



Science for Environment Policy

THEMATIC ISSUE:

Environmental compliance assurance and combatting environmental crime

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Environment

Environmental compliance assurance and combatting environmental crime

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EDITORIAL

The enforcement of environmental law: challenges and opportunities

The development of detailed, often ambitious laws designed to protect the environment over the past 30 years has been a striking phenomenon of our age. Laws in the statute book may provide some comfort but without effective implementation and enforcement they are meaningless. A Member of the European Parliament once remarked “we are good midwives but bad mothers” — implying that legislators often pay more attention to passing new laws than considering the equally challenging issues of implementation, and what happens after the law has come into force.

The potential gap between the formal law and its enforcement is seen in many fields of law, but it raises particular challenges in the field of environmental protection. In areas of law such as competition, social security, or consumer protections there are clearly defined victims with legal interests who can and will ensure that the law is enforced. In contrast, the environment is often unowned in legal terms — with the consequence that the environment dies in silence, it has been said. The responsibility for its legal protection lies largely on public authorities — the police, local authorities, or specialised regulatory agencies — often under competing policy priorities and severe resource constraints.

Yet, as this Thematic Issue demonstrates, in recent years far greater attention is being paid to the question of enforcement of environmental law — how it should most effectively be implemented, how best to ensure compliance, and how best to deal with breaches of environmental law where they occur.

These issues can raise delicate political issues at both national and regional levels. Deciding how to employ resources and respond to breaches of environmental law often involves considerable discretion amongst enforcement authorities, and national and local administrations have their own traditions and culture in which they operate. Imposing over-elaborate, top-down solutions may therefore be inappropriate. Within the European Union, environmental legislation has generally left the question of enforcement to the discretion of Member States, and it is rare for EU Regulations or Directives to specify the type of sanction that must be employed. The



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Court of Justice of the European Union has been equally reticent to trespass on the discretion of national authorities in this context, and simply relied upon the general principle that any sanctions employed must be effective, proportionate, and dissuasive.

An important exception to this picture was the passing of the [EU Environmental Crime Directive](#)¹ in 2008, requiring that certain types of conduct in relation to EU environmental law must at least be defined as a crime by Member States. The proposal to do so was the subject of legal challenge before the Court of Justice on the grounds that there was no legal competence under the environmental provisions of the European Treaty to do so. Eventually the Court held that if there was a genuine problem of enforcement, this was the proper subject of a European Directive, but recognised the

sensitivities of Member States by holding that the question of the size of penalties was a matter of national not European Union law.

Another very important legal development was the decision of the European Court in 2005 in a case taken by the European Commission against Ireland in respect of illegally operated and unlicensed waste sites. Until then enforcement actions concerning the failure by a Member State to implement EU environmental obligations in practice had been confined to specific examples. Here the Court held for the first time that the numerous cases of illegally operated sites represented a systematic failure in the administrative system for enforcement, and that this represented a breach of its obligations under EU law by the Member State.

EU environmental law, such as the [2010 Industrial Emissions Directive](#),² is beginning to contain requirements concerning inspection and enforcement, though still couched in carefully drafted language so as not to over-intrude on areas thought appropriate for national or local discretion. The [Make It Work](#) programme, initiated in 2015 by Germany, the Netherlands and the United Kingdom has now drafted common principles on issues of inspection and enforcement which are recommended to be included in future environmental legislation.

Against this background, the papers highlighted in this Thematic Issue provide important insights for policymakers and for enforcement, and reflect the contribution of recent research in this area. **Four particular themes emerge — the value of emerging networks of enforcement bodies, the need to exploit new technologies and strategies, the use of**

