true expected sanctions and are hence

⁵⁴ Ponsaers, P. and De Keulenaer, S., *Panopticon*, 2003, 262–263.

⁵⁵ Billiet, C. and Rousseau, S., *TMR*, 2005, 10.

⁵⁶ Billiet, C. and Rousseau, S., *Tijdschrift voor Milieurecht*, 2005, 18–19. Even though they do not have accurate compliance rates they argue (mostly based on interviews and literature review) that 80–90% of violations would end after a warning.

⁵⁷ Billiet, C. and Rousseau, S., *Tijdschrift voor Milieurecht*, 2005, 19.

⁵⁸ Rousseau, S., *Economic empirical analysis of sanctions for environmental violations: a literature overview*, 8–9.

⁵⁹ Rousseau, S., Evidence of a filtered approach to environmental monitoring, available from the author: Sandra.Rousseau@econ.kuleuven.be, August 2008, p. 9.

⁶⁰ Billiet, C. and Rousseau, S., ‘De hoogte van strafrechtelijke boetes. Een rechtseconomische analyse van milieurechtspraak (1990–2000) van het Hof van Beroep te Gent’, *Tijdschrift voor Milieurecht*, 2003, 131.

⁶¹ Billiet, C. and Rousseau, S., *Tijdschrift voor Milieurecht*, 2005, 17. For recent data also see Rousseau, S., ‘Empirical Analysis of Sanctions for Environmental Offenses’, *International Review of Environmental and Resource Economics*, forthcoming. In a recent publication it is held that the amounts have (in the period 2003–2007) slightly increased. For legal entities the mean of fines would be €14.569 in First Instance and €10.733 in Appeal. For individuals (not being legal entities) the average fine would be €3.787 in First Instance and €7.061 in Appeal (see Billiet, C.M., Rousseau, S. and others, ‘Milieucriminaliteit in handen van strafrechtters en beboetingsambtenaren: feiten uit Vlaanderen en Brussel’, *Milieu en Recht*, 2009, 342–349).

⁶² Rousseau, S., *Economic empirical analysis of sanctions for environmental violations: a literature overview*, p. 9.

⁶³ Rousseau, S., *The impact of sanctions and inspections on firms’ environmental compliance decisions*, working paper Center for Economic Studies, Katholieke Universiteit Leuven, Nr. 2007–04, September 2007, 10.

⁶⁴ Rousseau, S., August 2008, 9.

⁶⁵ Rousseau, S., ‘Timing of environmental inspections: Survival of the compliant’, *Journal of Regulatory Economics* 32, 2007

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not deterred by the monetary sanctions.⁶⁶ In that sense, their results show that fining a violator with a too low fine can even have a perverse effect: firms will then be informed about the low expected sanctions whereas those who were not confronted with those may still believe that expected sanctions are higher than they actually are and thus be more induced towards compliance.

4.3 Data on administrative fines

In her 2008 doctoral dissertation, Carole Billiet examined the application of administrative fines in the Brussels Region, but paid some attention to the administrative fines imposed for violations concerning the manure legislation in the Flemish Region as well. Interestingly she shows that in Brussels, where larger competences to impose administrative fines exist, this competence is effectively often used. For example, for the year 2005 she refers to a total number of warnings of 4.593, *pro justitias* 1.805 and administrative fines 880.⁶⁷ She also discusses the amounts of the fines imposed. The results she presents vary substantially. In some cases administrative fines for minor offences (a fine of between €62.50 and €625) could be imposed. Fines vary between the minimum and €375.⁶⁸ Fines in the Brussels Region can also be imposed for noise caused by airplanes in which case the maximum fine can be between €62.500 and €125.000. Of 77 fines for airline noise she found 23 of less than €2.500 and 25 of an amount between €2.500 and €25.000. Some fines are substantially higher and even (illegally) trespass the statutory maximum of €125.000.⁶⁹ Note again that these fines concern the Brussels Region; in the Flemish Region fines can basically only be imposed for violations of the manure legislation. Billiet also studied the latter and found that in the period between 1998 and 2007 669 fines were imposed.⁷⁰ In 2004 the average administrative fine was €12,497.90, but highest fines were imposed of €132.243 and €64.009.⁷¹ Billiet compares the administrative fines imposed for violations of the Manure Decree with the criminal fines imposed by the Court of Appeals of Ghent and finds it striking that these administrative fines are substantially higher and on average even more than twice as high than the fines that were at the time imposed by the criminal courts.⁷² One should notice however, that the earlier research she refers to, concerning the Court of Appeals of Ghent, applied to fines in the 1990s, whereas the fines under the Manure Decree concerned the year 2004.

