

Administrative environmental law enforcement in Andalusia, Spain*

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1. Introduction

The European Crime Directive of 2008 forced EU Member States to use the criminal law to remedy breaches of national legislation constituting an implementation of EU environmental law.¹ The Directive was criticised for largely ignoring the fact that in many Member States administrative enforcement plays an important role.² In many Member States, such as for example Spain, administrative authorities play a crucial role in enforcing environmental legislation; there is de facto a minor role for the criminal law. In Spain, there is an important role for the so-called autonomous regions in the enforcement of environmental law.³

In this paper, we will focus on the enforcement of environmental law in one such region, more particularly Andalusia, as we have some (incomplete) data illustrating the operation of administrative enforcement agencies. The data are interesting as they do indicate an evolution in the number of inspections and cases where sanctions are imposed. They also provide some indication on the role played by various authorities, but also by individuals and non-governmental organisations (NGOs) in initiating proceedings. The data provide also some indication on the enforcement strategies pursued by the administrative agencies. We aim to present and analyse the data in this paper inter alia in the light of the literature with respect to the choice between administrative and criminal law in the enforcement of environmental law.⁴

Focusing on administrative law enforcement is also important as the new Environmental Crime Directive of 11 April 2024,⁵ contrary to the 2008 Environmental Crime Directive, pays attention to administrative law enforcement. This is also in line with the toolbox approach suggested in academic literature, arguing that other remedies need to be developed as an alternative to the criminal law, allowing the criminal law to play its role as *ultimum remedium*.⁶

Data on environmental enforcement in the EU Member States are rare and this lack of data has also been identified as a critical point in environmental law enforcement by the European Legislator. Therefore, the new (2024) Environmental Crime Directive remedies this problem by imposing a duty on Member States to collect statistical data on the reporting, investigative and judicial stages in relation to the environmental criminal offences in order to monitor the effectiveness of the

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¹ Directive 2008/99/EC on the protection of the environment through criminal law, OJ L328, 6 December 2008.

² See inter alia Faure 2017a, 346-347.

³ The competences for the environment in Spain are divided between the central state and the autonomous communities. See Faure & Heine 2000, 291.

⁴ Faure & Gouritin 2014.

⁵ Directive 2024/1203 of 11 April 2024 on the protection of the environment through criminal law, OJ L, 30.4.2024..

⁶ This was strongly advocated for the UK by Anthony Ogus and Carolyn Abbot (2002) and was subsequently also introduced in the UK. See in that respect inter alia Hampton 2005 and Macrory 2006.

measures to combat those offences.⁷ Even though in this paper we can present some data indicating the practice of administrative law enforcement, there is, unfortunately, no data on the type and magnitude of the administrative sanctions actually imposed, nor on the number of cases that would have been handled via the criminal law. We will therefore not be able to examine to what extent the enforcement regime in Andalusia contributes either to deterrence or to an effective division of labour between administrative and criminal authorities. However, the data do allow to provide insight on the enforcement strategies pursued by the administrative authorities and on the types and number of cases handled.

The paper is structured as follows: we start by sketching the background for environmental law enforcement in Spain in general and in Andalusia in particular (2); we then sketch briefly the EU context and more particularly the comments that were provided by the European Commission at the occasion of the so-called environmental policy implementation reviews (3); we then briefly provide an overview of the (scarcely available) previous literature (4) and then present a few theoretical notions with respect to (administrative) environmental law enforcement (5). Then comes the core piece, i.e. the data with respect to administrative environmental enforcement (6) as well as a critical discussion of the data (7). Section 8 concludes.

2. Environmental law enforcement in Spain: the background

As far as environmental enforcement is concerned Spain generally has a model that relies both on administrative as well as on criminal enforcement.⁸ Concerning the monitoring of the compliance with environmental regulation there is a division of labour concerning the monitoring of the compliance with environmental regulation. ~~Inspections are~~ Most relevant activity is basically done by two different authorities. The most important is probably the Environmental Officers ~~Inspection Division~~ (AMA⁹) of the regional government of Andalusia. They are specialised agents focused on a variety of environmental tasks, including monitoring of compliance with environmental obligations. This AMA, an administrative agency of the regional government does inspection tasks in addition to many other tasks related to environmental management¹⁰.

In addition, ~~inspections are~~ environmental monitoring is also taking place by a specific division of the police (the Guardia Civil), referred to as SEPRONA.¹¹ SEPRONA in principle does not do ex ante monitoring (i.e. irrespective of a suspicion of a violation), but would rather intervene ex post, i.e. after a complaint. As Seprona is a part of the national police, their focus is more on crime. But obviously they may discover administrative violations as well that could then give rise to administrative sanctioning.

(I have changed the word inspection because I think it may lead to confusion. The inspection carried out by the AMA is only a part of their functions and SEPRONA cannot carry out inspections as discussed in the article)

Violations can therefore be established either by the AMA (administrative authorities) or by Seprona (of the national police). If a violation is established, it will normally first be analysed whether it is a

⁷ Art. 22 of the new (2024) Environmental Crime Directive.

⁸ See inter alia Pérez Jiménez 2023, Naves 2005 and see Faure & Heine 2000, 291-306.

⁹ Agentes de Medio Ambiente

¹⁰ <https://www.juntadeandalucia.es/medioambiente/portal/areas-tematicas/prevencion-y-calidad-ambiental/inspeccion-ambiental/agentes-de-medio-ambiente>

¹¹ Servicio de Protección a la Naturaleza. See further Fuentes Osorio 2017, 207.

crime or an administrative offence. If it is a crime the case would be sent to the public prosecutor with a view on criminal prosecution; if it were an administrative offence, the case would be sent to the regional Junta with a view of administrative sanctioning. In principle, a cumulation between administrative sanctioning (by the Junta) and criminal prosecution is possible.

3. The EU context

Fighting environmental crime is now for many decades high on the EU environmental agenda. In 2008 a Directive 2008/99 on the protection of the environment through criminal law (Environmental Crime Directive, ECD) was created which pays a lot of attention to criminal law enforcement. Recital 3 of the ECD states that the introduction of criminal penalties could complement the insufficiency of the existing systems to achieve complete compliance with the laws for the protection of the environment, given the social disapproval of a qualitatively different nature compared to administrative penalties or a compensation mechanism under civil law. The ECD 2008 forced Member States to criminalise particular conduct when it is committed unlawfully and intentionally. Unlawfulness is defined in Article 2(a) of the ECD as violating legislation contained in the Annex to the ECD.

The ECD 2008 focused strongly on the criminal law and has been criticised for an overreliance on the criminal law as the only enforcement tool.¹² Criminologists, but also law and economics scholars held that criminal law should be considered as an instrument of last resort, a so-called *ultimum remedium*, to be employed only by the legislator when other instruments (more particularly civil penalties or administrative sanctions) would have failed.¹³ On 11 April 2024, a new Directive on environmental crime has been promulgated. This new Directive 2024 provides more room for a toolbox approach, explicitly also mentioning the importance of administrative sanctioning. Recital 45 preceding the ECD 2024 refers explicitly to administrative penalties and so do Recitals 46 and 47.¹⁴

Within the framework of the so-called environmental policy implementation review, environmental enforcement in Spain has been reviewed for the European Commission. In that respect, critical comments were made on the effectiveness of environmental enforcement in Spain.

In the most recent Environmental Implementation Review (EIR) 2022, critical comments were made concerning data collection and inter alia regarding public participation in the country report Spain: "Overall information published on public information on environmental matters is not disaggregated and it is not possible to determine which requests for information refer to impact assessments. There is a lack of available statistical data on public participation regarding the EIA and SEA Directive".¹⁵ In a previous EIR (2019) compliance, promotion and monitoring in two particular autonomous regions was analysed (Murcia and Castilla-la-Mancha). There it was mentioned that no information was identified on follow-up of administrative proceedings or non-compliance. The situation was only better for

¹² Faure 2017a, 346.

¹³ See in that respect from a criminological perspective the famous enforcement pyramid from Ayres and Braithwaite 1992 and see a law and economics plea in favour of a restrictive application of the criminal law Ogus 2004.

¹⁴ Mentioning inter alia that Member States should define the scope of administrative and criminal law enforcement with regard to environmental offences in accordance with the national law (46) and that judicial and administrative authorities in the Member States should have at their disposal a range of criminal and non-criminal penalties and other measures, including preventive measures to address different types of criminal conduct in a tailored, timely, proportionate and effective manner (47).

¹⁵ Commission Staff Working Document. Environmental Implementation Review 2022. Country report Spain, Brussels 8.9.22, SWD(2022) 256 final, p. 49.

Catalonia where inspection reports from industrial sites were public and easily accessible. However, no information was available on measures adopted, corrective measures or sanctions taken further to inspection.¹⁶

As a general comment, the report criticises “the lack of an effective enforcement system that ensures that all administrative or judicial decisions are readily put into force”.¹⁷ Although the 2019 EIR already recommended to publish information on the result of administrative enforcement actions, it is only the National Prosecution Service that publishes annual reports on investigations for environmental crimes, but this does not provide information on the results of administrative enforcement.¹⁸ It is for that reason that the EIR 2022 mentions as a priority action to “publish information on the outcome of enforcement action and on the follow-up to detect the breaches on night trades and nature”.¹⁹ Finally, the report mentions that Spain generally has a bad enforcement record and is among the top three Member States with the highest number of infringement procedures in relation to the implementation of EU environmental law.²⁰ It is not surprising that the new Environmental Crime Directive 2024 imposes more detailed duties on Member States to collect and provide data on environmental enforcement (in Article 22).

