

Sanctioning of Environmental Crime in the European Union: The Case of Flanders, Belgium

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Abstract

The development of the criminal sanctioning track in the EU is a prominent policy issue. Previous studies of the actual use of criminal sanctions in the member states are very important since the gap between the law and practice can be very wide. Policy makers and law enforcers are confronted with a lack of empirical data on the actual use of criminal law to sanction environmental offenses. In this study, we use information stored in the *Environmental LawForce* database, which is a database of environmental sanctioning by criminal courts in Flanders, Belgium. The study distinguishes three types of offenders: companies, individuals prosecuted for acts committed as part of their professional activities, and individuals prosecuted for acts committed as part of their private lives. Based on previous theoretical insights, we investigate when we expect the environmental sanctions to be similar or different across the three groups of offenders. In particular, we assess the differences and similarities across the sanctioning of environmental offenses committed by companies, professional individuals and private individuals in Flanders.

Keywords: environmental crime; criminal sanctions; benchmark

JEL codes: K32 Environmental, health and safety law; K41 Litigation process; K42 Illegal behavior and the enforcement of law

1. Introduction

In the past twenty years, the institutions of the European Union (EU) have been placing increasing emphasis on the effective enforcement of the framework of environmental European legislation. The case law of the European Court of Justice constitutes a cornerstone of this development. In the milestone “Greek Maize” case of 1989, the Court established the obligation of the Member States to ensure that infringements of EU-based national legislation “*are penalized under conditions, both procedural and substantive, which are analogous to those applicable to infringements of national law of a similar nature and importance and which, in any event, make the penalty effective, proportionate and dissuasive*”¹. In the last decade or so, the use of criminal law is increasingly considered to be a necessity by EU institutions to further this environmental enforcement policy.

In light of the development of the criminal sanctioning track in the EU, studies of the actual use of criminal sanctions in the Member States are very important. The gap between the law and practice can be very wide. For instance, the legally stipulated maximum prison sentences and fines tell little about the actual prison sentences and fines imposed. At the EU-level, as well as in the EU Member States, policy makers and law enforcers are confronted with a serious lack of empirical case-level data² on the actual use of criminal law to sanction environmental offenses (Rousseau, 2009; Faure, 2010; Faure & Svatikova, 2012). The lack of information is a serious handicap for policy development since the EU has committed to developing policies based on evidence³; information on the actual use of criminal law represents one important type of evidence.

However, in Belgium a complete record is available for the environmental sanctioning by public prosecutors and criminal courts in the provinces of East and West Flanders, and by administrative authorities in Brussels. This record of environmental sanctioning is stored in the *Environmental LawForce* database⁴. Parts of this extensive dataset have previously been used to study the use of non-monetary sanctions by lower criminal courts against corporate environmental offenders (Blondiau & Rousseau, 2010), to explore the use of prison sentences by lower criminal courts against environmental offenders (Billiet & Rousseau, 2014), to

¹ Case 68/88, Commission of the European Communities v. Hellenic Republic (1989) *ECR* 2965, §24.

² While there is a shortage of empirical data focusing on individual cases, aggregate data are more abundant and have been studied, for instance, by Almer and Goeschl (2010) for Germany or by White (2006) for asbestos litigation in the US.

³ This lack of information on enforcement of environmental crime was one of the main motivations for the funding of the EFFACE (European Union Action to Fight Environmental Crime) project. Within this project several case studies were analysed in order to gain insight in current enforcement actions and to derive policy advice (for more information see www.efface.eu).

⁴ The database is available at www.environmental-lawforce.be.

examine the use of harm-based versus act-based sanctions by lower criminal and administrative courts (Rousseau & Blondiau, 2014), to assess the interactions between sanctioning decisions by lower criminal courts and the court of appeal (Billiet et al., 2014), and to compare the level of administrative and criminal fines imposed by lower sanctioning authorities (Blondiau et al., 2015).

The current study uses information stored in the *Environmental LawForce* database to draw a picture of the differences in the criminal sanctioning of three different types of environmental offenders in the Belgian provinces of East and West Flanders. We focus on (1) companies (legal persons), (2) individuals prosecuted for acts committed as part of their professional activities (hereafter ‘professional individuals’), and (3) individuals prosecuted for acts committed as part of their private lives (hereafter ‘private individuals’). Particularly, we assess the similarities and differences between sanctions imposed on companies⁵ *versus* sanctions imposed on professional individuals, since both types of offenders are engaged in business activities, and between sanctions imposed on professional individuals *versus* sanctions imposed on private individuals, since both categories of offenders are natural persons. This research approach is related to the recommendation formulated by Fortney (2003) and White (2010) to use tailored enforcement approaches based on organisation type and that *‘distinctions need to be drawn between one-off offenders and repeat offenders, between the large corporation and the negligent employee, and so on’* (White, 2010, p.374).

Besides being well documented, the environmental sanctioning policy of Flemish criminal courts has merits that make it interesting as a yardstick in the EU-context. First, the criminal sanctioning track is more frequently used and better developed in Belgium, and especially Flanders, than in other EU countries (Faure & Svatikova, 2012). Second, the sanctioning practice provides information on the sanctioning of natural as well as legal persons. Indeed, legal persons became criminally liable in Belgium in 1999 and can be prosecuted and punished together with natural persons involved in the same criminal case. This situation matches the predominant situation in the EU Member States (Vermeulen et al., 2012). Third, the sanctioning practice documents the use of an array of criminal sanctions including, besides the classical punitive sanctions, remedial sanctions and the forfeiture of illegally acquired benefits, reflecting EU policy views on this crucial point.

The remainder of the text is structured as follows. Section 2 presents a simple theoretical model in order to derive four hypotheses regarding possible similarities and differences in the

⁵ White (2010) also mentions tailored enforcement approaches based on organisation type.

sanctioning decision of different offender types: companies, professional individuals and private individuals. Section 3 provides essential background on the criminal sanctioning system in Belgium. Section 4 presents the dataset used in this study. Section 5 describes the environmental sanctioning decisions made by criminal courts in East and West Flanders. Section 6 tests the hypotheses derived in Section 2 by comparing sanctioning decisions against the three noted types of offenders. Section 7 concludes.