V. Stylised Facts

5.1 Data

Data on the enforcement of environmental law in the Flemish Region in Belgium is collected at the level of five Flemish provinces for the period of 15 consecutive years, 1993–2007. The only source available,

and providing at least some data, are the yearly (enforcement) reports of the Environmental Inspectorate (MI).⁷³ The sample used consists of several enforcement variables, all of which can be found in the yearly reports. We have yearly data on the number of inspections, violations, the number of firms inspected and some, but incoherent data on the number of administrative sanctions, administrative coercive measures and administrative fines. Furthermore, there is quite extensive reporting on what the public prosecutor in each province has done with the violations in each given year (1993–2004), giving us the number of dismissals, “transactions”, acquittals and convictions. However, as mentioned in the introduction, this data might be biased as it is based on the voluntary reporting by the public prosecutor’s offices. Therefore, any conclusions are drawn in tentative terms.

In addition, as already mentioned, data on the enforcement of environmental law is still rather limited. First, even though a single source is used to collect the data (MI reports), there are still big inconsistencies. More particularly, different provinces calculated the number of violations differently. Some provinces considered all violations against the same company as a single violation, while others counted these violations separately.⁷⁴ The system for reporting activities has been unified and hence comparable across provinces and years only since 1998. Since then, under the number of “observed violations” is understood the number of *initial* violations, excluding the number of *follow up* violations.⁷⁵ Therefore, when looking at the absolute values of enforcement of the violations pre- and post-1998, the picture is distorted.

Second, and more importantly, data for all variables is not available for all years. For instance, the

⁶⁶ See Rousseau, S., The impact of sanctions and inspections on firms’ environmental compliance decisions, 19.

⁶⁷ For more details see Billiet, C.M., *Bestuurlijke sanctiëring van het milieurecht*, 777.

⁶⁸ Billiet, C.M., *Bestuurlijke sanctiëring van het milieurecht*, 786.

⁶⁹ Billiet, C.M., *Bestuurlijke sanctiëring van het milieurecht*, 787–788.

⁷⁰ Billiet, C.M., *Bestuurlijke sanctiëring van het milieurecht*, 840.

⁷¹ This basically concerns fines imposed upon farmers who illegally spread manure on their land. See Billiet, C.M., *Bestuurlijke sanctiëring van het milieurecht*, 854.

⁷² Billiet, C.M., *Bestuurlijke sanctiëring van het milieurecht*, 859.

⁷³ Milieuhandhavingsrapporten (Environmental Enforcement Reports) of the Afdeling Milieu-inspectie (Department of the Environmental Inspectorate)

⁷⁴ For example, Environmental Enforcement Report 1994, p. 35.

⁷⁵ Environmental Enforcement Report 1998, p. 31; information provided by Mr. Peter Schryvers, Department of Environmental Inspectorate (Afdeling Milieu-inspectie)

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data on the number of inspections and violations that have happened in each year are available from 2000 onwards only at the Flanders level, not at the level of provinces. Due to this incomplete reporting, yearly (time-series) data will be mostly used. In addition, there are some data on the number of administrative sanctions, administrative coercive measures and administrative fines imposed by the Environmental Inspectorate. However, these are incoherent, very badly reported and missing for most of the years. Moreover, the administrative fines can be imposed only for manure (as explained in section II). Lastly, a distinction between priority and non-priority violations, which could be of a great interest to analyze, was introduced only in 2002. This makes it uninteresting to analyze from a comparative point of view, as this data is available only for 2002–2004.

Due to all these limitations, a proper econometric analysis is not possible. Therefore, the goal of this section is to formulate modest stylised facts about the trends (time series) and structure of the enforcement of environmental regulations in the Flemish region. The ex ante inspecting and targeting of the Environmental Inspectorate will be examined and analyzed, as well as the ex post (post-detection) enforcement by the public prosecutor. As the Flemish region uses criminal law to

enforce environmental regulations, we can derive some conclusions as to the enforcement of environmental criminal law and its potential effectiveness to induce compliance.