Finally, regarding environmental monitoring, it should be mentioned that in specific cases European legislation mandates the way in which inspections have to take place.²¹ For example, Article 23 of Directive 2010/75 of 24 November 2010 on industrial emissions (integrated pollution, prevention and control) forces Member States to ensure that all installations are covered by an environmental inspection plan and that installations posing the highest risks should be visited at least once a year and other installations once every three years. This Directive has now been replaced by EU Directive 2022/0104 of 2024, but the obligation of carrying out inspections at regular intervals has been maintained.²² Moreover, Recommendation 4 April 2001 provides minimum criteria for environmental inspections in the Member States. This Recommendation provides useful and clear indications regarding the quality of environmental inspections. However, as it is merely a Recommendation, it is non-binding resulting in large disparities in the way in which environmental inspections are organised and carried out in individual Member States.²³

4. Previous studies

Information concerning the criminal prosecutions is provided in the research by Fuentes Osorio and Fajardo del Castillo²⁴ and Fuentes.²⁵ Their work uses the official sources of knowledge of crime in Spain between 2008 and 2017 and the results of official resolutions of all the affected criminal bodies linked to articles 325 and 334 of the Penal Code between July 2009 and June 2019. Its conclusions are that the prosecution of criminal acts has intensified, as the number of crimes solved and sentences handed

¹⁶ Commission Staff Working Document (2022) 256 final, p. 50.

¹⁷ Commission Staff Working Document (2022) 256 final, p. 51.

¹⁸ *Ibidem*.

¹⁹ Commission Staff Working Document (2022) 256 final, p. 52.

²⁰ Commission Staff Working Document (2022) 256 final, p. 53.

²¹ For a detailed overview, see Hedemann-Robinson 2017, 36-42.

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²³ See further Blanc & Faure 2020, 10-13.

²⁴ Fuentes Osorio & Fajardo del Castillo 2020 and 2021.

²⁵ Fuentes Osorio 2021.

down have increased, but that this does not lead to a greater deterrent effectiveness of this channel, as the probability of serving a custodial sentence, high fines or severe disqualifications remains low.

Furthermore, the considerations regarding the grounds for acquittal are forceful for the assessment of the effectiveness of the Spanish system of penalties: "the most relevant factor is that the criterion of distinction between administrative offence and crime is not met", although they also highlight the evidential difficulties, as well as problems linked to the permissive wording of the administrative regulations, the lack of action by the administration (administrative tolerance) and "the lack of precision of the criminal regulations (...) which broadens the permitted risk or makes possible very strict interpretations of the significant criminal clauses".²⁶

In the administrative sanctioning sphere, the literature reflects the growing absence of a correct use of this legal tool in the protection of the environment. Among other aspects, attention is drawn to the trend towards a reduction in the levels of environmental protection,²⁷ the lack of delimitation of the administrative offence, and the lack of a clear definition of the administrative offence²⁸ and administrative tolerance, which takes the form of a lack of action by regional governments in the enforcement of imposed sanctions.²⁹

5. Smart environmental enforcement: theoretical framework

Criminological as well as law and economics literature has identified conditions for regulatory enforcement, equally in the domain of environmental violations.³⁰ Of course it is not possible to discuss this literature in any amount of detail. We will merely summarize the main findings to the extent that they are useful to interpret the data concerning administrative environmental enforcement from Andalusia that we will present in the next section.

5.1 Monitoring

A first question is very simply how violations of environmental regulation can be discovered. A distinction in that respect is made between proactive versus reactive monitoring systems. Proactive monitoring implies that agencies inspect installations *ex ante* upon their own initiative, even if no evidence of a contravention exists. Reactive monitoring refers to an agency's action which is triggered by a third party's complaint following a violation or an accident.³¹ In the environmental context proactive monitoring may be necessary for the simple reason that environmental violations will often go undetected. Often environmental violations merely relate to technical breaches, e.g. of permit conditions, which may be very hard or impossible to detect for third parties (like potential victims or NGOs). In other words: if there were no possibility of a proactive monitoring, a lot of environmental violations would simply never be detected. This is also related to the fact that the type of environmental regulation to be enforced may be very complex and third parties may have no possibility to discover violations. Moreover, individual victims of environmental harm may also lack incentives to verify compliance with environmental regulations because of so-called rational apathy

²⁶ Fuentes and Fajardo 2021, 10.

²⁷ Álvarez Carreño 2018.

²⁸ Arroyo Alfonso 2018.

²⁹ Mellado Ruiz 2021.

³⁰ See for example Faure 2009 and Faure, Ogus & Philipsen 2009.

³¹ Faure, Ogus & Philipsen 2009, 168 and Faure & Tilindyte 2010, 352.

or rational disinterest.³² The literature also indicates that many violations of environmental regulation are not intentional, but rather the result from a lack of information or knowledge.³³ In those cases a proactive approach has the advantage that, through education and information provision firms (who may not even have been aware that they were violating) can be led towards compliance. Thus, a system of proactive monitoring of operators by public authorities is likely to be cost-effective when there is no significant culture of proactive complaints by environmental groups or where the violation is unlikely to be easily detected and where information costs for operators to reach compliance are high.³⁴

5.2 Smart enforcement

A second point is how monitoring or inspection should be organised. The literature increasingly advocates smart enforcement which basically means that a differentiation is made between the type of operator to be monitored, the likelihood that violation could take place and the danger that in case of violation serious harm could occur. On that basis it is advocated that risk assessment models should be employed to determine which operators will be inspected when. The risk assessment will then be translated into an inspection plan. Risk-based monitoring is therefore to be distinguished from random inspections whereby monitoring activities would not be based on risk, but whereby the entire regulated community would be targeted.

Risk-based enforcement would in a smart enforcement model also be combined with a so-called targeted monitoring. Targeting takes into account the previous compliance performance of various operators. Operators that signalled “good” behaviour earlier (with compliance) would be “rewarded” with less monitoring in a later stage, whereas the firms belonging to the “bad” group would be confronted with more intensified monitoring.³⁵ Logically a distinction would be made within a smart enforcement model between the type of operators that need a strict monitoring (if an earlier experience and the risk of their operations indicated so) versus firms where a more “softer” approach, based on information strategies (because violations take place non-intentionally) may be more indicated.³⁶

5.3 Post-detection discretion

Third, when a violation has been established, an agency typically has a wide range of enforcement options, from taking no action other than an informal warning to issuing a formal warning, to initiate administrative, civil or criminal procedures. There are strong cost-effectiveness arguments for discretion.³⁷ The first is that the prosecution of all possible violations simply makes no sense from a societal perspective. There may sometimes be trivial (paper) violations. In those cases social costs of prosecution would be disproportionately high and would have no social benefits; it could even lead to resistance against compliance from the regulated community.³⁸ The second point is that especially in relation to first-time offenders that have violated out of ignorance, the first best approach is probably

³² Schäfer 2000.

³³ Faure 2012, 320-330.

³⁴ Faure, Ogus & Philipsen 2009, 169.

³⁵ This targeted monitoring model has especially been advocated by Arlen & Kraakman 1997.

³⁶ See further on the theory and practice of smart enforcement, Blanc & Faure 2018 and Blanc & Faure 2020.

³⁷ Faure, Ogus & Philipsen 2009, 170-171.

³⁸ A point made by Bardach & Kagan 1982.

to educate these operators (by providing information) in order to increase compliance. As such, there are therefore good public interest reasons for allowing post-detection discretion to administrative agencies. An important reason is also that agency resources for inspections are limited. It is therefore cost-effective for agencies to use tolerance in some contexts (with first offenders) and to increase coercion in others (for example with second, intentional offenders). The only danger is that officials may abuse discretion, for example when they would be captured by the regulated community.³⁹ A remedy for the danger of capturing is either a control on agency discretion (for example by an independent public prosecutor) or accountability of the officials, in order to avoid abuse of their discretion.

5.4 Deterrence or compliance?

The question of whether one accepts post-detection discretion is also strongly linked to the different enforcement models and their particular goals. Traditionally, a distinction was made between a “deterrence-based” and a “cooperative” enforcement model.⁴⁰ The deterrence model is strongly following the seminal work of Noble Prize Winner Gary Becker.⁴¹ It assumes that violators are rational utility maximising individuals who only violate when the benefits are higher than the expected costs (probability multiplied with the sanction). Within such a deterrent approach one should go tough on violators to send a clear signal also to other potential violators. In such a model, there would be no place for agency discretion. A cooperative strategy to the contrary assumes that many violations take place unintentionally as a result of a lack of knowledge. The cooperative enforcement style relies on negotiations between the agency and the regulated, leading the regulated to compliance. Within the latter model a post-detection discretion is of course crucial as it would make no sense to prosecute all cases, also those committed out of ignorance. A third model now relies on a combination of the cooperative and the deterrence approach, arguing that for particular rules and particular operators a deterrence approach may be effective, whereas for others (the uninformed first-time offender) a cooperative strategy may work better.⁴² The strict deterrence approach would therefore exclude post detection discretion, whereas that would be crucial within a cooperative enforcement model, where the goal is not primarily deterrence, but rather leading the regulated to compliance.

5.5 Administrative or criminal law?

A next issue extensively discussed in the literature is whether there should be either administrative or criminal law enforcement. A lot of literature has been paying attention to the question whether violations of environmental law should be dealt with via administrative or via criminal law. It is often advanced that administrative remedies have the advantage that they can be flexible and also lead the operator towards compliance. Administrative authorities could for example take urgent measures aiming at a restoration of the environmental harm done or prevention of future harm.⁴³ This role of administrative authorities, imposing remedies leading to restoration and compliance, fits therefore strongly in a cooperative enforcement strategy. However, even in a deterrence enforcement model administrative financial penalties can play an important role. To the extent that the probability of

³⁹ An example of which is provided by May & Winter 1999.

⁴⁰ For details see Oded 2013, 15-70.

⁴¹ Becker 1968.

⁴² Oded 2013, 71-97.