2. A Simplified Model

To understand the determinants and levels of penalties for environmental offenses, we look at the compliance decisions by firms and individuals as well as the enforcement decisions by the regulator [see Becker (1968) and Harford (1978)].

2.1 Compliance decisions

First, we turn to the compliance decision of a rational cost-minimizing actor who is confronted with environmental regulation. This actor selects the level of violation, $v \geq 0$, that minimizes the sum of all costs associated with the environmental regulation in place, TC . Compliance costs, $C(v)$, are assumed to be a continuously decreasing function of the size of violation, v . The expected violation costs are determined by the probability that the violation is detected, p , and by the size of the violation costs, $V(v)$, which are assumed to be continuously increasing in the level of the violation, v .⁶ Violation costs consist of many aspects, including monetary sanctions, reputational effects, and clean-up requirements, so violations costs are defined as all negative consequences associated with a violation (Rousseau, 2009). Given this structure, the actor chooses violation level, v^* , that minimizes the sum of compliance costs and expected violation costs:

$$\min_v TC = \min_v \{C(v) + pV(v)\} \quad (1)$$

The actor fully complies with the regulation if the costs of doing so are lower than or equal to the expected violation costs for all levels of violation:

$$C(0) \leq pV(v) \quad \forall v \quad (2)$$

If inequality (2) does not hold, the actor decides to violate the regulation and selects a level of violation, $v > 0$, such that the marginal compliance cost equals the marginal expected violation cost:

$$C'(v) = pV'(v) \quad (3)$$

⁶ In this type of simple model, the probability of detection typically coincides with the probability of sanctioning. Obviously in reality this assumption does not hold: not all detected violations are sanctioned.

2.2. Regulator's sanctioning decision

Next, we investigate the regulator's determination of the optimal sanction level, $S(v)$, which represents a fixed proportion, a , of violation costs: $S(v)=aV(v)$. What type and level of sanction is optimal crucially depends on the objective function of the regulator (e.g., Polinsky & Shavell, 2000; Cohen, 1987). We focus briefly on two important objective functions for the regulator: (i) social welfare maximization and (ii) deterrence maximization.⁷

Social welfare maximization, on the one hand, implies that the regulator balances compliance costs against environmental damages, $D(v)$. Thus, in equilibrium, marginal compliance costs should equal marginal damages. The regulator can obtain this equilibrium by choosing a sanction that reflects marginal damages adjusted for the probability of sanctioning:

$$D'(v) = pV'(v) \text{ where } V(v) = S(v)/a$$

This social welfare maximization objective implies a damage-based approach to environmental enforcement (Polinsky & Shavell, 1994) since the sanction imposed on violators is based upon the level of damages caused by the violation. This implication leads to the first hypothesis:

Hypothesis H1: If the judge aims to maximize social welfare, offenders that have caused similar environmental harm should receive similar monetary sanctions, assuming a uniform probability of detection. In general, the optimal monetary sanction depends positively on harm and negatively on the probability of detection.

Maximizing deterrence, on the other hand, implies that the costs associated with violating the rules should always be larger than the cost of compliance, as shown in expression (3). The avoided cost of compliance then represents the gain to the violator from breaking the law. This insight is expressed in a second hypothesis:

Hypothesis H2: If the judge aims to maximize deterrence, offenders with similar gains from non-compliance should receive similar monetary sanctions, assuming a uniform probability of detection. In general, the optimal monetary sanction depends positively on the gain from non-compliance and negatively on the probability of detection.

Moreover, in order to maximise future deterrence, it is important to minimize the probability of repeat offenses. Note that postponing or imposing conditional sanctions may be more effective in minimizing the probability of repeat offenses for a given type of offense,

⁷ Alternative objective functions include the promotion of justice (see e.g. Braithwaite, 2002; Zaibert, 2006) or problem solving (see e.g. White, 2013).

when the offender is relatively easy to locate, or when the context in which the offender operates remains similar in the future. Thus, we expect that postponement and suspension are used more often when sanctioning companies and professional individuals, and less often for private individuals.⁸ This expectation generates a third hypothesis:

Hypothesis H3: If the judge aims to maximize future deterrence of similar offenses by offenders, then the judge should use postponement and suspension more frequently against companies and professional offenders.

Finally, sanctioning decisions are often modified to take account of the differences between theoretical ‘perfect’ models and actual ‘imperfect’ circumstances such as the wealth constraints faced by potential violators. Wealth constraints limit the effectiveness of monetary sanctions and promote the use of non-monetary sanctions, such as imprisonment or firm closure (Polinsky & Shavell, 1991). This insight generates a fourth hypothesis:

Hypothesis H4: The judge should use non-monetary sanctions, such as imprisonment or firm closure, more frequently against offenders who face wealth constraints than against offenders who do not face wealth constraints.

Thus, if corporations are less likely than both professionals and private individuals to face wealth constraints, then the judge should impose non-monetary sanctions more frequently on individual offenders – both professional and private – than on corporations. Moreover, since part of the sanctions used against professional offenders may be paid by their employer (or its insurance), we may expect that non-monetary sanctions are used more frequently for private individuals than for professionals.⁹

Overall, the outlined theory reveals that the judge should treat the three identified groups of offenders uniformly unless key elements differ. In the next sections we confront these theoretical insights with data on criminal sanctioning practices in Belgium.

⁸ Note that the preventive dimension of verdict postponement and suspended sanctions can be easily combined with the widespread interpretation of these sanctioning options as measures of leniency. This preventive aspect, which is also recognized by policy practice (e.g. European Commission, 2004), is reflected in our third hypothesis.

⁹ While the number of different non-monetary sanctions imposed on individuals and corporations may differ, our study does not examine the number of non-monetary sanctions types used by judges. Instead our study examines the frequency of use.

3. Background on the Criminal Sanctioning System in Belgium

This section provides an overview of the most relevant characteristics of the Belgian criminal sanctioning system (see Billiet et al., 2014; Billiet, 2014). We limit the information to the law that was applicable when the recorded criminal cases were handled by the courts.