5.2 Results

By looking at the data, a two-stage enforcement process can be analysed. The first is to look at the number of inspections, observed violations and calculate the probabilities of being detected and prosecuted (sanctioned). This is the ex ante (pre-enforcement) inspecting activity of the MI. Secondly, we can look at the ex post (post-detection) enforcement activity of the public prosecutor and the MI. Once a violation has been established, MI in addition to issuing a NOV, can issue a warning, a recommendation and adhere to the imposition of administrative sanctions or measures.⁷⁶ The number of observed violations refers to the number of violations that have

⁷⁶ As we indicated above in some cases all of these reactions can be cumulated (see 2.4.1) which of course make it more difficulties to interpret the data.

⁷⁷ Information provided by Mr. Paul Bernaert, Head of the Division of Environmental Permits of the Flemish Ministry for the Environment.

Table 1:
Flemish Region ex ante inspecting activity of the Environmental Inspectorate

Year	# Inspections	# Firms inspected	# Observed violations	# Notice of violations	(1) P firm inspected	(2) P inspected	(3) P prosecuted	(4) P convicted	(5) P apprehended & prosecuted
1993			1910	449			0,15	0,13	
1994			1517	938			0,16	0,14	
1995	15007		1301	1665		0,60	0,19	0,18	
1996	12751		1233	2217		0,51	0,21	0,20	
1997	12469		1166	2760		0,50	0,22	0,17	
1998	12061		1099	356		0,48	0,14	0,13	
1999	11595		785	419		0,46	0,07	0,06	
2000	10584	4380	794	359	0,18	0,42	0,07	0,06	0,01
2001	11351	4505	805	386	0,18	0,45	0,05	0,04	0,01
2002	12060	5280	741	423	0,21	0,48	0,06	0,05	0,01
2003	11605	4612	751	326	0,18	0,46	0,03	0,02	0,01
2004	12156	5082	608	288	0,20	0,49	0,09	0,04	0,02
2005	11150	4721	497		0,19	0,45			
2006	12518	5481	516		0,22	0,50			
2007	12017	4422	587		0,18	0,48			
Mean	12101,8	4810,4	954,0	882,17	0,2	0,5	0,1	0,1	0,01

Source: Environmental Inspectorate (MI)

Note: Column (1) is calculated as $p \text{ firm-inspected} = \frac{\# \text{ firms_inspected}}{\# \text{ companies}}$, column (2) as $p \text{ inspected} = \frac{\# \text{ inspection s}}{\# \text{ companies}}$, column (3) as $p \text{ prosecuted} = \frac{\# \text{ pro sec utions}}{\# \text{ NOV's}}$, column (4) as $p \text{ convicted} = \frac{\# \text{ conviction s}}{\# \text{ NOV's}}$ and column (5) as $p = \frac{\# \text{ firms_inspected}}{\# \text{ companies}}$.

. For columns (1) and (2), the total number of companies that fall within the investigation powers of the MI is approximately 25.000.⁷⁷

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been discovered (registered) in a given year by the MI. The number of NOV's refers to the number of violations that have been dealt with in a given year by the public prosecutor. Hence, the latter might be violations detected also in the previous years, but not being dealt with in those years.

5.2.1 *Ex ante inspecting activities by the MI*

Table 1 shows the number of inspections, firms inspected, observed violations, "official reports", and the different probabilities of being inspected and prosecuted (convicted), given the data from the MI yearly reports.

As can be seen from Table 1, there are on average 12101.8 inspections performed and on average 4810.4 firms inspected per year. As the number of inspections is more than twice the number of firms inspected, at least some firms get inspected more than once. On average there are 954 violations detected per year, meaning less than 8% of the performed inspections result in a violation.⁷⁸

What is more interesting is to look at the probabilities that a violation will be detected and prosecuted. As explained in section III, a "rational" company will value its costs and benefits of complying when making a decision whether to comply or not. In the Becker model, a company will comply if the expected sanction is higher than its expected benefits of violating the law. The probability of being apprehended and prosecuted (p) is one of the two factors determining the level of the expected sanction (Expected sanction = $p \cdot \text{Sanction}$). Unfortunately, the data allows us to calculate only the probabilities of observed violations. Many violations go undetected, which decreases the probability of apprehension and prosecution even further.