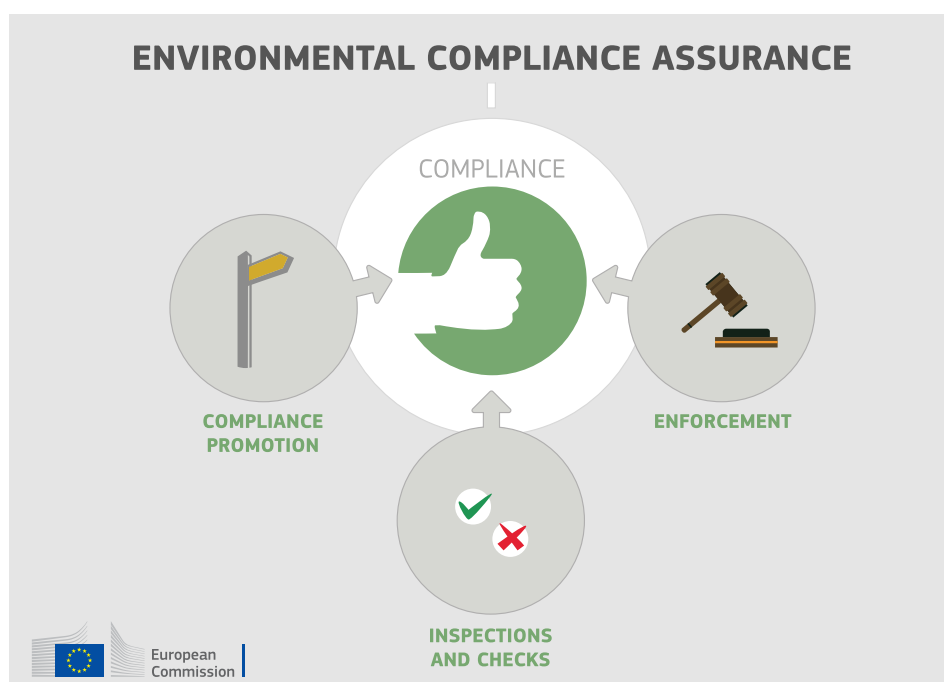
appropriate sanctions and the added value of a compliance assurance conceptual framework reflecting the interaction between three main functions — compliance promotion, compliance monitoring (inspections/surveillance) and enforcement.

Environmental networks

We have seen in recent years the growing development of various networks of enforcement agencies, at local, national, regional and international levels. Cross-border cooperation may be essential for issues such as transboundary pollution, the illegal transport of waste, and the illegal trade in endangered species. But the exchange of views and experience at national level where authorities may handle similar problems in different ways may also provide an invaluable learning experience.

Research is now beginning to attempt to evaluate the effectiveness of these networks, and how they might be improved in the future. Contacts, the development of good relationships, sharing best practice, and access to information can provide real benefits, but there are also challenges in funding, participation, and effective administration of the networks. The 2011 survey by one of the earliest such networks, INECE ([International Network on Environment Compliance and Enforcement](#)), covered some 10 networks around the world and highlighted a number of critical factors to ensure success. These include the need to prioritise, ensure adequate funding and the translation of key materials. Effective communication and the continuing evaluation of the performance network were equally vital. Ireland has provided a useful example of a national network — [the Network for Ireland's Environmental Compliance and Enforcement](#) (NIECE)

established in 2004, operating in the field of waste disposal and involving a national regulator and 34 local authorities. This helped to provide guidance and training for local enforcement officers, improving coordination and consistency in approach. The NIECE appeared to lead to a dramatic improvement in the quality of local authority inspection plans in a short space of time — in 2007 less than a quarter of such plans were given an 'A' rating but, by 2009, 85% received such a rating.



Using resources more effectively

Regulators and enforcement agencies never have unlimited budgets, and these days are normally operating under increasing financial constraints. This means developing more effective approaches and strategies. Risk-based enforcement strategies based on focusing efforts on activities judged to be the most problematic have emerged as one response, which is reflected in recent legislation such as the [EU Industrial Emissions Directive](#).³ Carrying out the same inspection levels for all industrial installations in a sector may not be the most effective use of scarce resources; it is preferable to give a lighter touch to those considered most compliant, while drilling down on the more problematic. But it is important to first ensure that there is public understanding and confidence in such an approach. Risk assessments are never foolproof. Members of the public who have not been engaged in the development of risk-based strategies are unlikely to react positively to a pollution incident on a site where there have been few inspections because the installation had been previously judged to have little risk, for example.