Belgian criminal court judges enjoy huge discretion over their sanctioning decisions. Importantly, sentencing guidelines do not exist in Belgian criminal law. Criminal judges are not bound by the public prosecutors' sanctioning requests. Moreover, criminal judges are not constrained by the sanctions imposed in previous cases. The decisions they make, case by case, thus represent *de facto* policy development.

Criminal court judges can shape sanctioning policy in the 8%¹⁰ of environmental files that reach the bench in the following realms. If facts and liability are proven, which happens in nine out of ten cases (Billiet et al., 2009), the judges' first decision involves the choice between a postponement of conviction and an actual conviction. Postponement of conviction¹¹ basically represents a choice not to punish and includes a probationary period of one to five years in which the offender must not re-offend.

When the criminal court opts for a conviction, its second decision concerns sanctions. The court needs to impose at least one principal sanction. Belgian criminal law offers three principal sanctions: imprisonment, fine, and community service (Van den Wyngaert, 2009). Each sanction is punitive in character. The imposition of multiple principal sanctions is legally possible and quite common (Billiet & Rousseau, 2014).

For each imposed principal sanction, the judge also needs to determine a sanction level that lies between the legal minima and maxima. The ranges between minimum and maximum levels are typically very large. The statutes reflected in the *Environmental LawForce* dataset provide for fines ranging from a minimum of 26€ to a maximum of 10,000,000€ and for prison sentences with a minimum of eight days and maxima ranging from one year (e.g., the Environmental Permitting Decree) to five years (e.g., the Waste Decree).¹²

¹⁰ Some 60% of Flemish environmental cases end with a dismissal and 14% with a settlement (Billiet et al., 2010). About half of the dismissals involve a technical reason, such as lack of evidence, while the other dismissals are based on policy reasons, such as regularisation of the offense.

¹¹ The postponement of conviction implies that the defendant is found guilty but that the judge suspends the official verdict of the conviction for one to five years (i.e. the probationary period). If the defendant is convicted during this probationary for other criminal facts, the postponement will be revoked and the defendant will still be convicted for the original crime.

¹² In Belgium, the fine amounts mentioned in legislation are multiplied by a legal correction factor ("opdecimen") to counter the effects of monetary depreciation. This correction factor equalled 5 between 2002 and 2004, 5.5 between 2005 and 2011, and has equalled 6 since 2012. The minimum and maximum fines mentioned do not reflect this factor.

A further core option of the criminal court relates to the possibility to suspend sanction execution, either partially or completely. Similar to a postponement of a verdict, a suspension always includes a probationary period of one to five years. Criminal legal doctrine classifies both postponement and suspension as “favours”, representing expressions of leniency. Yet it should be stressed that both sanctioning options put strong emphasis on specific deterrence. Indeed, after a postponement, an offender who does not relapse during the probationary period will escape conviction for the offense in question. Similarly, following a suspension, an offender who does not relapse will not bear the imposed sanction. However, if the offender does relapse during probation, he/she will be convicted in the case of postponement or bear the sanction in the case of suspension. Unlike postponement, suspension is a widespread option in the sanctioning possibilities of criminal courts throughout the EU, where it is commonly seen as a means to prevent recidivism (European Commission, 2004).

Finally, once the criminal court decided to impose at least one principal sanction, suspended or not, it can also impose one or more additional sanctions. The additional sanctions can be punitive or remedial, with the remedial ones typically aiming to stop or at least mitigate further damage to the environment. The most common additional sanctions are the forfeiture of illegally acquired benefits, waste removal orders, and the injunction to cease a business operation for safety reasons. Forfeiture of illegally acquired benefits fits with the widespread belief that “crime should not pay” (e.g., Bowles et al., 2005). Under Belgian law, this sanction can only be imposed if explicitly requested by the public prosecutor.

The only decisive factor in the determination of the sanctioning decision is the criterion of proportionality with ‘the seriousness of the offense’, which indicates that the criminal judge must punish ‘in proportion to the seriousness of the offense’. This basic sentencing criterion, developed by the Belgian Supreme Court, applies to all types of criminal cases. It includes two sub-criteria: (1) the objective gravity of facts, which is rated by the extent to which the unlawful activities harmed or might have harmed the public interest, and (2) the culpability of the defendant.

Individuals, as well as legal persons, who consider themselves harmed by the offense under consideration, can become a civil party in a criminal case. Such legal persons acting as a civil party include public authorities and administrations. If a defendant is convicted, the judge will also rule on civil claims and, if necessary, award damages.

4. Description of the *Environmental LawForce* database¹³

Regarding sanctioning by criminal courts, the *Environmental LawForce* database records the complete environmental case load from January 1, 2003, to December 31, 2006, for seven of the thirteen judicial districts located in Flanders -- Brugge, Dendermonde, Gent, Ieper, Kortrijk, Oudenaarde, and Veurne -- and the relevant court of appeal, located in Gent, representing one of the five Belgian courts of appeal.

Our study is limited to the decisions made by the courts of first instance. The database includes 1,033 sentences in which 1,612 defendants were tried and 2,987 accusations were made, noting that one defendant can face several accusations. The sampled environmental case load focuses on the environmental legislative acts listed in Appendix A.

Three offenses prove to be common: breaches of the prohibition to dispose unlawfully of waste [Waste Decree, art.12], breaches of the environmental permitting obligation [Environmental Permitting Decree (EPD), art.4(1)] and breaches of the obligation to respect facility operating conditions [EPD, art.22(1)]. Together these three offenses account for more than half of all accusations. A few other offenses account for a small but distinct portion of the case load (< 10% each): excessive noise levels in public venues [1977 Ordinance on Noise Levels, art.2], the duty of care that applies when operating a facility subjected to environmental permitting [EPD, art.22(2)], and the waste-related duty of care [Waste Decree, art.13] (Billiet et al., 2009).