Table 1 column (1) shows the probability a firm will be inspected, defined as the ratio of the number of firms inspected to the total number of companies. The total number of companies that could be inspected is only approximate. There are currently approximately 25.000 1st class companies, 70.000 2nd class companies and 180.000 3rd class companies. The 1st class companies fall under the inspection by the MI, while the 2nd and 3rd class companies are first being dealt with by the regional authorities (*gemeente*). Therefore, the benchmark of 25.000 companies is used to calculate the probabilities of inspections. The first column shows that on average, there is a probability of 0.2 that a company will be inspected, which is rather low.

The second column (2) shows the probability there will be an inspection defined as the ratio of the number of inspections to the total number of companies. This measure shows the probability of being inspected disregarding the number of inspections for a company. Because we cannot assume a single inspection per company (this would be ideal to measure the probability of being detected a violation through inspec-

tion) and there are at least twice as many inspections as firms inspected, this measure reflects only the probability of having an inspection, not that of detection. On average, the probability of inspection is 0.5, which is strongly overestimated because some firms get inspected more than once, while the majority of the 25,000 companies do not get inspected at all.

The third column (3) of Table 1 shows the probability of being prosecuted once a NOV has been issued and sent to the public prosecutor (p prosecuted). It is defined as the ratio of the number of prosecutions in a given year to the total number of NOV's in a given year. Basically, it shows the rate of violations that get to the court. As can be seen, the probability that a violation will be prosecuted in a court is relatively low, on average only 0.1. This suggests that even if a company is detected committing a violation and a NOV is established, 9 out of 10 times it will not be brought to court. This implies that to see the real probabilities a company will actually be penalised for a violation, we must account not only for the probability of being inspected (and hence incur a high chance of being found a violation given a violation was committed), but also for the probability of being prosecuted once a violation has been established. It is a fact that not all violations are found and those that are found are not all prosecuted. Thus, the probability of being apprehended and prosecuted for a violation is defined as the product of the probability a firm will be inspected and the probability it will be prosecuted (column (5), assuming if a firm is inspected and in violation, this violation will be found). On average this probability is less than 0.01, i.e. less than 1%. The column (4) shows the probability of being convicted, which is also important as not all prosecutions lead to convictions. However, in our case most of the prosecutions lead to convictions, therefore the results are on average the same as when the probability of being prosecuted is considered.

5.2.2 *Ex post (post-detection) enforcement by the MI and the public prosecutor*

When looking at the post-detection enforcement, once the MI observes a violation and sends a NOV to the public prosecutor, it can also use a soft approach and issue a recommendation or a warning, or impose administrative sanctions and measures, and in case of manure, administrative fines. Little data on the number of warnings (1995–1997) indicates approximately 1200 warnings per year (on average for the three years). The number of recommendations is

⁷⁸ It should be noted that the calculation of violations has been unified only since 1998, hence the numbers for years before 1998 might overstate the average number of violations. In other words, there would be less than 8% of inspections resulting in a violation.

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Table 2:
Flemish Region follow up on violations in absolute terms (% of total # NOV in a given year)

Year	Dismissal	Transaction	Acquittal	Conviction	Tot # NOVs
1993	265 (59%)	115 (26%)	11 (2,45%)	58 (12,92%)	449
1994	589 (63%)	201 (21%)	13 (1,39%)	135 (14,39%)	938
1995	1007 (60%)	336 (20%)	19 (1,14%)	303 (18,20%)	1665
1996	1255 (57%)	486 (22%)	40 (1,80%)	436 (19,67%)	2217
1997	1505 (54%)	659 (24%)	120 (4,35%)	476 (17,25%)	2760
1998	162 (45%)	144 (40%)	4 (1,12%)	46 (12,92%)	356
1999	263 (63%)	126 (30%)	3 (0,72%)	27 (6,44%)	419
2000	241 (67%)	94 (26%)	3 (0,84%)	21 (5,85%)	359
2001	284 (73%)	84 (22%)	1 (0,26%)	17 (4,40%)	386
2002	282 (67%)	117 (28%)	3 (0,71%)	21 (4,96%)	423
2003	225 (69%)	90 (28%)	5 (1,53%)	6 (1,84%)	326
2004	179 (62%)	83 (29%)	14 (4,86%)	12 (4,17%)	288
Mean	521,42 (62%)	211,25 (26%)	19,67 (1,76%)	129,83 (10,25%)	882,17 (100%)

Source: Environmental Inspectorate (MI), percentages authors' calculations

available only for years 1998–1999. In 1998 and 1999, there have been 1010 and 724, respectively, recommendations in total given by the MI after a NOV has been established. In 1999, the data shows also the number of recommendations given in the absence of a NOV, namely 453. MI imposes roughly up to 10 administrative sanctions per year, around 30–40 administrative measures (*dwangmaatregelen*) and 10–30 administrative fines (period considered 1998–2001). However, no proper estimates can be made as the values for other years are either missing or their calculation is inconsistent.