⁴³ See further on administrative enforcement and sanctioning Faure 2017b, 298-301.

detection is relatively high, that benefits to the operator are not too high, a reasonable (in the sense of not too high) administrative penalty could lead to deterrence.⁴⁴

However, there are two important reasons why administrative financial penalties may not be sufficient to deter environmental pollution and why in those cases the criminal law is necessary as well. The first reason is related to the fact that the probability of detecting violations of environmental law is in practice often very low. That would imply that (especially where benefits are high) the optimal sanction to deter pollution may become very high. There is a risk that this high fine may outweigh the assets of the offender as a result of which an insolvency risk would emerge. In that case non-monetary sanctions, such as imprisonment or community service have to be imposed for deterrence.⁴⁵ The second reason to justify the criminal law is that the goal of the enforcement system is not only to punish the guilty, but equally to avoid punishing the innocent. In economic terms this is referred to as the goal of reducing error costs.⁴⁶ When sanctions become very harsh (such as imprisonment) the costs of error are obviously more important than when only monetary sanctions would be imposed. That explains why the much more complex (with higher thresholds of proof) criminal procedures would be applied when non-monetary sanctions could be imposed.⁴⁷

As a result, an optimal enforcement model should use administrative financial penalties for first-time offenders that have committed violations non-intentionally (to the extent that deterrence is necessary), where the breach of regulations was unintentional. However, in cases where the potential benefits of violation would be high and the probability of detection would be low (for example because the perpetrator tries to escape the clutches of the law), criminal sanctions could be employed. Many (European) legal systems originally only enforced environmental law only via the criminal law. The result was catastrophic in the sense that many violations were never prosecuted given the limited possibilities to prosecute cases via the criminal law. For that reason, a doctrinal movement emerged suggesting the introduction of administrative financial penalties for (most) environmental regulations,⁴⁸ also referred to as a toolbox approach.⁴⁹ There was also empirical support for their criticism as it appeared that in many legal systems violations of environmental law were simply not prosecuted through the criminal law.⁵⁰ As a result nowadays many legal systems have an environmental enforcement approach consisting of both administrative financial penalties and criminal enforcement and, in theory, reserving the criminal enforcement only for the most serious cases where repeat-offenders intentionally commit environmental violations out of profit-seeking, causing substantial damage.

5.6 Human capital and data

The last two issues are relatively straightforward and might not need that much explanation. The first one is the obvious point that an environmental enforcement system also needs substantial investments in human capital, in other words in capacity. It may be clear that it does not make sense to have an elaborate environmental regulatory system if there is no capacity available to monitor the compliance with the regulation. Given the importance of ex ante monitoring (as otherwise

⁴⁴ See also Lu & Faure 2021.

⁴⁵ Shavell 1985.

⁴⁶ Miceli 1990.

⁴⁷ See further Bowles, Faure & Garoupa 2008.

⁴⁸ See for example Ogus & Abbot 2002.

⁴⁹ Faure 2017a, 353-355.

⁵⁰ See Faure & Svatikova 2012.

environmental violations will not be discovered), substantial investments need to be made to guarantee that at least violations can be detected. Moreover, human capital is also needed for the further phases of the enforcement chain.⁵¹

Noble Prize Winner Stigler rightly indicated that society cannot always have a maximum enforcement of laws for the simple reason that that may be too costly. As a result, taking into account enforcement costs, society will strive for an optimum enforcement of laws.⁵² Given the limited capacity, it is important to employ the above-mentioned strategies to use the limited resources in the most effective manner. Therefore it is for example important to employ a smart, risk-based enforcement strategy. Therefore it is equally important to allow for post-detection discretion in order to be able to avoid the prosecution of trivial cases and to make only a limited use of the costly criminal law system, applying administrative financial penalties as long as they could equally provide deterrence. Still, an environmental law enforcement system needs investments as otherwise both deterrence and compliance may fail. That is why studies have often recommended to invest substantially in environmental enforcement.⁵³ At the EU level that is currently a problem as information on the human capital available for environmental enforcement within the Member States is de facto lacking. That is obviously a serious problem as it could lead to a race-to-the-bottom (as far as environmental enforcement is concerned) between Member States.⁵⁴

The other point of importance is data and information management concerning environmental crime and environmental crime enforcement. The earlier mentioned EFFACE research recommends in its conclusions “To prevent a race-to-the-bottom it is crucial that Member States allocate sufficient resources to monitoring and inspection with the aim of detecting environmental crime”.⁵⁵ This point has been taken up in Article 17 of the new Environmental Crime Directive (2024).

The implementation of the smart enforcement mentioned above is obviously only possible when data is available, for example on the number of installations to be inspected, the number of inspectors that can execute those tasks, but also on the number of violations established in case of an inspection and on the reaction that was subsequently given after the establishment of a violation.

Only when those types of data are collected in a systematic manner, will it be possible to engage in a systematic evidence-based enforcement policy.

6. Data

⁵¹ This is also recognized in the new Environmental Crime Directive (2024), which obliges Member States (in Art. 17) to ensure that national authorities which detect, investigate, prosecute or adjudicate environmental criminal offences, have a sufficient number of qualified staff and sufficient financial, technical and technological resources for the effective performance of their functions.

⁵² Stigler 1970.

⁵³ See inter alia the conclusions and recommendations of EFFACE (European Union Action to Fight Environmental Crime). Available at: https://www.ecologic.eu/sites/default/files/publication/2016/2720-efface_conclusions_recommendations_0.pdf.

⁵⁴ So Faure 2020, 259-263. This point has not been solved by the new Environmental Crime Directive (2024). It does (in Art. 22) impose a duty to collect statistical data on the enforcement of environmental crime, but not on the human capital available. However, Art. 17 imposes, as mentioned, an obligation on Member States to have sufficient resources available for environmental crime enforcement.

⁵⁵ The conclusions and recommendations of EFFACE (European Union Action to Fight Environmental Crime). Available at: https://www.ecologic.eu/sites/default/files/publication/2016/2720-efface_conclusions_recommendations_0.pdf, p. 24.

Recently an author wrote concerning environmental enforcement in Spain: “There is a lack of general information about inspectors and appropriate controls by the Inspectorate Services”.⁵⁶ This same can be said of complaints in the administrative sphere and the subsequent sanctioning procedure that follows. For that reason we had to do an attempt to collect the data ourselves.

The data that will follow were put together based on information collected by the Andalusian Environmental Information Network (abbreviated REDIAM).⁵⁷ This REDIAM collects information on all environmental issues promoted by the European Union such as water, soil, biodiversity, climate, forest areas, waste, etc. In addition data from provincial, regional and national bodies is also incorporated. The data is not completely up to date and in some of the sections there is little or no information, but it should be remembered that this is a public service that has not been in operation for very long and that it may need a period of adjustment to offer an optimal service.

The two activities that materialize the punitive regulatory enforcement are the complaints and the resulting sanctioning proceedings, and the inspections. We will divide this section into two subsections in which the publicly available data will be discussed.

6.1. Complaints and sanctioning proceedings

In relation to the subject that concerns us, the REDIAM offers information on the infringement proceedings carried out by the environmental agents and the complaints collected by the Sustainability, Environment, and Blue Economy Department (from the Regional Government)⁵⁸. This information is broken down by province and ordered starting from the year 2013. The previous years do not include the same data, so it is not possible to make an adjusted time sequence.

As we already mentioned above (see section 2), an important role in environmental enforcement is played by the AMA (administrative enforcement) on the one hand and SEPRONA (Guardia Civil) on the other. As will be seen in the provided data, they are the ones who handle the vast majority of complaints for environmental violations. Following a complaint, if it is classified as an administrative infringement, it is the Reports and Sanctions Department of each provincial Service that is responsible for carrying out the administrative sanctioning process, which will result in a sanction or not. If the infringement has the nature of a criminal offense, it is passed on to the provincial Environmental Prosecutor's Office.

Firstly, data available on who initiates an enforcement action will be presented, i.e. who formulates a complaint and to which type of subject areas these complaints relate. Table 1 provides an overview of the total number of complaints handled by the Junta (2013-2022) divided by subject matter; table 2 presents the total number of complaints processed by the Junta, divided by the various actors that handed in the complaints.

A first point one can immediately notice is that the total numbers in table 1 and table 2 do not coincide. That is explained by a different methodology. One complaint can be related to several subject matters, several provinces and several complainants. Table 1 shows that many complaints relate to the protection of natural areas, to hunting and to waste. Striking is the relatively low number of complaints

⁵⁶ Fuentes Osorio 2017, 209.

⁵⁷<https://www.juntadeandalucia.es/organismos/sostenibilidadmedioambienteconomiaazul/servicios/servicios-informacion/rediam.html> (Consulted 29/04/2024)

⁵⁸ <https://www.juntadeandalucia.es/organismos/sostenibilidadmedioambienteconomiaazul.html> (Consulted 29/04/2024)

related to water. If the data is analyzed considering its variation over these ten years, it is noteworthy that matters related to hunting have decreased significantly, while those related to fires or forestry activities have doubled in number.