5. Description of Criminal Sanctioning Decisions made by Courts in East and West Flanders

In this section we depict the criminal sanctioning decisions made by courts in East and West Flanders regarding three types of defendants: companies, professional individuals, and private individuals. Companies represent 17% of the defendants in the dataset (279 out of 1612 defendants), while professional individuals represent 37% (588) and private individuals 46% (745). The courts in Gent and Dendermonde dealt with the largest share of cases, each roughly one third of the total environmental case load. The subsequent sub-sections explore the characteristics of the defendants in the three groups, then we look at the offense characteristics, and finally we assess trial outcomes.

¹³ The database is available on the website www.environmental-lawforce.be.

5.1. Defendant characteristics

The companies and professional individuals prosecuted between 2003 and 2006 belong to a variety of sectors (Table 1). The three most represented sectors to which the prosecuted companies belonged are manufacturing (20%), construction (16%), and wholesale and retail trade (15%). Looking at the prosecuted professionals, the three most represented sectors are agriculture (25%), accommodation and food services (18%), and wholesale and retail trade (14%).

Table 1: Sectorial Classification of Prosecuted Companies and Professional Individuals

NACE Sectorial Classification	Companies	Professional Individuals
A – Agriculture, forestry and fishing	9.6%	25.2%
C – Manufacturing	21.0%	12.4%
E – Water supply; waste management	4.0%	3.6%
F – Construction	15.8%	11.4%
G – Wholesale and retail trade	14.7%	13.7%
H – Transporting and storage	8.8%	7.4%
I – Accommodation and food service activities	11.8%	17.5%
R – Arts, entertainment and recreation	5.5%	4.0%
Other sectors	8.8%	4.8%
	100%	100%

Perhaps more importantly, 22% of the prosecuted professionals had already been convicted of one or more environmental or other criminal offenses before the start of their court trial. This percentage of repeat offenders is noticeably higher than for the group of prosecuted companies: 22% *versus* 4%. One possible reason might be that companies could only have been prosecuted since 1999, while individuals have always been criminally liable. Another reason might be that companies can relatively easily change their legal status as a result of which they will not often formally ‘repeat’ crimes, although the individuals behind different entities could still be the same. Surprisingly, the percentage of repeat offenders is very similar between the group of prosecuted professional individuals and the group of prosecuted private individuals. Some 20% of private individuals had already been convicted. Moreover, the three types of defendants differ in their use of legal counsel in court. Companies always utilize legal counsel, while private individuals and professional individuals may or may not employ legal representation. In our dataset, 45% of private individuals and 77% of professional individuals employ a lawyer.

We now describe some demographic characteristics of professional and private individuals. First, some 91% of the prosecuted professionals were male and 95% were of Belgian nationality. They were 47 years old on average with a minimum age of 22 and a maximum of 83. Second, some 80% of the prosecuted private individuals were male and 89% were of Belgian nationality. They were 44 years old on average with a minimum age of 19 and

a maximum of 93. While the scarcity of female defendants among professional offenders (9%) may in part be explained by the limited presence of women in higher managerial positions and corporate boards, this explanation does not hold for private offenders.

Defendants may face one or multiple accusations. Generally, each breach of a particular article of a law generates a separate accusation. Some 45% of companies and some 43% of professional individuals were prosecuted for one accusation only. Of the private defendants, 70% faced only one accusation. Compared to cases against companies and professionals, cases against private individuals thus appear less complex.

5.2 Offense characteristics

The types of laws breached differ across cases. Not surprising, more than half of companies (55%) were prosecuted for breaches of the Environmental Permitting Decree (EPD), which regulates the permitting obligations and permitting conditions for many polluting activities in Flanders, while 19% of companies were charged for breaches of the Waste Decree. As with companies, almost half of professional individuals (43%) were prosecuted for breaches of the EPD, while 20% faced charges for breaches of the Waste Decree, 16% for breaches of the Manure Decree, and 11% for breaches of the Ordinance on Noise Levels. Looking at private individuals, more than half of them (64%) were prosecuted for breaches of the Waste Decree, indicating that waste dumping and littering remain common practice. Additionally, noteworthy fractions of offenses relate to the EPD (13%) and to the Ordinance on Noise Levels (6%). The amount of prosecutions for breaches of the EPD is surprising at first blush. However, some private individuals might be unofficially involved in activities, such as waste storage, that are regulated by the EPD. Similar to the type of laws breached, offenses caused different types of pollution. Note that one offense can cause more than one type of pollution. For instance, the occurrence of soil pollution and that of groundwater pollution are often positively correlated. Defendants caused noise pollution, waste pollution, or water pollution most frequently (Table 2). Waste pollution dominated cases of prosecuted private individuals (68%).

Table 2: Type of Pollution: Percent of Defendants

Type of pollution	Companies	Professional Individuals	Private Individuals
Waste	22.0%	24.7%	67.5%
Soil	6.6%	10.2%	3.0%
Noise	23.8%	22.5%	8.5%
Odour	6.9%	4.1%	2.0%
Groundwater	4.5%	2.3%	1.3%
Air (incl. rubbish incineration)	0.5%	0.7%	3.4%
Surface water	9.8%	10.3%	5.4%
Other	7.1%	3.6%	2.7%
No pollution	3.5%	6.8%	2.0%

No information	29.0%	22.9%	13.0%
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Additional information is available on the degree of harm caused by environmental offenses. As one indicator, the presence of civil parties implies some form of (perceived) nuisance or damage caused by the defendant. In cases against 22% of prosecuted companies, one or more civil parties joined the public prosecutor indicating greater damage than in cases lacking a civil party. At least one civil party joined the public prosecutor’s case against 15% of the professional individuals as well as against 15% of private individuals. As a second indicator, the risk of health damage stemming from the prosecuted offense was explicitly mentioned by the court in its sentence in 11% of the cases involving company defendants and 10% of the cases against professionals, while this fraction dropped to 2% of the cases involving private individuals as defendants.

5.3 Trial outcomes

Given these case details, our analysis turns to an assessment of the trial outcomes. We assess the outcomes of the trials for each of the defendants separately, even if these defendants are jointly prosecuted in one case. All accusations are considered jointly to reach one verdict per defendant. Judges acquit the charges brought against 14 % of the prosecuted companies, postponed the verdict for 14%, and convicted 72% (Table 3). Judges convicted a higher portion of prosecuted private individuals than prosecuted professionals and companies: 82% *versus* 71% and 72%, respectively. In contrast, judges postponed the verdict for a clearly lower portion of prosecuted private individuals than prosecuted professionals and companies: 7% *versus* 17% and 14%, respectively.