At this point, the public prosecutor has several options to decide what to do with the violation (2.4.3). The relative use of the various options, such as dismissal, transaction or prosecution (acquittal and conviction) is shown in Table 2.

Table 2 shows the number and the percentages of dismissals, transactions, acquittals and convictions in a given year for Flanders. As already mentioned, the numbers are comparable only since 1998 and might be biased because they are based on the voluntary reporting by the public prosecutors' offices. As can be seen, there are approximately 350–400 NOV in total per year (period 1998–2004) out of which around three quarters result in a dismissal. Data across the whole period 1993–2004 might be made more comparable by looking at the numbers in relative terms. Taking the number of convictions, acquittals, transactions and dismissals as a percentage of the total number of convictions per year will allow us to have the same basis (100%) for every year. There might still

be some distortions as the absolute numbers differ substantially (e.g. total number of convictions for 1997 is 2760 while for 2003 it is 326, hence comparatively 5% of 2760 might weight less than 2% of 326). However, it still does indicate a trend in enforcement decisions by the public prosecutor. There are on average 62% of dismissals, 26% transactions, 10% convictions and 2% acquittals per year. Thus on average 12% of violations get prosecuted, which is very low. The lowest percentage of dismissals and the highest percentage of transactions have been in 1998. As to the prosecution rate, there has been a slight decreasing trend since 1997, with the lowest rate in 2003. The peak prosecution rate has been in 1996 and 1997, however, never reaching above 22% of the total number of violations. Since then it has rapidly decreased, reaching its minimum of only 3.4% in 2003. In 2004 there have been comparably many more acquittals, reaching almost 5%. We do not know the reasons for that.

Table 3 shows a panel of five Flemish provinces across 12 years. The data shows the prosecution rate in a particular province in a given year. The results are extremely interesting as they show a great variation in prosecution rate across provinces and years, even though the same law applies to the whole region. In the peak prosecution years, 1996 and 1997, all provinces have above average prosecution rates, being the highest in Limburg, reaching around 50% of the total number of violations in Limburg that year. In other words, one in two violations was prosecuted there at that time. In Oost-Vlaanderen there has been

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Table 3:

Prosecution rate across Flemish provinces

Prosecution rate across Flemish provinces for all years (%)					
Year	Antwerpen	Brabant	Limburg	Oost-Vlaanderen	West-Vlaanderen
1993		16,92%	4,17%	14,50%	26,03%
1994		17,19%	27,78%	14,03%	24,36%
1995		12,15%	47,50%	11,57%	31,34%
1996		10,95%	51,85%	11,73%	35,28%
1997	19,65%	7,73%	49,06%	11,49%	34,61%
1998	0,00%	6,12%	30,43%	11,46%	24,00%
1999	20,69%	1,08%	6,06%	4,17%	14,58%
2000	0,00%	2,33%	10,53%	8,28%	10,26%
2001	0,00%	3,13%	3,70%	3,79%	8,33%
2002	6,25%	0,00%	10,00%	2,36%	10,87%
2003	16,00%	0,00%	2,56%	2,56%	3,77%
2004	42,11%	0,00%	1,64%	0,00%	13,04%
Mean	13,09%	6,47%	20,44%	7,99%	19,71%

Source: Environmental Inspectorate (MI), percentages authors' calculations

a straight decline in the prosecution rate, while in Antwerpen there seems to be years of moderate prosecution (20%) mixed with years with no prosecution.⁷⁹ However, in 2004, Antwerpen outnumbered by far (42%) other provinces in their prosecution rates. Limburg and West-Vlaanderen have on average the highest prosecution rates, reaching around 20%.

This might be due to a random variation across provinces, we do not know. It might be the case that some provinces get more serious cases than others, or a certain type of companies tends to concentrate in a certain province.