Table 1: Complaints processed by subject in the Junta de Andalucía 2013-2022

Subject	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Waters	0	0	0	2	202	383	248	211	146	134
	0,0%	0,0%	0,0%	0,0%	1,9%	4,5%	3,5%	2,3%	1,9%	1,6%
Hunting	2.735	1.851	1.227	2.320	2.467	1.734	1.383	847	487	406
	21,5%	18,9%	15,8%	23,6%	23,0%	20,2%	19,8%	9,2%	6,5%	5,0%
Costs	236	408	290	229	288	339	146	270	140	234
	1,9%	4,2%	3,7%	2,3%	2,7%	4,0%	2,1%	2,9%	1,9%	2,9%
Spaces protected natural areas	2.225	1.540	1.503	2.105	1.736	1.166	788	3.243	3.192	2.660
	17,5%	15,7%	19,3%	21,4%	16,2%	13,6%	11,3%	35,4%	42,5%	32,8%
Protected species	907	772	772	1.029	860	545	571	478	221	203
	7,1%	7,9%	9,9%	10,5%	8,0%	6,4%	8,2%	5,2%	2,9%	2,5%
Forestry	910	763	767	794	908	795	880	930	1.021	1.415
	7,2%	7,8%	9,9%	8,1%	8,5%	9,3%	12,6%	10,2%	13,6%	17,5%
Fires	920	894	661	751	1.008	872	693	764	1.069	1.248
	7,2%	9,1%	8,5%	7,6%	9,4%	10,2%	9,9%	8,3%	14,2%	15,4%
River fishing	989	827	746	446	733	330	597	350	321	377
	7,8%	8,4%	9,6%	4,5%	6,8%	3,8%	8,5%	3,8%	4,3%	4,6%
Environmental protection	1.165	940	432	715	993	693	515	397	177	209
	9,2%	9,6%	5,6%	7,3%	9,3%	8,1%	7,4%	4,3%	2,4%	2,6%
Waste	2.363	1.627	1.206	1.264	1.356	1.521	1.009	1.528	596	1.008
	18,6%	16,6%	15,5%	12,9%	12,6%	17,7%	14,4%	16,7%	7,9%	12,4%
Livestock trails	240	185	155	172	179	171	155	130	142	2012
	1,9%	1,9%	2,0%	1,8%	1,7%	2,0%	2,2%	1,4%	1,9%	24,8%
Not reported	2	9	11	1	4	33	10	5	-	-
	0,0%	0,1%	0,1%	0,0%	0,0%	0,4%	0,1%	0,05%		
TOTAL	12.692	9.816	7.770	9.828	10.734	8.582	6.995	9.153	7.512	8.106

Source: elaboration based on information from REDIAM.

Table 2: Complaints processed according to the type of complainant in the Junta de Andalucía 2013-2022.

Whistleblowers	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Environmental agents	2.527	2.171	2.162	2.487	2.822	2.160	1.886	1.001	1.092	1.228
	19,6%	21,7%	27,2%	24,3%	24,8%	24,08%	24,81%	26,01%	26,17%	23,48%
Environmental associations	23	14	25	22	21	27	16	15	14	26
	0,2%	0,1%	0,3%	0,2%	0,2%	0,30%	0,21%	0,39%	0,34%	0,50%
Game reserve gamekeeper	957	475	369	1.070	903	579	486	189	26	24
	7,4%	4,7%	4,6%	10,5%	7,9%	6,46%	6,39%	4,91%	0,62%	0,46%
Guardia Civil	7.755	5.901	4.208	5.264	5.875	4.479	3.629	1.890	1.917	1.913
	60,2%	58,9%	53%	51,5%	51,5%	49,94%	47,74%	49,10%	45,94%	36,57%
	32	36	44	53	88	76	48	37	9	40

Other administrations	0,2%	0,4%	0,6%	0,5%	0,8%	0,85%	0,63%	0,96%	0,22%	0,76%
Other	-	-	-	-		150	93	5	-	-
						1,67%	1,22%	0,13%		
Other officials of the Ministry	393	406	357	406	534	589	639	145	61	61
	3,0%	4,0%	4,5%	4,0%	4,7%	6,57%	8,41%	3,77%	1,46%	1,17%
Individuals (natural or legal persons)	167	211	116	196	185	203	82	94	40	33
	1,3%	2,1%	1,5%	1,9%	1,6%	2,26%	1,08%	2,44%	0,96%	0,63%
Autonomous Police	796	612	552	516	765	542	652	433	949	1.728
	6,2%	6,1%	6,9%	5,0%	6,7%	6,04%	8,58%	11,25%	22,74%	33,03%
Local Police	177	114	81	111	168	47	47	40	65	178
	1,4%	1,1%	1,0%	1,1%	1,5%	0,52%	0,62%	1,04%	1,56%	3,40%
National Police	57	77	14	69	29	19	3	-	-	-
	0,4%	0,8%	0,2%	0,7%	0,3%	0,21%	0,04%			
Coastguard	4	7	15	26	10	98	21	-	-	-
	0,0%	0,1%	0,2%	0,3%	0,1%	1,09%	0,28%			
TOTAL	12.888	10.024	7.943	10.220	11.400	8.969	7.602	3.849	4.173	5.231

Source: elaboration based on information from REDIAM.

Table 2 indicates that in approximately 75% of the cases complaints were initiated by the environmental agents (AMA) or by the Guardia Civil (SEPRONA), although in the years 2021 and 2022 the regional police greatly increased the number of complaints it handled. In fact, it is shown that the number of cases handled by the Guardia Civil is substantially larger than the number of cases handled by the AMA. That is related to the fact that AMA has a lot of different tasks derived from the regional government's duty to protect the environment (other than doing reports and inspections). The police officers of SEPRONA (of the Guardia Civil) focus almost exclusively on handling environmental complaints. That is why a substantial number of the complaints are processed by them. Formally, there are, in addition to the Guardia Civil, also tasks for the autonomous police (the police of the autonomous region Andalusia). The number of complaints they processed is increasing. And environmental complaints could equally be processed by the local police. However, as the data show, their role in the complaints handling is relatively modest.

A very significant aspect to highlight is that the number of complaints decreases over the ten years analyzed. The main reason for this decline is that over the years fewer and fewer provinces are reporting their data. In fact, in both tables, in the last three years, figures for four provinces, half of the Andalusian territory, have not been included. This makes it impossible to hypothesise whether a possible decrease in offences or an increase in the black number also plays a role.

Data is also provided by the Guardia Civil of the national police and more particularly from their specialised section SEPRONA (table 3). It is striking that even though their main objective is to fight environmental crime, they de facto play an important role in processing administrative offences as well. The Guardia Civil provided the following numbers for the administrative and penal offences known to them for Andalusia:

Table 3: administrative and penal offences in Andalusia (known by the Guardia Civil)

	Administrative and penal offences in Andalusia (known by Guardia Civil)		
	2014	2018	2022
Administrative offences	42.249	23.872	24.111
Penal offences	499	1.123	2.392

Source: REDIAM

These numbers are interesting and indicate a few issues. The information on detected environmental infractions reveals a large discrepancy between the data collected by the Junta and the Guardia Civil. In 2022, the Guardia Civil was aware of more than 24,000 infractions, but only 2,000 were brought to the attention of the Junta. If the Junta had had the figures for the eight provinces in 2022, the number might have risen to 6,000, which is still a long way from the Guardia Civil's figures⁵⁹. No doubt this discrepancy has to do with the way the actions are counted, but the difference is so large that it would be advisable to give more details about the information provided. It is impossible not to wonder about the final destination of thousands of administrative infractions against the environment known to the Guardia Civil in our territory.

The information in table 3, notwithstanding these disturbing differences in data collection, provides some interesting indications on the relationship between administrative and criminal enforcement, but also on the role of the Guardia Civil in administrative enforcement. The data show that a substantially larger (roughly 90 versus 10%) part of the cases are handled via administrative offences rather than via the criminal track. The second point is that apparently the Guardia Civil is able to process a substantial amount of offences, also of an administrative nature. Given the fact that the Junta can in principle impose remedies that could lead to compliance and a restoration of environmental harm, this looks like an effective division of labour. These numbers are not exceptional or typical for Andalusia. In the latest statistical yearbook of the Spanish Ministry of the Interior for 2021, a report is provided concerning Guardia Civil's activity with respect to nature conservation. It reports in 2018 a total of 99.694 administrative offences and 3.295 criminal offences; in 2022 the number of administrative offences was 104.486 and criminal offences 6.326.⁶⁰ But again, even for the entire Spain, it is clear that the number of cases handled as administrative offences is substantially larger than the number of penal offences. However, as there is no information on the selection (i.e. which cases go the administrative route and which criminal) nor on the remedies/penalties actually imposed, it is impossible to come to any specific conclusions with respect to the entire effectiveness of the system, including deterrence.

The following table (4) shows the number of cases by the subject of infringements between 2013 and 2022, with the absence of 2017 as data for that year were not available. The data is broken down by subject area, grouping together the areas of activity of the environmental officers:

Table 4: Files processed by subject in the Junta de Andalusia 2013-2022

Subject	2013	2014	2015	2016	2018	2019	2020	2021	2022
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⁵⁹ The data provided corresponds to the activity of the Civil Guard as a whole. It should be noted that this police force has a section specifically dedicated to the environment (SEPRONA), but the rest of the agents can also detect and report violations in this area.

⁶⁰ <https://www.interior.gob.es/opencms/es/archivos-y-documentacion/documentacion-y-publicaciones/anuarios-y-estadisticas/anuarios-estadisticos-anteriores/anuario-estadistico-de-2022/>

Waters	0	0	0	1	384	258	94	146	134
	0,0%	0,0%	0,0%	0,0%	7,1%	6,0%	2,3%	2,8%	2,9%
Hunting	1.066	911	931	1.070	795	701	493	313	301
	20,2%	16,3%	21,0%	15,4%	14,7%	16,3%	11,8%	6,1%	6,5%
Costs	128	275	130	160	238	92	39	90	126
	2,4%	4,9%	2,9%	2,3%	4,4%	2,1%	0,9%	1,7%	2,7%
Protected natural areas	782	1.012	630	1.897	942	725	1.208	2.767	1.734
	14,8%	18,1%	14,2	27,3%	17,4%	16,8%	29,0%	53,5%	37,4%
Protected species	589	569	600	840	448	439	438	170	163
	11,2%	10,2%	13,5%	12,1%	8,3%	10,2%	10,5%	3,3%	3,5%
Forestry	644	593	459	647	630	514	541	523	744
	12,2%	10,6%	10,3%	9,3%	11,6%	11,9%	13,0%	10,1%	16,0%
Fires	435	618	409	530	495	382	410	526	680
	8,2%	11,0%	9,2%	7,6%	9,2%	8,9%	9,8%	10,2%	14,7%
River fishing	421	414	424	303	257	326	200	111	121
	8,0%	7,4%	9,6%	4,4%	4,8%	7,6%	4,8%	2,1%	2,6%
Environmental protection	505	622	430	563	365	294	106	141	148
	9,6%	11,1%	9,7%	8,1%	6,7%	6,8%	2,5%	2,7%	3,2%
Waste	611	468	350	812	750	501	572	285	361
	11,6%	8,4%	7,9%	11,7%	13,9%	11,6%	13,7%	5,5%	7,8%
Livestock trails	99	111	70	130	104	76	69	95	127
	1,9%	2,0%	1,6%	1,9%	1,9%	1,8%	1,7%	1,8%	2,7%
Total	5.280	5.593	4.433	6.953	5.408	4.308	4.170	5.167	4.639

Source: elaboration based on information from REDIAM

Table 4 therefore shows the total number of administrative cases dealt with by the Junta of Andalusia. The criminal cases are not included in this table, as they go directly to the public prosecutor. The last line provides an indication of the evolution in the total number of cases handled in the sanctioning proceedings. It is, however, unfortunately not known whether the Junta imposed a sanction and if so, what the magnitude of the sanction would have been.