Against a background of resource constraints, new ways of using technology and data are likely to prove important. The [Environment Agency](#) in England provides an example of an intelligence-led policy in the field of illegal export of wastes, using data-collection technologies in a more focused way. The resolution of satellites is becoming ever finer, and a leading British legal expert in the use of space technologies as evidence highlights the potential of such technology to alert authorities of potential breaches of law, to monitor high-risk offenders to ensure compliance, and to check historical data. This research emphasises the need for lawyers to engage with Earth observation specialists so that the disciplines can more fully understand one another's needs and constraints. A Belgian judge notes that Earth observation techniques are unlikely to replace ground-based monitoring and will have little to offer in some areas of environmental law, but nevertheless have a potential that is yet to be fully exploited.

Appropriate sanctions

The 2008 EU Environmental Crime Directive highlighted the potential significance of criminal law in dealing with breaches of environmental law, especially for those jurisdictions where there had been a heavy reliance of administrative penalties in dealing with regulatory breaches. Studies here include the use of imprisonment as a sanction, and argue for the greater involvement and acknowledgement of victims in the process.

Yet the message of many recent studies is that reliance on a single form of sanction is unlikely to be the most effective approach. A mixture of administrative and criminal enforcement is preferable, but since in many jurisdictions this is likely to involve different agencies (including the police), the development of new coordination strategies will be vital.

It is clear, however, that we still have little robust, comparative data on the real effectiveness of different forms of sanctions — either in terms of their impact on the individuals or business involved in the breach of environmental law, or on how they affect the internal costs of regulators and the public sector, including the courts. This needs to be a continuing area for future research and monitoring.

Regulatory agencies are likely to be under increasing scrutiny for their cost-effectiveness and efficiency. In terms of public accountability, it is important to have performance indicators based on activity such as the number and type of enforcement actions taken. But we must not let these requirements obscure the reason we have environmental law and regulation in the first place. Outcome measures relating to the quality of the environment being protected should be a central aspiration, and studies here indicate how they are being developed in some jurisdictions. But it is not an easy exercise. It is all too easy for outcome measures to become goal-orientated targets which then over-dominate the enforcement body's strategy and thinking.

The more recent emphasis on implementation and enforcement is to be welcomed, but there are clearly many areas in which the research community has much to offer. Regulators and government should value the input of independent research to improve their own understanding and performance, and work closely with research bodies to help identify key issues that need exploring. Legislative bodies such as the [Council of the European Union](#) or [UK Parliamentary Select Committees](#) should systematically evaluate the actual implementation of environmental legislation so that improvements can be made to the enforcement of existing laws, and lessons learnt in the design of new legislation. The environmental challenges facing our society are profound, but the signs from the recent research identified in this Thematic Issue give some room for optimism.

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1. <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32008L0099>
 2. <http://eur-lex.europa.eu/legal-content/HR/ALL/?uri=CELEX:32010L0075>
 3. <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=URISERV%3Aev0027>
 4. http://europa.eu/about-eu/institutions-bodies/council-eu/index_en.htm

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Read more about: [Environmental information services, Sustainable development and policy assessment](#)

Environmental compliance systems compared in OECD study

Systems for ensuring industry compliance with pollution regulations in eight countries have been assessed by an OECD study. OECD countries have been making good progress in designing and introducing new environmental policies. However, they are generally not on track to meet the policies' goals. A major reason for this 'implementation gap' is low compliance with respective regulatory requirements, for instance, emission limit values.

"Effective compliance assurance involves a combination of all three of these pillars, working together..."

This study (conducted in 2007–2008) undertook a comprehensive analysis of government programmes designed to ensure compliance with pollution prevention and control regulations, particularly in the industrial sector. It compared such compliance assurance systems in six OECD countries (Finland, France, Japan, the Netherlands, the UK and the USA) and two non-OECD countries as examples of emerging economies (China and Russia). The report identifies good practices in these countries and points to important trends across the different systems.