To sum up, looking at the activities of the public prosecutor and his follow up on violations, it can be concluded that the majority of violations (on average around 62%) get dismissed, while the prosecution rate reaches on average only 12%. This poses doubt on the effectiveness of criminal law system to adequately handle the enforcement of environmental regulations. However, the great regional differences have to be taken into account as well as the great variation across years.

VI. Analysis

The goal of this section is to look at the stylised facts we presented in Section 5 and to compare our own findings with the earlier findings in empirical literature (presented in Section 4). Moreover, we of course will try to compare these findings with hypothesis in the law and economics literature with respect to effective-

ness of environmental law enforcement (summarised in Section 3).

6.1 *Ex ante*: inspections and violations

Our results showed that on average in only less than 8% of all inspections a violation was established. One violation might have been the result of several inspections. This is of course relatively low and would assume a relatively high degree of compliance or many undetected violations. More exciting is of course the question whether the data sheds some light on the *ex ante* probability of being inspected, prosecuted and convicted. Our Table 1 (Section 5.2.1) suggests that the probability of a firm being inspected is relatively high: on average 0.2 (or 20%). This contrasts with earlier findings that the probability to be inspected would statistically only be once in 10 years (10%).⁸⁰ However, we explained how this probability of being inspected has to be interpreted and that it needs to be combined with the probability of being prosecuted and convicted. Taken together on average this probability is less than 0.01, even a less than 1%.

⁷⁹ Again one has to be careful with interpreting these data: the fact that Table 3 shows in some cases a 0% prosecution rate may simply be due to the fact that in those years prosecutors have failed to provide information on prosecution to MI.

⁸⁰ See Billiet, C. and Rousseau, S., *Tijdschrift voor Milieurecht*, 2005, 19, discussed above at 4.1.

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6.2 Expected sanctions?

This finding of a low probability of being inspected and prosecuted sheds some light on the expected sanction a potential perpetrator is facing. We did not have data on actual sanctions imposed, either by the prosecutor (through a transaction) or by the court, but we can use the data provided in various studies of Billiet and Rousseau discussed above (see 4.2). They refer to an average fine of €5.000 imposed in the period 1990–2000 and a later study found an average fine of €2.869 in first instance and €6.165 in appeal.⁸¹ Multiplied with the 0.01 probability this leads to expected sanctions varying between €28.50 and €61, which is even lower than the estimate provided in earlier studies by Billiet and Rousseau of €87, €176 and €181. However, in order to assess the total expected sanction also the probability that a transaction is imposed should be added to the calculation.

It is therefore not difficult to argue that with these expected sanctions the threat of a sanction imposed by the criminal court will have low, if any, deterrent effect on potential violators, taking into account high benefits that can be generated by violating environmental regulation. This is confirmed in the study of Rousseau who even found a “perverse learning effect” in the sense that firms were even more inclined to violate after they had paid the fine once, thus being better informed about the low expected fine (see 4.2 *in fine*).

6.3 Post-detection discretion

We also indicated above (see 3.2) that the debate has taken place in the literature on whether enforcement agencies should be awarded discretion on whether to prosecute or not. Given high costs of enforcing every violation some strategy whereby enforcement agencies and prosecutors focus on particular heavy violations (sometimes referred to as targeting) has been defended in the literature.⁸² In the Flemish case we discussed there was discretion at the prosecution level. First of all, once a NOV has been issued for a violation, the Environmental Inspectorate starts monitoring the violation and tries to get compliance by using “soft” remedies like warnings and recommendations. We do have some data on the number of warnings and recommendations issued but they are too limited to provide meaningful results; moreover, we have no data on whether these soft approaches (warnings and recommendations) led to compliance by the violator. The moment of discretion comes when the public prosecutor has to decide on how to handle a NOV. Table 2 shows that the number of dismissals is substantial (62%) and that in one quarter of the cases (26%) a transaction is offered by the public prosecutor. The remaining 12% of cases is only prosecuted (leading to a conviction in 9 out of 10 cases).

The low prosecution rates and high dismissal rates we found correspond with earlier studies discussed in 4.1 even though the number of dismissals reported in

those studies were substantially lower (28% in Ghent and 46% in Brussels). Their sample was, however, limited to one year and only to two districts, whereas we examined the whole of the Flemish Region and for the whole period of activity of the Environmental Inspectorate.