A few elements appear from this table. First of all, a more or less stable trend can be observed over these ten years. But once again, the data provided by each territorial delegation is deficient. Only two provinces provide data for the entire period, and in recent years more and more provinces have been absent, reaching four in 2021 and 2022. Taking this into account, it could be hypothesised that the number of cases processed has an upward trend, given that the amount of missing provincial data is increasing. Of course, it is not known whether the number of administrative cases handled by the Junta would be compensated by an increased number of cases sent to the public prosecutor for criminal prosecution.

The reduced number of cases handled by the Junta in the 10 years period may be related to the low number of personnel assigned to carry out the sanctioning procedure. Each provincial service has a Reports and Sanctions Department where technicians work to manage the received complaints, which are usually around six. The complaints that arrive are so numerous that the technicians in these departments cannot initiate all procedures, and many of them expire. This is perhaps the most critical knot in the administrative sanctioning procedure. Many infractions become known, but only a small portion receives a sanctioning response.

Table 4 also provides an indication on the common areas in which cases are processed. Apparently hunting, protected areas, forestry and waste are those that generate the largest number of cases.

6.2. Inspections

As a result of the development of European regulations regarding various environmental issues and the specific emphasis on minimum criteria for environmental inspections, the Sustainability, Environment, and Blue Economy Department (from the Regional Government) published a comprehensive inspection plan on environmental quality for the period 2020-2025. It outlines the basic points of the different inspection programs and how to carry them out, among other matters.⁶¹ The entire inspection plan is risk-based and follows the integrated risk assessment method (IRAM) developed by IMPEL, perhaps also as a result of the environmental policy implementation reviews (discussed above in section 3).

Every year, in March, the inspection program for that period is published in the Official Gazette of the Andalusian Regional Government. The inspection plan indicates that the general objective of the integral inspection programme is to achieve compliance. It contains a detailed inspection plan for inspecting the more than 800 establishments that have to be inspected within the programmed inspections. All annual programs follow the same format, which adheres to the objectives and lines of action proposed in the comprehensive plan. The one published for the year 2024 contains the following.⁶²

Three inspection programs are established:

- Inspection program for AAI facilities (these are industrial activity facilities that require an integrated environmental authorization. This permit aims to make pollution prevention and integrated control effective, thus it needs to be reviewed and updated).
- Inspection program for cross-border transfer of waste.
- Sectoral inspection program on environmental quality.

It is indicated in the Official Gazette that the staff assigned to these programs by this Department are twelve officials distributed among the eight provincial delegations.⁶³

The AAI facilities program is carried out with on-site visits by inspectors. These visits are scheduled. In 2024, there are 627 facilities eligible for inspection. More than half are agri-food industries and livestock farms; around one hundred are dedicated to waste management, and there are also chemical, mineral, and similar industries. Specific parameters and indicators are used to determine which establishments will be inspected on a yearly, two-yearly or three-yearly basis. The inspection programme is drawn upon the basis of the assessment of the environmental risks of the particular facilities. Specific criteria are indicated on the basis of a risk assessment and on the basis of

⁶¹ <https://www.juntadeandalucia.es/medioambiente/portal/areas-tematicas/prevencion-y-calidad-ambiental/inspeccion-ambiental/planificacion-de-inspeccion-en-materia-de-calidad-ambiental/pidia-2020-2025> (in Spanish!), last consulted on 23.4.2024

⁶² https://www.juntadeandalucia.es/boja/2024/57/BOJA24-057-00037-42055-01_00298862.pdf, last consulted on 23.4.2024

⁶³ As will be analysed, the number of new inspections programmed for this year according to the Official Gazette is 466. These are in addition to those that have not been completed from previous annual programmes.

(non)compliance in previous periods. Following the application of the criteria, 375 facilities in the eight provinces were selected.

The phases of the inspection are as follows:

- Review of all documentary reports of the installation.
- Preparation of checklists and/or measurements
- On-site visit and verification of reports and records
- Drafting and signing of the inspection report
- Drafting of the preliminary inspection report and sending it to the operator.
- Drawing up of allegations by the operator
- Drafting of final report, notification to the operator
- Publication of the summary of the final report on the website
- Monitoring to ensure that the operator takes the necessary measures indicated in the report in relation to the non-compliances detected. There is no strict period for this compliance, it is stated "within a reasonable period".

Unscheduled visits may be made to these AAI facilities as a result of complaints, serious accidents or non-compliance with regulations.

The cross-border transfer inspection program targets companies, traders, agents, or carriers involved in these transfers within Andalusia. These actions are scheduled, although they can also be conducted without scheduling in the event of a complaint, accident, or justified reason. In 2024, there were 100 establishments or operators that have imported or exported waste to EU countries. After applying impact criteria (hazard, quantity, degree of impact, and others), a risk index is obtained: one operator was classified as high risk, 24 as medium risk, and the rest as low risk. Roads, ports, and railway stations are also evaluated to determine the risk of waste in transit. After applying the criteria, 4 roads and 2 ports were assessed as high risk, and 15 roads as medium risk. The remaining have low risk. Following this assessment and considering other circumstances such as available inspection capacity, it is decided to schedule inspections for one operator classified as high risk and seven as medium risk. Additionally, four road inspections and two port inspections are scheduled.

There is no reference in this programme to the way inspections are carried out or to the publication of reports.

The third program is the sectoral one regarding environmental quality that applies to all facilities, actions, and activities subject to the environmental prevention and control instruments within the competence of the regional government. Facilities to be inspected are selected based on whether there have been complaints or environmental accidents, if there have been breaches, or if the facilities have been modified, among other criteria. The total number of facilities that could be inspected is not provided. The activity is divided into sub-programmes according to different subjects. In the sub-programme for waste and contaminated soil inspections, 28 inspections are planned for 2024: to waste producers, waste management companies and landfills. In the sub-programme for air pollution and climate change inspections, 11 scheduled inspections are planned. The sub-programme for inspections of activities and installations with other prevention instruments other than those mentioned above includes 19 scheduled inspections. The execution of these inspections follows the same steps as the first programme relating to AAI installations, with the difference that the operator will not be able to make allegations. If breaches are detected, follow-up will be conducted to ascertain whether corrective measures have been implemented. No specific timeframe is established. Although

it is specified that the reports are public documents, the location for their publication for consultation is not specified. This type of inspections can also be conducted exclusively in a documentary manner.

~~All this inspection activity is carried out by the Andalusian Government. However, it does not cover all facilities that need to be inspected. Thus, the Government~~

Another department of the Andalusian Government is responsible for inspecting inland and maritime waters; ~~so~~ the Directorate General of Water Resources annually approves the Inspection Program for discharges into the intracommunity hydraulic public domain and the Andalusian coastal public domain.⁶⁴ A particularity of these inspections is that fees are incurred by the inspected facility, whether it is public or private. Inspections can also be either scheduled or ad-hoc, based on complaints or prior to authorization being granted, but on a regular basis they are always scheduled. All these inspections are carried out by the AMAs.

They are divided into two main groups: urban and industrial discharges. The inspection program for discharges into the intracommunity hydraulic public domain covers 670 facilities. And the inspection program for discharges into the coastal public domain reaches 463. For these inspections, all relevant documentation is collected beforehand. During the visit, an inspection report is prepared and handed over to the owner, and a report is produced with conclusions regarding compliance with regulations and potential corrective measures to be taken. In these cases, there is also no mention of the publication of these reports.

As can be seen, the inspection activity overseen by the regional government is extensive and encompasses activities and facilities of various natures. It is very positive to note that there is an interest in implementing the recommendations made by the EIR⁶⁵ for this sector of environmental protection into specific actions, although these are still subject to improvement.

In accordance with Directive 2003/4/EC of the European Parliament and of the Council of 28 January 2003 on public access to environmental information, some of the inspection reports are made publicly available. Unfortunately, not all of them are. We have analysed the inspection reports published on the website for the year 2023, which correspond only to installations with an Integrated Environmental Authorisation (AAI). In that year, the inspection programme indicated that 601 installations had been granted integrated environmental authorisation (AAI). Following the application of the selection criteria, 328 installations were included for the application of the annual inspection programme.

In the section for 2023⁶⁶, one can find⁶⁷ 130 final environmental inspection reports conducted in the 8 Andalusian provinces, slightly over a third of the total number of facilities included in the program. The reports are not finalized in the same year as the program, as there is a period for objections to be raised after the scheduled visits throughout the year before the report is finalized. The published reports indicate that in 2021 214 visits of the 343 that were scheduled could be executed.⁶⁸

⁶⁴ https://www.juntadeandalucia.es/boja/2024/52/BOJA24-052-00011-41776-01_00298490.pdf

⁶⁵ See, supra section 3.