Table 3: Trial outcomes

	Companies		Professional Individuals		Private Individuals	
Acquittal	39	14.0%	68	11.6%	81	10.9%
Postponement of Verdict	38	13.6%	98	16.7%	51	6.9%
Conviction	200	71.7%	419	71.3%	608	81.6%
Other	2	0.7%	3	0.5%	5	0.7%

Focusing on the type of sanctions imposed on convicted defendants (Table 4), we find that judges fined over 95% of defendants and imposed some type of remedial sanction on slightly over 20% of defendants. Both the frequency of imposed fines and the frequency of remedial sanctions are similar across convicted private individuals, professionals, and companies. However, the frequency of the forfeiture of illegal benefits is clearly different: judges almost never seized illegal benefits from convicted private individuals, while 8% of convicted professionals and 17% of convicted companies was confronted with forfeiture.

Further, we find that judges issued a prison sentence against 13% of convicted professionals and 8% of convicted private individuals. Finally, community service was required from 1% of convicted professionals and 2% of convicted private individuals. Using Tables 4 and 5, we examine the different types of sanctions in more detail.

First, we describe the most frequently imposed sanction type – fines.¹⁴ Fined defendants do not always need to pay the full amount of the imposed sanction. Some 50% of the fined companies and professionals, as well as 33% of fined private individuals, see their imposed fine partly, or even completely, suspended (Table 4). This depiction reveals an almost identical use of suspended fines for professional individuals and companies, while fines for private individuals are clearly less frequently suspended. Assessing the fine level, we see that, in real terms (2007€), the average fine for companies equals 15,233€ while the median equals 2,850€ (Table 5).¹⁵ For fined professionals, judges imposed fines equalling 6,888€ on average with a median value of 1,631€, in real terms (2007€), while private individuals faced fines with an average equalling 1,778€ (in real 2007 terms) and a median value of 799€ (in real 2007 terms). The relatively low level of fines imposed on companies, as well as individual offenders, is noteworthy. Overall, small fines are relatively more frequent than large fines. Assuming that gains to the offenders can be substantial and knowing that the probability of being detected, prosecuted, and sanctioned is small (Svatikova, 2012),¹⁶ these low levels can raise questions about the deterrence generated by fines. Still, even the imposition of small fines might be sufficient to induce compliance with environmental regulation if the relevant authorities implement a state-dependent enforcement strategy. Under this type of strategy, compliant and non-compliant entities are treated differently: a targeted group of ‘bad eggs’ receive greater scrutiny for a defined period of time, thus, increasing the expected sanction magnitude during this period of time (Harrington, 1988).

Secondly, we look at the use of prison sentences. Clearly this sanction can only be used against individuals. Judges issued a prison sentence against 8% of convicted private individuals and against 13% of convicted professional individuals (Table 4). Moreover, judges are less

¹⁴ All displayed fine amounts reflect amounts after legal correction for inflation.

¹⁵ In 2005 the average income per private income tax declaration was 25,609€ (26,543 in 2007 terms) in Flanders and 24,422€ (25,313 in 2007 terms) in Belgium (Statistics Belgium, s.d.).

¹⁶ Using published data, Svatikova (2012) generates a rough estimate of the average probability of detection and prosecution of less than 1% for those firms that are monitored by the Flemish Environmental Inspectorate. The inspections of the Flemish Environmental Inspectorate target the (possibly) most polluting firms, giving them higher priority in inspection efforts. Reasonably, the probability of detection and prosecution for offenses committed by firms given lower priority in inspection efforts is smaller. The same logic applies to private offenders. Table 3 documents the relationship between prosecution and conviction.

likely to suspend these sentences against private individuals: judges suspended partially or completely 56% (28 out of 50) of the sentences against private individuals, while suspension increased to 78% (42 out of 54) of prison terms against professionals. We refer to the non-suspended portion of the sentence term as the effective prison term. During the sample period, Flanders was confronted with a severe shortage of prison cells and only effective prison terms of more than 6 months had a chance to be executed (Billiet and Rousseau, 2014). Thus, of the 104 prison terms issued by judges, only 12 were executed. On average, the judge-issued initial term was only 4.3 months and the effective term was 1.9 months for private individuals and was fairly similar for professionals (4.5 months and 1.7 months respectively). Based on maximum prison sentences of 1 to 5 years, the judge-issued prison terms seem quite small.

Table 4: Sanctions for convicted offenders

	Companies		Professional individuals		Private individuals	
Fine	197	98.5%	415	99.1%	586	96.4%
- without suspension	96	48.0%	206	49.2%	399	65.6%
- with suspension	101	50.5%	209	49.9%	197	30.8%
Prison sentence			54	12.9%	50	8.2%
- without suspension			12	2.9%	22	3.6%
- with suspension			42	10.0%	28	4.6%
Community service			3	0.7%	14	2.3%
Forfeiture of illegally acquired benefits	34	17.0%	35	8.4%	6	0.99%
Remedial sanction	41	20.5%	90	21.5%	126	20.7%
- Waste clean-up	16	8.0%	45	10.7%	86	14.1%
- Facility closure	23	11.5%	43	10.3%	11	1.8%
- Other	2	1.0%	2	0.5%	29	4.8%
Total	200	100%	419	100%	608	100%

Thirdly, we examine the use of forfeitures of illegally acquired benefits. This sanction was imposed for 17% of the convicted companies, 8% of the convicted professionals, and 1% of the convicted private individuals (Table 5). Judges forfeited on average 833,782€ (in real 2007 terms) from convicted companies, 20,233€ (in real 2007 terms) from convicted professionals, and 54,562€ (in real terms) from private individuals (Table 5). Thus judges seized smaller amounts of illegal benefits from convicted professionals than from companies. In the case of private individuals, the illegal benefits typically reflect the avoided costs of legal waste disposal. Clearly the monetary impact of the forfeiture is potentially much greater than the impact of fines, due to the much higher amounts involved in practice. The difference between fine amounts and forfeiture amounts does not follow from maximum limits provided by the law. The forfeiture amounts are legally limited to the gross benefit generated by the offense; therefore, they vary according to the offenses involved. The fine levels imposed in

practice lie far below the legally allowed maxima, which typically range from several hundred thousand to several million euros.