How should one consider the low prosecution/high dismissal rates in the light of the theoretical literature discussed in Section 3? It may be clear that the low prosecution rates lead, from a deterrence perspective, to a low probability of having a sanction imposed and hence to a low average expected sanction. Still one could argue that in more than a quarter of the cases a transaction was proposed by the public prosecutor, but no information is available on the amounts. It is hence difficult to judge to what extent this constitutes an effective remedy.

One should be careful in interpreting the high number of dismissals as cases where “nothing happened”. They could in fact be the type of regulatory dealings,⁸³ whereby the prosecutor, often in coordination with the Environmental Inspectorate, leads the violator towards compliance. The dismissal may hence fit into a soft approach, even though we have no data showing to what extent that is actually the case. Billiet and Rousseau held that this soft approach (by the Environmental Inspectorate) often led to compliance.⁸⁴

Even though one would interpret these high dismissal rates as evidence that the prosecutor engages in a soft approach and would only dismiss when there is evidence of compliance by the violator (even though there is little support for such an optimistic interpretation), the problem remains that this *ex post* compliance does not remove the problem that the average expected (legal) sanction *ex ante* remains very low. If, after all, all the violator risks in case of violation is that he still has to comply violation constitutes no risk to the violator.

A puzzling aspect in our data constituted the very high regional differences between the provinces shown in Table 3. Apparently there is on average a relatively low probability of being prosecuted for an environmental case in the province of Brabant (6.47%) or Oost-Vlaanderen (7.99%) whereas these probabilities are more than twice as high for Antwerp (13.09%) and

⁸¹ The €5.000 is for a specific selection of cases for various sectors brought for the court of appeal in Gent and the other figures deal with all types of violations by the textile sector.

⁸² Rousseau, S., ‘Timing of environmental inspections: survival of the compliant’, *Journal of Regulatory Economics*, 2007, Vol. 32, 17–36.

⁸³ Referred to by Fenn and Veljanovski, *Economic Journal*, Vol. 98, 1988, 1055–1070.

⁸⁴ Billiet, C. and Rousseau, S., *Tijdschrift voor Milieurecht*, 2005, 18–19.

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almost three times as high for West-Vlaanderen (19.71%) and Limburg (20.44%). We had no data allowing us to explain these differences; it would be interesting to examine whether this would for example be related to the office of the public prosecutor being specialised in environmental cases and having substantial man power devoted only to the enforcement of environmental regulation in particular provinces. This may constitute an interesting point for further research.

6.4 Administrative fines

As we discussed at length in Section 2 sketching the legal background administrative fines can in the Flemish Region in fact only be imposed for violations of regulations concerning manure and environmental taxes. It hence does not constitute an important sanction for the main of environmental violations. That is why we only found a relatively low number of administrative fines imposed; but also the other administrative sanctions are not imposed that often. The only exception is the extensive use of recommendations by the MI, once a NOV is issued. However, these are only effective under the condition that further non-compliance leads to a sanction. As could be seen, the public prosecutor dismisses cases on average in 62%. This might be for technical reasons or for policy reasons. Nevertheless, given high costs of the criminal procedure, allowing the MI to impose administrative sanctions might reduce the burden from courts⁸⁵ and possibly reduce the dismissal rate.

There is, however, an interesting alternative for the administrative fine which has been developed in Belgium, being the proposal of the transaction by the public prosecutor. It can be proposed by the prosecutor and in case of payment the criminal case extinguishes. The prosecutor does not have to bring the case before a court and hence the costs may be lower. Since we have no data on the average amounts of these transactions it is difficult to judge its effectiveness in the particular case of the Flemish Region which we examined. It is, however, striking that this remedy is only chosen in 26% of the cases. Even if the high amount of dismissals were interpreted as evidence of a soft approach, after compliance the public prosecutor could “reward” the complying firm with a transaction instead of prosecuting the firm. Apparently that happens rarely.

Introducing administrative fines on a wider scale than is the case today in Flemish environmental legislation may thus, as suggested in the literature, have an important added value of imposing at least some sanction in those cases which now often result in a dismissal. The fact that administrative fines may be more effective than criminal fines was also confirmed in the thesis by Billiet, discussing the use of the administrative fine in the Brussels Region (4.3). She found that on average the administrative fines imposed were substantially higher than the fines imposed by the criminal courts.

VII. Concluding remarks

We used the yearly reports of the Environmental Inspectorate in the Flemish Region to look at the enforcement of environmental law in Flanders, whereby we compared our data to earlier studies and to the literature on law enforcement.