⁶⁶ https://www.juntadeandalucia.es/medioambiente/portal/landing-page-%C3%ADndice/-/asset_publisher/zX2ouZa4r1Rf/content/informes-de-inspecci-c3-b3n-ambiental-a-instalaciones-ippc-4/20151

⁶⁷ 22th April 2024

⁶⁸ https://www.juntadeandalucia.es/boja/2021/58/BOJA21-058-00026-5138-01_00189038.pdf

All reports refer to on-site and scheduled visits. The scope of the inspection activity is comprehensive in all cases except for thirteen facilities, where various aspects such as air and water emissions, noise, soil quality, waste production and management, among others, are highlighted.

In 48% of the reports, inspectors identified non-compliances in various areas, such as general conditions, water and air quality protection, or pollution. It is advised that the owner must immediately take corrective measures to prevent any adverse effects on people and the environment from the reported non-conforming aspects. In 66% of the reports, it is noted that the owner has made objections. It may seem strange that the submission of objections by the owners exceeds the number of cases identified as non-compliant, but it should be remembered that these are final reports. Therefore, the inspector, after partially or fully accepting the objections, states that there is no non-compliance in the final report. This percentage is a more reliable indicator of the inspectors' understanding of the operation of the facilities and the efficiency of the inspection work. The report concludes with a section detailing "the actions taken by the competent authority as of the deadline for submission of objections by the facility operator and after reviewing them." In 43% of the reports, the notification of the report to the activity owner is indicated, along with some other actions such as "requiring the activity owner to adopt provisional measures to prevent risks to the environment or health" or "requesting the submission of documentation demonstrating that the identified deviations have been corrected or, failing that, actions have been implemented for their prompt correction". Only in six reports was the file sent to the sanctions department of the Provincial Delegation (all in the same province), and in one case, it was proposed that the conditions of the integrated environmental authorization for the facility be reviewed.

A second source of information is on the number of inspection reports that is drafted by the AMA. Data on that (for the total number of reports) are only available for the years 2019 and 2023. In 2019 the AMA drafted in total 98.237 reports and in 2023 60.283 reports. The inspection reports represent only 6,5% and 11,9% (2023) of all the types of actions which are included in the annual published quality indicators (such as general reports, reports of complaints, direct authorisations, data sheets and inspection reports)⁶⁹.

Of these inspections listed in Table 5, the only ones that relate to annual inspection programs are those related to coast and water, which are scheduled by the Directorate General of Water Resources of the Regional Government as mentioned above. These inspections reach a very high number, and it can be inferred that they are carried out as proposed annually. All of these inspections are scheduled. The remaining inspection reports are conducted by the AMAs as a result of incidents encountered in their daily work or, primarily, at the request of various departments managing different environmental protection areas. For example, if a citizen requests to intervene in the natural environment regarding flora or fauna, they need to obtain authorization. Before granting it, the service conducts an inspection to assess whether that action will not cause harm to the environment.

Table 5: AMA inspection reports 2019, 2020, 2021 and 2023

WORK AREAS	2019		2020		2021		2023	
Forestry management and development	1.651	25,7%	1.091	14,9%	990	12,5%	889	12%

⁶⁹ <https://www.juntadeandalucia.es/medioambiente/portal/areas-tematicas/prevencion-y-calidad-ambiental/inspeccion-ambiental/agentes-de-medio-ambiente> (Consulted 8.10.2024)

Forest fires	320	5,0%	266	3,6%	516	6,5%	190	3%
Hunting	849	13,2%	826	11,3%	917	11,5%	978	14%
Inland fisheries	319	5,0%	230	3,1%	313	3,9%	260	4%
Flora and fauna (biodiversity)	987	15,4%	1.527	20,9%	1.749	22,0%	1.995	28%
Protected natural areas (town planning)	259	4,0%	395	5,4%	399	5,0%	466	6%
Livestock trails	365	5,7%	265	3,6%	227	2,9%	140	2%
Prevention and environmental quality	877	13,7%	695	9,5%	1.079	13,6%	811	11%
Costs (DPMT-ZSP)	226	3,5%	486	6,6%	461	5,8%	428	6%
Water (DPH + WASTE)	694	10,8%	1.091	14,9%	1.292	16,3%	1.026	14%
TOTAL	6.421		7.291		7.943		7.183	

Source: Prepared by the authors based on information from the quality indicators of the Andalusian Regional Government's AMA services.

Three final points should be highlighted:

- the human capital available to carry out both installation inspections and water inspections are very scarce. For the province of Malaga, there is only one inspector who pointed (obviously) at the lack of personnel being the most serious problem⁷⁰. The same opinion is held by the Andalusian environmental officers surveyed in 2021 and 2022, who pointed to this as the determining factor in the lack of efficacy of the administrative sanctioning procedure.⁷¹
- a very small number of inspections include a report of violation and end with the initiation of a sanctioning procedure. Moreover, also the already mentioned shortage of staff at the Junta may explain that even where inspections reports would indicate violations, it does not imply that all those cases will lead to administrative sanctioning by the Junta
- The time for the completion of the inspections scheduled for each year is very long and the inspection process is spread out so widely that the deterrent effect is minimised.

7. Discussion

7.1 Data collection

A first obvious point when reviewing the data is that the data from Andalusia are scarce and not always consistent. In fact, for the province region of Andalusia, there is only data on administrative enforcement (and only a few data on criminal enforcement in table 5.3) *Michael, this is true if we take into account only the information of the regional government, if we consult other sources as the Memorandum of the Public Prosecutor's Office in Andalusia we can have information about criminal enforcement <https://www.fiscal.es/web/fiscal/-/andalucia?assetCategoryId=36702>*. Even the data presented do not always match. For example, tables 3 and 4 1 and 2 provided different total numbers of complaints for which there is no good explanation and the most striking differences are between the numbers collected by the Junta (administrative) in table 1 table 2 and the total number of administrative offences according to the Guardia Civil in table 5 table 3. That shows a large difference

⁷⁰ Interview by F.P.J. on 18th May 2023 with the inspector for industrial establishments, responsible for the province of Malaga.

⁷¹ Pérez Jiménez & Faure 2024, p. 26.

in data simply based on the actor who collected the information. Apparently there is a lack of a commonly agreed methodology for data collection.

Apparently the lack of data is not only a problem for Andalusia, but a general point for Spain. An author recently wrote in that respect: “This lack of information means that the enforcement agents cannot provide adequate evidence to ensure convictions. Moreover it endangered the substantial deterrent effect, reducing and preventing future violations, which environmental monitoring and enforcement activities produce”.⁷²

This is, also in the European context, an important point. In the literature it had already been indicated to be of great importance that adequate data on environmental enforcement should be collected in order to allow for an evidence-based environmental policy.⁷³ Moreover, also the previous European Crime Directive (2008) had been criticized for not imposing a duty on Member States to provide data on the way in which environmental crime is handled. In the absence of information on that point, there is a serious risk that Member States would, as a result of local protectionism, engage in a race-to-the-bottom, attracting industry with lenient enforcement.⁷⁴

A Recommendation from 2001 imposed a duty on Member States to collect data on environmental enforcement,⁷⁵ but this is merely a recommendation and therefore hardly followed in practice. The problem of lacking data was also recognized as the Achilles heel of European environmental enforcement policy and harmonizing adequate data collection was therefore heavily recommended.⁷⁶ That recommendation is followed in the 2024 Environmental Crime Directive. One of the important elements is that it contains a duty on Member States (in Article 22) to collect statistical data to monitor the effectiveness of their measures to combat environmental criminal offences, inter alia on:

- the number of criminal offences registered and adjudicated;
- the number of dismissed court cases;
- the number of natural and legal persons that are prosecuted and convicted;
- the types and levels of sanctions imposed.

The case of Andalusia underscores the importance of agreements on adequate data collection. Note, however, that the obligation of Article 22 only refers to data collection with respect to criminal offences. In order to judge the effectiveness of the entire enforcement system, data should be available both on administrative as well as on criminal enforcement.

7.2 Compliance versus deterrence

As second general issue is that one has the impression from the scarce data observed that the approach followed by the agencies in Andalusia is rather a compliance than a deterrence approach. It is difficult to assess this exactly as the remedies for environmental violations are not known. But it is striking that a much larger number of cases (90%) are handled via administrative than via criminal

⁷² Fuentes Osorio 2017, 209.

⁷³ Faure 2020, 262.

⁷⁴ Faure & Johnston 2009.

⁷⁵ Recommendation 4 April 2001 providing for minimum criteria for environmental inspections in the Member States. For a discussion see Blanc & Faure 2020, 10-13.

⁷⁶ For example in the Conclusions and Recommendations of the EFFACE project, mentioned before. See : https://www.ecologic.eu/sites/default/files/publication/2016/2720-efface_conclusions_recommendations_0.pdf, p. 23-27.

enforcement (10%). That may indicate that the primary goal of the enforcement agencies in Andalusia is a new breach compliance rather than deterrence. Also the recent inspection programme seems to indicate that the primary goal is to remedy non-compliance.

As mentioned in the theoretical framework, such a cooperative, compliance strategy may work well for the unintentional violations that were committed out of negligence. However, the Andalusian enforcement model may be problematic for the hardcore intentional offenders (for example people engaged in illegal traffic of waste), as there a softer cooperative approach aiming to achieve compliance may not be effective.

7.3 Detection of violations

A third crucial element in environmental enforcement is how particular violations are detected. The problem with environmental crime is (as indicated in the framework in section 5) that it is often of a wide-spread or hidden nature and sometimes lacks individual victims. As a result environmental crime is sometimes (wrongly) considered as a victimless crime. The reality is that the entire society (or a large population) may be victimized, but may lack the information or incentives to complain. That can be to some extent be confirmed if one notices the type of cases for which complaints were brought (table 4). It is often hunting, protection of natural areas and waste. Those are typically the type of violations that are visible as a result of which one could expect more complaints. However, that also raises the question how “victimless” or “invisible” violations (like for example air pollution) would be discovered. It is in that respect striking that some role is played by environmental associations (see table 2), but that this role is really limited (only 1, exceptionally 2% of the complaints).