Finally, we discuss the use of remedial sanctions, which aim to stop further damage to the environment. Approximately 21% of the convicted defendants received a remedial sanction for each of the three groups (Table 4). For the convicted companies these sanctions mainly addressed waste clean-up (16) or involved an injunction ordering facility closure (23). Similarly, for the convicted professionals, the remedial sanctions addressed waste clean-up (45) or involved an injunction ordering facility closure (43). However, for convicted private individuals, 86 of a majority of these remedial sanctions addressed waste clean-up (86%), while 11 involved facility closure (e.g., closure of the illegal waste disposal activities), and 29 involved site restoration (Table 4).

Table 5: Level of Imposed Sanctions

	Companies		Professional Individuals		Private Individuals	
	Mean	Median	Mean	Median	Mean	Median
Fine amount (in 2007€)	15,233	2,850	6,888	1,631	1,778	799
Forfeiture of benefits* (in 2007€)	833,782	15,645	20,233	5,182	54,562	10,368
Prison term**						
- nominal (in months)			4.5	3.0	4.3	3.5
- effective (in months)			1.7	0	1.9	0

* Means and medians are calculated conditional on the imposition of a positive forfeiture of benefits

** Means and medians are calculated conditional on the imposition of a positive nominal prison term

6. Evidence of the theoretical predictions

The outlined theory reveals that the courts should treat the three identified groups of offenders uniformly unless key elements differ. While our initial set of empirical findings do not control for variation in key elements, these findings establish a useful foundation. By conditioning our analysis on key elements, we can examine the empirical evidence supporting or rejecting our four hypotheses formulated in sub-section 2.2.

6.1. General observations gleaned from initial assessment

Our initial empirical findings summarize as follows. Judges postpone the verdict more often for companies and professional individuals than for private individuals.

Further, judges impose fines on all three defendant types at a very similar rate. Yet judges suspend fines partly or completely more often for companies and professionals than for private individuals. Based on median values, judges impose roughly similarly sized fines, in absolute terms, on the three defendant types even though the company median fine is more than three times the private individual median fine. Still, based on mean values, judges clearly impose the

highest fines on companies and the lowest fines on private individuals with professionals in between.

While judges impose prison sentences reasonably similarly on professional and private individuals, they suspend prison terms partially or completely more often for professional individuals. Judges sentence professional and private individuals to reasonably similar prison terms at least in absolute terms.

Moreover, judges impose more frequently a forfeiture of illegal benefits on companies than on professional individuals, while rarely inflicting this monetary sanction on private individuals. Judges seize much larger amounts of illegal benefits from companies, with the amounts seized from individuals – professional or private – representing only a tiny fraction in comparison.

Finally, judges impose remedial sanctions on the three defendant types at a very similar rate and only rarely require community service.

6.2 Hypothesis Testing

6.2.1 Hypothesis H1

To test Hypothesis H1, we must control for variation in environmental harm. Since we lack a direct measure, we employ two proxies. As the first, we claim that the presence of a civil party indicates a more homogenous type of environmental harm than the absence of a civil party. Consequently, we control for variation in harm by dividing our sample into two sub-samples based on the presence or absence of a civil party¹⁷. As the second proxy, we claim that violations of a certain law generate similar levels of environmental harm. Consequently, we divide our sample into three sub-samples based on these groups of laws: waste law, noise law, and “other” laws. For each proxy, we assess the levels of fine and forfeiture of illegal benefits for the three pairings: (1) facility versus professional individual, (2) facility versus private individual, and (3) professional versus private individual. We test the hypothesis using Sample Means T-tests (Table 6). To substantiate our hypothesis, we need to find that both groups in the pairings receive similarly seized sanctions. When controlling for the presence/absence of a civil party, the test statistics demonstrate that offender groups are treated

¹⁷ As mentioned in Section 3, natural as well as legal persons can be a civil party, and the legal persons can include public authorities and administrations. In our dataset, the fact that a civil party is a natural person typically signals the presence of harm caused by hindrances (e.g., noise, vibrations, dust, odour, light). When the civil party is a legal person, the harm extends to other types of pollution. Public authorities tend to claim damages that cover clean-up costs such as for waste removal but also for more diffuse pollution such as surface water and soil pollution. Note that the majority of civil parties are natural persons.

differently except in one case: facilities and private individuals are fined similarly in the presence of a civil party (Table 6). Otherwise, facilities face higher fines and forfeitures than both professional and private individuals, yet private individuals face higher fines and forfeitures than professional individuals. When controlling for the type of violated law, test statistics support highly similar conclusions (Table 6). Generally, facilities face higher fines and forfeitures than individuals, while private individuals face higher fines and forfeitures than professional individuals. However, for noise law violations, facilities face fines similar to both professional and private individuals, and for waste law violations, facilities face smaller forfeitures than private individuals. Overall, little evidence supports Hypothesis H1, indicating that judges seem to assess similar types of harm differently depending on the type of offender. Considering the more stringent sanctioning of facilities, it seems possible that the assessment of harm by judges is partly influenced by facilities' relatively higher financial means.

Table 6: Testing H1

	Fine			Forfeiture of illegal gain		
	Facility vs Prof.	Facility vs Private	Prof. vs Private	Facility vs Prof.	Facility vs Private	Prof. vs Private
Civil party present	+***	0	-***	+***	+***	-***
Civil party absent	+***	+***	-***	+***	+***	-***
Waste law	+***	+***	-***	+***	-**	-***
Noise law	0	0	-***	+***	+***	-***
Other law	+***	+***	-***	+***	+***	-***

“+”: the first listed group receives a higher sanction than the second listed group.

“-”: the first listed group receives a lower sanction than the second listed group.

“0”: the first and second listed groups receive similarly sized sanctions.