We found that the *ex ante* probability for a violator of environmental regulation to be brought to court and sanctioned is relatively small. We found that when a NOV is drafted which is subsequently sent to the public prosecutor, in more than 60% the case is dismissed. These numbers seem worrying, even though we cannot exclude the fact that “soft” remedies might have been used. Nevertheless, one has to be slightly cautious since we of course just looked at the quantity of inspections and violations, not at the quality. In some cases a violation nearly has an administrative nature (forgetting to fill in or hand in a form) whereas in other cases there may have been an emission with damaging consequences for the environment.⁸⁶ From an *ex ante* perspective the prospect of criminal enforcement can hardly have any deterrent effect on the firms’ behaviour, given the low expected (legal) sanctions we found which are comparable to estimates in earlier studies. Still, some may hold that the Environmental Inspectorate and the prosecutor engage in a compliance strategy. For those cases where firms would violate out of ignorance, this soft approach (with warnings and recommendations) would lead firms towards compliance. However, even if *ex post* a firm would comply after having received a warning that is barely proof of the effectiveness of a compliance strategy. Firms have in that case little to lose with violation. If lacking information would prove to be a serious source of violations, information strategies may be more effective than the soft approach which seems to be followed currently in environmental enforcement in Flanders.

Moreover, the reason why the prosecutor dismisses a high number of cases may not only be related to a compliance strategy that would be followed (we have no evidence of that), but to the fact that bringing a case to court may be too costly. Moreover, the data also show that fines which are effectively imposed by the courts are relatively low as well, which may discourage prosecutors. However, since only 12% of

⁸⁵ We realize that we base this on the heavy assumption that imposing a fine through an administrative procedure is less costly than imposing the same fine through a criminal procedure. This assumption may still hold today even though the requirements (especially as far as allowing appeals and respecting the rights of the defence are concerned) have in recent years also increased for administrative procedures.

⁸⁶ See Rousseau, S., The impact of sanctions and inspections on firms’ environmental compliance decisions, 24.

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cases are actually prosecuted this selection can hardly be considered as evidence of efficient targeting.

It remains somewhat puzzling why the prosecutor does not make more often use of the so-called transaction: this informal mechanism allows the prosecutor to propose the perpetrator to pay a sum of money which could (in theory, never in practice) go as high as the maximum statutory fine. The major advantage for the prosecutor would be that the risks involved in bringing a case to court as well as the high costs would be avoided. Moreover, given the low average fines imposed by the court the transaction could be an efficient remedy in the hands of the prosecutor. It is, however, only used in 26% of cases, thus barely adding to the effectiveness of the criminal law.

It is hence not surprising that in legal literature in Flanders many suggestions have been formulated to introduce administrative fines at a larger scale in Flemish environmental law. This would provide larger possibilities to the environmental inspectorate to deal with (smaller) cases itself by imposing an administrative fine. After a first proposal in that respect was formulated by an interuniversity commission for the revision of the law in the Flemish Region, a new decree on environmental enforcement has been promulgated on the 21 December 2007⁸⁷ which has entered into force on 1 May 2009. Since on the basis of this decree the administrative fine will be the principle sanction in case of minor administrative violations some have qualified this recent decree as a “Copernican” revolution in the field of environmental law enforcement in the Flemish Region.⁸⁸ Based on earlier studies with respect to the application of administrative fines in the Brussels Region and given the results of our own analysis which cast serious doubts with respect to the effectiveness of criminal law enforcement, the recent changes may increase the effectiveness of environmental law enforcement in the Flemish Region.

Note that this tendency in the Flemish Region to rely much more heavily on administrative penalties seems to be a different approach than the one followed by the EU, which is to force Member States to impose criminal sanctions on the violation of EU implementing legislation. In fact, the Flemish Region had the system as the EU desires it, being merely relying on criminal law. The data we presented in this paper precisely show the weakness of such an approach: it may effectively lead to large dismissals of cases by the public prosecutor and hence to serious under-enforcement. The data provided in this paper hence provide support to those who believe that environmental law should not only be enforced through criminal law (as the EU Directive seems to indicate). A combined approach of administrative and criminal penalties whereby criminal sanctions are reserved for the more serious cases and administrative penalties are applied to violations of an administrative character (as has now been introduced in the Flemish Region) seems to be a more promising approach.

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