As was indicated in section 5, in order to discover environmental crime it is necessary to have the powers to monitor *ex ante* (i.e. before a violation is discovered) whether there is compliance with the regulations. As explained in section 6.2, these competences are assigned to the few inspectors designated by the annual inspection plan of the Sustainability, Environment, and Blue Economy Department and to the AMAs. The study of the inspection records to which the public has access (a small proportion of the total) has revealed that in more than half of the cases, these professionals encounter malfunctions in the visited facilities. In some cases, these problems are efficiently resolved before the case is closed, but in the majority of cases, the file is closed requiring the facility to make improvements. Another aspect revealed is the extensive delays in the inspection activities, which cast doubt on their deterrent effect. For their part, the AMAs have among their duties the responsibility to inspect facilities and services. It is surprising that both the inspections scheduled under the annual plans and those proposed by the different departments account for only between 6% and 11% of their activity.

~~and Those competences are typically with the administrative agencies of the AMA. Nevertheless, they process only on average 20% of the complaints (table 5). A much more important role is played by the Guardia Civil (processing approximately 50% of all cases). But the problem is that the Guardia Civil (belonging to the police) typically acts on an *ex post* basis, i.e. after a violation has been discovered, whereas the discovery of environmental crime also requires an active *ex ante* inspection strategy. The positive side is obviously that the Guardia Civil does handle a large number of the cases.~~

Still, given the fact that many environmental violations will not automatically be detected, the Andalusian approach, strongly relying on *ex post* detection, is problematic. Visible violations (like hunting or waste) may be easily discovered and *ex post* reported to SEPRONA, as a result of which most of the complaints are handled by them. But there is a danger that there is a substantial dark

number of undetected violations (like for example air, soil or water pollution). Those are typically the type of violations that will not come to the surface if there is no effective proactive monitoring model. Given the low number of cases handled by the AMA, there may be a relatively large number of violations that go undetected.

7.4 Inspections

A fourth aspect relates to the question how inspection visits will take place. The fact that inspection visits are always announced in advance seems risky to say the least. Especially if there were rogue polluters who would e.g. emit waste water via a so-called bypass, there is a big danger that those types of extremely dangerous activities would not be discovered as it is relatively easy to hide them before the inspection visit takes place. Precisely in order to discover these types of hidden activities which may cause large environmental harm, unannounced visits are also of a crucial importance. Andalusia now seems to implement risk-based inspections based on the IMPEL model in order to target the most risky activities, thereby incorporating a model of smart environmental enforcement.

Again, this tendency to announce visits in advance could well fit into a cooperative approach, aiming to bring perpetrators towards compliance. But that is strongly based on the assumption that operators are in principle willing to comply with their legal obligations as long as they are accurately informed. The enforcement strategy has then as main function to provide information leading violators towards compliance. However, an inspection approach based on announced visits may, again, not be appropriate in case of intentional violators who would take efforts that their violations (for example illegal trade in waste) would go undiscovered.

7.5 Post-detection discretion

A fifth question is whether there should be any post-detection discretion. As indicated in section 5, the literature generally holds that capacity is often lacking to handle all cases and that, moreover, not all cases necessarily deserve further treatment if they are of minor importance. Andalusia clearly awards post-detection discretion to the authorities as the number of complaints processed (tables 1) is much larger than the files eventually processed by the Junta (according to table 4). And also ~~inspection reports (table 2) do not all lead to a processing by the Junta~~ a few number of inspection reports lead to an administrative sanctioning procedure, as we saw in section 6.2. This may indicate that a wise use is made of discretionary power to focus scarce resources on the most important cases. However, without further qualitative information on how the discretionary power is used, it is obviously difficult to make normative judgments.

7.6 Capacity

The sixth problem seems to be the most serious one in Andalusia (and for the matter in many other jurisdictions as well), being a serious lack of staff. There seems to be a lack of staff at all levels. The AMA has (too) many other tasks to devote itself fully to complaints and inspections; the Guardia Civil plays an important role in processing complaints. But even to inspect serious industrial installations, there is only very limited capacity available, as the case of the one inspector in Malaga illustrates. And also at the level of the Junta, there has been a decrease in the AMA staff over the years. Given that they, moreover, have to handle many other tasks, it is no surprise that one could also observe a

reduction in the number of files processed by the Junta (in table 4). The literature has repeatedly argued that environmental enforcement and handling (i.e. providing adequate remedies) needs human capital and, in other words, adequate staffing.⁷⁷ Otherwise there is a substantial risk that the goals of the enforcement policy (achieving compliance and deterrence) cannot be reached. Again, this problem is not limited to Andalusia. Generally, Spanish prosecutors have criticized the limited resources available to obtain evidence to justify further investigation, as well as to determine the existence, nature and gravity and scope of the harm.⁷⁸ Regarding Malaga (in Andalusia), the situation was even describes as “disastrous” by the environmental prosecutor.⁷⁹ The need to have adequate resources for environmental law enforcement is now also clearly stressed in Article 17 of the new (2024) Environmental Crime Directive.

7.7 Administrative versus criminal enforcement

A seventh point of interest based on the data is the relationship between administrative and criminal law. Table 3 provides some indication, based on data provided by the Guardia Civil, that administrative enforcement seems, at least quantitatively, much more important than criminal enforcement. This provides an important message, also to the EU policy maker, i.e. that administrative enforcement can play an important role in environmental enforcement generally. That is an important point as one of the criticisms on the previous (2008) Environmental Crime Directive was that it wrongly only focused on the criminal law and completely disregarded administrative enforcement, thus neglecting the importance of a toolbox approach in which other instruments, such as for example administrative fines would also play an important role.⁸⁰ This critique has been heard as a result of which the new (2024) Environmental Crime Directive has a much broader approach, providing a wider toolkit to enforcement authorities.

However, it is difficult to reach firm conclusions on the division between administrative and criminal enforcement in Andalusia. As there is no information on the quality of the cases that follow one route or the other and as there is no information either on the remedies imposed in either system (for example the magnitude of fines), it is difficult to judge whether the current strategy in Andalusia (90% administrative; 10% criminal enforcement) is indeed an effective enforcement strategy or rather the result of the fact that the regional Junta is simply more active in (administrative) law enforcement than the local criminal prosecutor. The danger of this model is always that some cases of intentional serious environmental pollution by repeat offenders would (wrongly) end up in the administrative track whereas they typically would need a more deterrent approach via the criminal law.⁸¹ In that case, environmental enforcement would fail its deterrent effect and would remain ineffective. Whether that is a serious problem is, however, difficult to judge based on the current data. But it once more underscores the general point that an effective, evidence-based, environmental policy requires complete and reliable data on the way cases are handled, both in the administrative and in the criminal track.

⁷⁷ For example in the Conclusions and Recommendations to the EFFACE study the importance of investments in the entire environmental enforcement chain is regularly stressed (EFFACE, Conclusions and Recommendations, https://www.ecologic.eu/sites/default/files/publication/2016/2720-efface_conclusions_recommendations_0.pdf).

⁷⁸ Fuentes Osorio 2017, 209.

⁷⁹ Fuentes Osorio 2017, 209, footnote 87.

⁸⁰ See on this toolbox, also referred to as “sanction mapping” e.g. Pink & Marshall 2015.

⁸¹ Faure, Ogus & Philipsen 2009, 173-181.

8. Concluding remarks

In this paper, we presented some data concerning administrative enforcement of environmental laws in the autonomous region of Andalusia in Spain. It is first of all striking that there is in fact relatively little data available, that different actors collect different types of data and that there also seem to be inconsistencies. That as such is an important conclusion in itself. Apparently, there is no data for example on the number of enterprises that have to be monitored, nor on the number of sanctions (or other remedies) imposed or on the amounts of for example administrative fines. As a result, it is on the basis of these data not possible to say anything, for example on the effectiveness of the enforcement strategy in terms of either deterrence or reaching compliance. As there is no (complete) data, it is also not possible to engage in any type of evidence-based enforcement.

This already is an important conclusion in the European context. In the EU there has been for a long time a serious implementation deficit as far as the environmental acquis is concerned and Spain is among the top three Member States with the worst record in that respect. When there is no information on how the legislation implementing European environmental law is actually enforced in the Member States, there remains a danger of a race-to-the-bottom: Member States could formally implement European environmental law (through formal transposition), but if subsequently in a particular Member State (like for example in Spain) enforcement would be lenient or weak, there would be no level playing field compared to other Member States that would take enforcement more seriously. In order to create this level playing field and to fight the danger of a race-to-the-bottom, it is important for the EU to have accurate information on enforcement within the Member States. The case of Andalusia shows that more particularly within countries with a federalist structure, this is even more complicated as actual enforcement may to a large extent take place at the level of the regions, rather than at the federal level. The problem is that, as the data from Andalusia show, there is simply insufficient information available to judge whether EU environmental law is not only formally transposed, but also actually enforced. It is therefore with good reasons that the new (2024) Environmental Crime Directive foresees in Article 22 obligations for the Member States to report data on environmental law enforcement. However, the European legislator has to realise that (as the case of Andalusia shows) in reality in many Member States administrative law enforcement may be the main tool used (in 90% of the cases). As long as there is no obligation to provide also information on data concerning administrative law enforcement, it would be impossible for the European authorities to verify the real implementation of environmental law within the Member States. Including also data on administrative environmental law enforcement is absolutely needed to fight the danger of a race-to-the-bottom.