, * indicates statistical significance at the 5% and 1% levels, respectively.

6.2.2 Hypothesis H2

To test Hypothesis H2, we must control for variation in gains from non-compliance. Since we lack a direct measure, we implement this control by employing this proxy: whether or not the public prosecutor requested the forfeiture of illegal gains. As with Hypothesis H1, we compare the three pairings of offender groups by using Sample Means T-tests (Table 7). To support H2, we should find that the paired groups receive similarly seized sanctions. Test statistics demonstrate that the three groups indeed face similarly sized fines and forfeitures when the public prosecutor requests forfeiture. In contrast, both facilities and private individuals face higher fines than professionals when the public prosecutor requests no forfeiture; yet facilities and private individuals face similarly sized fines. Overall, evidence supporting Hypothesis H2 is fairly persuasive.

Table 7: Testing H2

	Imposed fine			Imposed forfeiture of illegal gain		
	Facility vs Prof.	Facility vs Private	Prof. vs Private	Facility vs Prof.	Facility vs Private	Prof. vs Private
Forfeiture requested by public prosecutor	0	0	0	0	0	0
Forfeiture not requested by public prosecutor	+***	0	-**	n/a	n/a	n/a

“+”: the first listed group receives a higher sanction than the second listed group.

“-”: the first listed group receives a lower sanction than the second listed group.

“0”: the first and second listed groups receive similarly sized sanctions.

, * indicates statistical significance at the 5% and 1% levels, respectively.

6.2.3 Hypothesis H3

Again we control for variation in gains from non-compliance by employing the proxy whether or not the public prosecutor requested the forfeiture of illegal gains. We compare the pairings of offender groups by using Sample Means T-tests (Table 8). To support H3, we should find that postponement and suspension are used more frequently against facilities and professionals than against private individuals. Test statistics demonstrate that the three groups have a similar chance of postponement and suspension when the public prosecutor requests forfeiture. Yet, when the public prosecutor requests no forfeiture, the judge is more likely to postpone the verdict or to suspend the sanction against facilities and professionals as compared to private individuals. Overall, evidence supporting Hypothesis H3 is fairly good.

Table 8: Testing H3

	Postponement versus conviction			Ratio of suspended to imposed fine		
	Facility vs Prof.	Facility vs Private	Prof. vs Private	Facility vs Prof.	Facility vs Private	Prof. vs Private
Forfeiture requested by public prosecutor	0	0	0	0	0	0
Forfeiture not requested by public prosecutor	0	+***	+***	0	+***	+***

“+”: the first listed group has a higher ratio than the second listed group.

“-”: the first listed group has a lower ratio than the second listed group.

“0”: the first and second listed groups receive similarly sized ratios.

, * indicates statistical significance at the 5% and 1% levels, respectively.

6.2.4 Hypothesis H4

We again control for variation in environmental harm by employing the type of violated law as a proxy (Table 9). For all pairings, we assess the frequency of remedial sanctions using Chi-Square Tests. For the pairing of individuals, we also assess the frequency of imposed prison terms using Chi-Square Tests and the length of prison terms using Sample Means T-

tests. To support H4, we should find that private individuals are confronted more frequently with non-monetary sanctions, followed by professionals and that facilities face non-monetary sanctions least frequently. Most of the test statistics reveal that offender groups are equally likely to face a remedial sanction, especially for “other” law violations. Moreover, for noise violations, facilities are more likely than professional and private individuals to face a remedial sanction. However, for waste offenses private individuals are more likely than professional individuals to face remedial sanctions. Test statistics also demonstrate that while private and professional individuals are equally likely to face prison (Table 9), private individuals can expect longer prison terms than professional individuals, for all law violations. Overall, evidence supporting Hypothesis H4 is moderate. Especially private individuals have a higher likelihood of facing a non-monetary sanction.

Table 9: Testing H4

	Remedial sanction			Prison sentence	
	Facility vs Prof.	Facility vs Private	Prof. vs Private	Prof. vs Private	
				<i>Frequency</i>	<i>Term</i>
Waste law	0	0	_-***	0	_-***
Noise law	+***	+**	0	0	_-***
Other law	0	0	0	0	_-***

“+”: the first listed group is more likely to receive the sanction than the second listed group.

“-”: the first listed group is less likely to receive the sanction than the second listed group.

“0”: the first and second listed groups are similarly likely to receive the sanction.

, * indicates statistical significance at the 5% and 1% levels, respectively.

7. Concluding Remarks

In conclusion, two findings deserve attention: the judges’ generation of specific deterrence through a postponement of the verdict and suspension of the execution of a sanction, and the judges’ use of monetary sanctions. While our dataset consists of the environmental case law only in East and West Flanders, we claim that our findings should generalize to the entire Flemish Region.

As our test results for hypotheses H1, H2 and H3 indicate, judges generally aim at deterrence when sanctioning rather than punishing according to harm. However, when sanctioning professional offenders, companies as well as professional individuals, they appear to attach far more importance to specific deterrence than when sanctioning private individuals. Indeed, when sentencing professional offenders, judges use relatively more frequently a postponement of the verdict (see Table 3) as well as a suspension of the execution of fines (see Tables 4 and 8) and, in the case of professional individuals, prison sentences (see Table 4). Overall, these choices reveal a sanctioning policy where the sanction acts as both stick and

carrot. With this perspective in mind, why might judges see such a sanctioning policy as a fitting one when punishing professional offenders, yet consider it distinctly less fitting when punishing private offenders? The use of legal counsel offers one explanation. Private individuals tend to be less likely to hire a lawyer than professionals. The professional context offers a second explanation. Ongoing economic activities include a permanent risk of new breaches of environmental legislation, which may be relatively damaging. The likelihood of detection and prosecution offers a third explanation. Business facilities and factories most often operate on well-defined locations. Thus, considering all kinds of offenses, the link to a particular offender is more easily established for companies and professional individuals than for private individuals, enhancing the probability of detection and prosecution when these types of offenders re-offend. In contrast, the characteristics of the main offenses committed by private individuals, namely waste littering and dumping, are notably different. These offenses can be committed anywhere and the identification of the offender depends on chance circumstances, such as catching him/her in the act or finding evidence in the abandoned waste that identifies the perpetrator.¹⁸

The judges' use of monetary sanctions is puzzling. Fines are small to very small, especially those imposed on companies. Given these steadily low fine levels, the amounts of forfeited benefits bear attention. Regarding companies, it is striking that these amounts rise to levels many times as high as the fine levels (see Table 5). Judges somehow decide more easily to inflict a high forfeiture of illegal benefits than a high fine. This finding adds an interesting dimension to the obvious complementarity between both monetary sanctions.

Finally, we offer some concluding policy remarks. First, Flemish criminal court judges impose fines that seem small relative to the costs of conducting a criminal case (see Table 5). As a case in point, Rousseau and Proost (2005) provide a rough estimate of the average costs of imposing a criminal fine in Flanders at 13,600 € per imposed fine. This said, the forfeiture of illegally acquired benefits strongly tilts this scale in the 75 cases where imposed. Still the availability of alternative means of punitive sanctioning, especially administrative fining, is interesting to consider (e.g., Faure and Svatikova, 2012; Blondiau et al., 2015). In 2009

¹⁸ To support this point, we refer to the *Milieuhandhavingsrapport 2015* of the Flemish Region (Vlaamse Hoge Raad voor Ruimte en Milieu, 2016). The report mentions the percentages of technical dismissals due to the absence of an identified offender for different categories of offenses. In 2015, this type of technical dismissal amounted to 5.3% for environmental permit offenses by companies (infringements of the permit duty and infringements of exploitation conditions such as emission standards). In that same year, technical dismissals due to the lack of identified offender reached 23% for nature conservation offenses (habitat and wildlife crime) and 18.5% for waste offenses (including littering).

administrative fining for environmental offenses has been introduced in Flanders. Sanctioning through administrative fines should lower sanctioning costs since the set of legal actors is smaller. If the administrative fining authority is specialized in environmental crime, which is a reasonable assumption as specialization is a common feature of administrative fining authorities, this lowers the costs even more because of the increased efficiency in data processing.¹⁹

Second, when adjusting the design of existing criminal sanctioning tools or designing new sanctioning tools, the legislator should systematically consider the different types of offenders, especially professional versus private individuals. Diversity of sanctioning tools gives judges better chances to tailor sanction packages according to the offenders' characteristics, as is illustrated by the differentiated use of the suspension of sanctions, the forfeiture of illegal benefits (see Tables 4, 7, 8 and 9).

Third, Flemish criminal court judges impose fines that seem small (see Table 5), especially since we suspect that the costs of complying with environmentally related laws can be substantial and that the probabilities of detection and sanctioning are limited. If indeed a large difference lies between the costs of non-compliance and the costs of compliance, we would argue in favour of higher fine levels in Flanders to effectively deter environmental crimes. This said, we acknowledge that even relatively small fines may still induce compliance in the presence of sufficiently strong risk averse preferences, sufficiently great reputational costs associated with the imposition of fines, sufficiently large exposure to third party liability, state-dependent enforcement strategies, or sufficiently meaningful intrinsic motivations to comply with environmental protection laws. Note that imposing these higher fines would not require higher statutory maxima since these currently reach several million euros.

Fourth, forfeiture of illegal benefits represents a useful type of monetary sanction. Based on simple economic logic, a single euro extracted from a convicted defendant whether from the imposition of a fine or a forfeiture should generate the same level of deterrence. Of course, the difference in labels may generate differences in reputational costs, third party liability exposure, or displacement of intrinsic motivation to comply. In this broader sense, judges need to evaluate the full extent of a euro extracted using a fine *versus* a euro extracted through forfeiture. The obvious complementarity between forfeiture of illegal benefits and fines is strengthened by the observation that judges quite easily inflict forfeitures for relatively high

¹⁹ In Europe, differences in proof requirements should not lower the costs of administrative fining relative to criminal fining. Based upon its interpretation of the presumption of innocence, the European Court of Human Rights imposes the same standard of proof for all punitive sanctions, regardless of their criminal or administrative nature, namely the standard of proof "beyond a reasonable doubt".

amounts, a decision that seems harder to make for a fine (see Table 5). As one explanation, judges might be reluctant to impose higher fine levels due to their assessment of the proportionality criterion, whereas these same judges might feel comfortable with the idea that 'crime should not pay' (e.g., Bowles et al., 2005). Regardless of the reason behind the discrepancy in the use of fines and forfeitures, the latter sanction offers a welcome complement to low fine levels, especially when sanctioning companies. As a monetary sanction that offers a complement to fines, the forfeiture of illegal benefits deserves a place in the set of criminal sanctioning tools designed to punish environmental crime.

Last but not least, when given the possibility, criminal judges use remedial sanctions against environmental crime (see Tables 4 and 9). Whereas such sanctions traditionally belong to the realm of administrative enforcement, it appears worthwhile to incorporate them in criminal enforcement too.

Appendix A: Legislation included in the Environmental LawForce database

The *Environmental LawForce* database included the case load of the courts for criminal cases where at least one accusation concerned a violation of one of the following parliament acts, cooperation agreements, or associated implementing royal and government ordinances: the Air Pollution Act (1964), Pesticides Act (1969), Surface Water Act (1971), Noise Pollution Act (1973), Flemish Waste Decree (1981), Flemish Groundwater Decree (1984), Flemish Environmental Permitting Decree (EPD) (1985), Non-ionizing Radiation Act (1985), Flemish Manure Decree (1991), Green Taxes Act (1993), Ionizing Radiation Act (1994), Ecolabel Act (1994), Flemish Environmental Policy Decree (1995), Flemish Soil Clean-up Decree (1995), Packaging Waste Cooperation Agreement (1996), Product Standards Act (1998), Marine Environment Act (1999), and Seveso II Cooperation Agreement (1999). The data collection also included violations of exploitation permits based on the Labour Safety Order (1946). During the period covered by the database – 2003 to 2006 – a large number of firms in Flanders still operated under these labour safety permits, which preceded the environmental permits issued under the EPD.

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