The (limited) data we studied are not only interesting from an EU perspective, but also for the specific case of Andalusia in itself. The limited data available show that the administrative authorities engaged in enforcement have apparently a strong focus on compliance. That can as such be a wise strategy to bring violators with a soft, cooperative approach towards compliance. The question, however, arises whether that strategy is equally effective for more hardcore, rational violators causing serious harm to the environment (for example those engaged in illegal trade in waste).

The case of Andalusia also showed a strong reliance on reactive monitoring. That means that mostly visible violations were reported as was shown from the large amount of visible violations like waste crimes, hunting and others. That of course raises the question how invisible violations (for example related to air or water pollution) will be discovered? This requires effective proactive monitoring and it is not clear whether there is sufficient capacity to engage in that. Moreover, it is also not clear how

the post detection discretion is de facto used by the administrative authorities in Andalusia. Post detection discretion is useful, but can be dangerous e.g. if also serious environmental violations would be dismissed or handled with just a warning or a low fine. It is not clear to what extent the authorities are accountable for the way in which they use their discretion. There is also no information on the way in which environmental criminal law is applied.

On that basis there is a fear that with the current system not enough might be done to deal with invisible violations and with the rogue traders who intentionally violate environmental regulations leading to serious environmental harm. An additional problem is that there seems to be too little staff, both for inspection as well as for handling the violations. The limited capacity also shows the importance of a smart risk-based enforcement mechanism, in order to make optimal use of the limited available capacity and to target on those cases where violations could create large social harm.

On the basis of the limited data available, there are hence reasons for worry concerning the effectiveness of the environmental enforcement system in Andalusia. But again, we could not review all data. Hopefully, supported by the new Environmental Crime Directive, authorities would be forced to collect and reveal also data, for example on the number and type of remedies imposed (in administrative enforcement), as well as concerning the number and size of the penalties imposed for those cases that went via criminal law enforcement. If those types of data would become available, that would be a useful source for additional future research.

List of References

Álvarez Carreño, S.M., "The regressive evolution of environmental policy and law in Spain", *Revista Aranzadi de Derecho Ambiental*, 2018, Vol. 41, 15-39.

Arlen, J. & Kraakman, R., "Controlling corporate misconduct: an analysis of corporate liability regimes", *New York University Law Review*, 1997, Vol. 72, 687-779.

Arroyo Alfonso, M.S., "Notes on the administrativisation of environmental criminal law", *Actualidad Jurídica Ambiental*, 2018, Vol. 83, 1-33.

Ayres, I. & Braithwaite, J., *Responsive regulation: transcending the deregulation debate*, Oxford, Oxford University Press, 1992.

Bardach, E. & Kagan, R., *Going by the book: the problem of regulatory unreasonableness*, Philadelphia, Temple University Press, 1982.

Becker, G.S., "Crime and punishment: an economic approach", *The Journal of Political Economy*, 1968, Vol. 76(2), 169-2017.

Blanc, F. & Faure, M.G., "Smart Enforcement. Theory and Practice", *European Journal of Law Reform*, 2018, Vol. 20(4), 78-103.

Blanc, F. & Faure, M.G., "Smart Enforcement in the EU", *Journal of Risk Research*, 2020, 1-19.

Bowles, R., Faure, M.G. & 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.

Faure, M.G., "Environmental Crimes", in Garoupa, N. (ed.), *Criminal Law and Economics*, Vol. 3, Cheltenham, Edward Elgar, 2009, 320-345.

Faure, M.G., "Effectiveness of Environmental Law: What Does the Evidence Tell us?", *William & Mary Environmental Law and Policy Review*, 2012, Vol. 36(2), 293-336.

Faure, M., "The revolution in environmental criminal law in Europe", *Virginia Environmental Law Journal*, 2017a, Vol. 35(2), 321-356.

Faure, M.G., "The Evolution of Environmental Criminal Law in Europe: A Comparative Analysis", in Farmer, A., Faure, M.G. & Vagliasindi, G.M. (eds.), *Environmental Crime in Europe*, Oxford, Hart Publishing, 2017b, 267-317.

Faure, M.G., "Environmental Criminal Liability: The Long and Winding Road towards an Effective Environmental Criminal Law System in the EU", in Peeters, M. & Eliantonio, M. (eds.), *Research Handbook on EU Environmental Law*, Cheltenham, Edward Elgar, 2020, 248-263.

Faure, M.G. & Gouritin, A., "Blurring Boundaries between Administrative and Criminal Enforcement of Environmental Law", in Galli, F. & Weyembergh, A. (eds.), *Do Labels Still Matter? Blurring Boundaries between Administrative and Criminal Law. The Influence of the EU*, Brussels, Éditions de l'Université de Bruxelles, 2014, 109-135.

Faure, M.G. & Heine, G., *Environmental Criminal Law in the European Union. Documentation of the Main Provisions with Introductions*, Freiburg im Breisgau, Max Planck Institut für ausländisches und internationales Strafrecht, 2000.

Faure, M.G. & Johnston, J.S., "The Law and Economics of Environmental Federalism: Europe and the United States Compared", *Virginia Environmental Law Journal*, 2009, Vol. 27(3), 205-274.

Faure, M.G. & Svatikova, K., "Criminal or Administrative Law to Protect the Environment?", *Journal of Environmental Law*, 2012, Vol. 24(2), 253-286.

Faure, M.G. & Tilindyte, L., "Effective enforcement of occupational health and safety regulation: an economic approach", *European Labour Law Journal*, 2010, Vol. 1(3), 346-367.

Faure, M.G., Ogus, A. & Philipsen, N., "Curbing Consumer Financial Losses: The Economics of Regulatory Enforcement", *Law & Policy*, 2009, Vol. 31(2), 161-191.

Fuentes Osorio, J.L., "Environmental criminal law in Spain", in Farmer, A., Faure, M. & Vagliasindi, G.M. (eds.), *Environmental crime in Europe*, Oxford, Hart, 2017, 189-220.

Fuentes Osorio, J.L., "A Punch in the Face or a Slap on the Wrist? The meagre severity of sentences for environmental crime", in Miró Llinares, F. & Fuentes Osorio, J.L. (eds.), *Criminal Law in the face of "the empirical"*, Madrid, Marcial Pons, 2021, 173-196.

Fuentes Osorio, J.L. & Fajardo del Castillo, T., "Estudio sobre el carácter disuasorio, efectivo y proporcional de las sanciones penales impuestas en España y Portugal en delitos contra el medio ambiente y su adecuación a la Directiva 2008/99/EC sobre protección del medio ambiente a través del Derecho penal", in De la Bodega Zugasti (Coord.) (pp. 7-97). LIFE Guardians of Nature, 2020.

Fuentes Osorio, J.L. & Fajardo del Castillo, T., "Motivos de absolución en los delitos contra el medio ambiente : una comparación entre los delitos contra la fauna y contra os recursos naturales", *Revista Electrónica de Criminología*, 2021, Vol. 4(3), 1-17.

Hampton, P., *Reducing administrative burdens: effective inspection and enforcement*, London, HM Treasury, 2005.

Hedemann-Robinson, M., "Environmental inspections and the EU: securing an effective role for a supranational union legal framework", *Transnational Environmental Law*, 2017, Vol. 6(1), 31-58.

Lu, M. & Faure, M.G., "Does the Tiger Have Teeth? A Critical Examination of the Toolbox Approach of Environmental Law Enforcement in China", *RECIEL*, 2022, Vol. 31(1), 89-102.

Macrory, R., *Regulatory justice: making sanctions effective. Final report*, London, Cabinet Office, Better Regulation Executive, 2006.

May, P.J. & Winter, S., "Regulatory enforcement and compliance: examining the Danish agro-environmental policy", *Journal of Policy Analysis and Management*, 1999, Vol. 18, 625-651.

Mellado Ruiz, L., "Environmental jurisprudence in Andalusia", *Revista catalana de Dret Ambiental*, 2021, Vol. XII(2), 857-866.

Miceli, T., "Optimal prosecution of defendants when guilt is uncertain", *Journal of Law, Economics and Organisation*, 1990, Vol. 6, 189-201.

Naves, A., "Spain", in Faure, M. & Heine, G. (eds.), *Criminal enforcement of environmental law in the European Union*, The Hague, Kluwer Law International, 2005, 151-155.

Oded, S., *Corporate compliance. New approaches to regulatory enforcement*, Cheltenham, Edward Elgar, 2013.

Ogus, A.I., "Enforcing regulation: do we need the criminal law?", in Sjögren, H. & Skogh, G. (eds.), *New perspectives on economic crime*, Cheltenham, Edward Elgar, 2004, 42-46.

Ogus, A. & Abbot, C., "Sanctions for pollution: do we have the right regime?", *Journal of Environmental Law*, 2002, Vol. 14(3), 283-298.

Pérez Jiménez, F., "La actividad sancionadora medioambiental en Andalucía en perspectiva Criminológica", in Muñoz-Sánchez, J. et al (eds.), *Diálogos sobre cuestiones problemáticas de las Ciencias Penales*, Valencia, Tirant lo Blanch, 2023, 265-286.

Pérez Jiménez, F. & Faure, M., "Protección del medio ambiente en Andalucía desde el ámbito administrativo sancionador: exploración de su puesta en práctica", *Boletín criminológico*, 2024, Vol. 239. Special Issue 30_años_BC, 1-34.

Pink, G. & Marshall, M., "Sanction mapping: a tool for fine-tuning environmental regulatory strategies", in DeBree, M. & Ruessink, H. (eds.), *Innovating environmental compliance assurance*, INECE, 2015, 85.

Schäfer, H.-B., "The bundling of similar interests on litigation. The incentives for class actions and legal actions taken by associations", *European Journal of Law and Economics*, 2000, Vol. 9(3), 183-213.

Shavell, S., "Criminal law and the optimal use of non-monetary sanctions as a deterrent", *Columbia Law Review*, 1985, Vol. 85, 12-32.

Stigler, G., "The optimum enforcement of laws", *Journal of Political Economy*, 1970, Vol. 78, 526-536.