Compliance assurance was considered in terms of its three main pillars:

- **Compliance promotion:** this covers any activity that encourages compliance but does not impose sanctions for non-compliance. Examples include information dissemination, technical assistance and regulatory and financial incentives.
- **Compliance monitoring:** whereby information on compliance status is collected and analysed. Examples include governmental inspections, audits, self-monitoring and citizen monitoring.
- **Compliance enforcement:** actions taken by government or third parties in response to non-compliance, to encourage the offender to comply and remediate damage, and to impose sanctions on the offender.

Effective compliance assurance involves a combination of all three of these pillars, working together, say the researchers.

To learn about these countries' compliance systems, the project team questioned stakeholders at relevant authorities, such as environmental ministries and environmental protection agencies, through questionnaires and interviews.

Although national approaches to compliance varied according to each country's own administrative traditions and cultures, they shared many of the same challenges. The following trends in efforts to improve compliance assurance systems across the countries were identified by the study.

- **Increased focus of strategic planning for compliance assurance and assessment on environmental outcomes.** Two main approaches to structuring strategic planning were identified: problem-orientated and task-orientated strategies, both emphasising the importance of risk assessment for identifying and addressing the highest risks to the environment. Traditionally, the performance and cost-effectiveness of regulatory agencies has been largely assessed in terms of activity levels (outputs), such as the number of site visits made by inspectors, or the number of compliance notices issued. However, these indicators do not show how effective enforcement is, and agencies are also looking at the actual environmental impacts of compliance assurance activities. At the time of the study, the Netherlands, the UK and the USA had developed indicators that report on levels of pollution release and improvements in environmental quality (such as cleaner river water) to help assess enforcement authorities' performances.

Source: OECD. (2009). *Ensuring Environmental Compliance: Trends and Good Practices*. Paris: OECD Publishing. Available at: www.oecd.org/env/tools-evaluation/

- **‘Cross-media’ integration of environmental permitting and compliance monitoring.** Agencies increasingly assess pollution across the media of soil, air and water, instead of just one medium. This trend was most obvious in EU Member States where integrated permitting and compliance monitoring was well established as a result of the Integrated Pollution Prevention and Control Directive which has since been superseded by the [Industrial Emissions Directive](#).¹
 - **Greater promotion of compliance targeted at small and medium-sized enterprises (SMEs).** This trend was clear in all countries considered; compliance promotion appears to be an efficient way of achieving compliance by businesses which receive assistance and incentives, and saves regulators’ resources on enforcement, the study notes. It found increasing emphasis on web-based tools for businesses, such as [Compliance Assistance Centers](#) in the USA and [NetRegs](#) in the UK.
 - **Targeting of compliance monitoring on high-risk industries.** There was targeting of inspections on industries with higher polluting risk in almost all countries studied. There was also evidence that better-targeted inspections lead to higher rates of non-compliance detection.
 - **Shifting responsibilities for monitoring facilities.** The study found more self-monitoring and reporting by industry. This also reflects the common drive for efficiency.
 - **Making enforcement more proportionate to non-compliance.** Less severe violations have been decriminalised in several countries, including France and the UK,
- through more emphasis on administrative responses instead of criminal responses. This has made enforcement more efficient.
- **Enhancing stakeholder cooperation, transparency and public disclosure.** Regulators have to consult and collaborate with other authorities as part of the growing integration of permitting and compliance monitoring. The study also noted that more countries were making monitoring information, and even enforcement data (in the USA), publicly available.
 - **Mobilising IT opportunities.** IT is increasingly used in permitting, compliance assistance, monitoring and reporting, the study found. Examples include electronic submissions of permit applications and self-monitoring reports. This also makes enforcement more efficient.
 - **Analysing non-compliance to improve policy design.** In many of the countries studied, enforcement authorities increasingly take part in improving existing policies and regulations. For example, in the Netherlands, reasons for non-compliance and the effectiveness of enforcement are studied thoroughly as part of the policy design process.
- The study raises a number of issues which point to opportunities for further improving compliance assurance programmes. For example, it asks whether the implementation gap reflects policy failure or ineffective compliance assurance, and what the limits are of doing more with less. It also recommends new methods for assessing the resources needed to achieve compliance objectives.

1. Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control): <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32010L0075>

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Read more about: [Sustainable development and policy assessment](#)

Tailored enforcement strategies may improve environmental outcomes

Regardless of how well-designed environmental legislation is, for it to be effective it must be properly enforced. This study explored the enforcement practices of several environmental agencies, recommending that strategies are chosen based on regulatory context and environmental risk.

A good idea is nothing without implementation. Similarly, effective environmental legislation must be well designed but also properly enforced. For environmental regulators, implementation comprises two stages: first, allocating resources and targeting duty holders, and secondly, inspecting those organisations. Both come with challenges: how to allocate scarce resources for the greatest impact, and how to intervene in the affairs of organisations. For example, regulators could use strict enforcement measures or alternatively negotiate outcomes using persuasion.

Risk-based regulation is emerging as a consensus method for allocating resources, defined as ‘the development of decision-making frameworks and procedures to prioritise regulatory activities and deploy resources... based on an assessment of the risks that regulated organisations pose to the regulator’s objectives’¹.

However, intervention strategy — deciding how to intervene in the affairs of organisations to ensure compliance — has received less attention, and consensus on the best approach is lacking. It is important to address this, as intervention strategy has a major influence on regulatory (and thus environmental) outcomes.

This study explored the intervention strategies of five environmental regulators: the [US Federal Environment Protection Agency](#) (EPA), the Florida Department of Environment Protection (DEP), the Netherlands Ministry of Housing, Spatial Planning and the Environment (VROM), the United Kingdom Environment Agency, and several Australian environmental protection

authorities. Based on the formal, published policies of these regulators, the researcher identified five strategies for intervention.

- *Rules and deterrence* is a coercive, formal style of enforcement based on the punishment of rule-breaking behaviour. The US EPA uses such a strategy, based on compliance monitoring and legal consequences, which contrasts with the less confrontational approaches of many European agencies.
- Strategies based on *advice and persuasion* emphasise cooperation and conciliation over confrontation and coercion, aiming to prevent harm by persuasion rather than sanctioning. This strategy was difficult to identify in the agencies studied, but the Australian Department of Environment, Water, Heritage and Arts uses a similar approach, which emphasises self-regulation and uses communication and education activities to encourage compliance.
- *Criteria strategies* comprise a list of factors used by regulators to make a decision on what action to take regarding a case of environmental crime. The Florida DEP provides a good example of this. It considers factors such as how serious the violation was and how quickly damage to the environment can be remediated when deciding its response to a violation. The Dutch VROM has adopted a similar approach, which provides individual decision makers with a high degree of discretion.

- *Risk-based regulation* decides on an intervention based on the risk to the environment, and is used by the UK Environment Agency. It classifies cases of non-compliance as ‘major’, ‘significant’, ‘minor’, or having ‘no environmental impact’. Major effect incidences normally lead to prosecution, while minor incidents are more likely to be resolved by a formal caution. This approach enables regulators to prioritise their efforts and maximise cost effectiveness.
- Finally, *responsive regulation* includes a mixture of persuasion and coercion. In this system, an agency typically approaches the organisation in a cooperative manner but may turn to deterrence if the organisation does not cooperate. Some Australian jurisdictions use such an approach, which can overcome the limitations of *rules and deterrence* (which can be counterproductive) and *advice and persuasion* strategies (which can fail to encourage deterrence).

However, the researcher suggests that no single strategy can work for all situations, and thus that ‘one-size-fits-all’ strategies are inappropriate. Overall, the researcher says that implementation is as important as the design of environmental regulation, and should be given greater consideration by environmental agencies. Although sophisticated strategies are available for allocating resources, improvement is required in current practices on how best to intervene in organisations.

The paper concludes that instead of trying to identify the single most effective intervention strategy, regulatory agencies should apply strategies based on what is most suitable for the regulatory context and environmental risk. This might mean using a combination of approaches to compensate for the weaknesses of one tactic with the strengths of another. Developing more refined and context-specific intervention strategies offers the opportunity to significantly improve environmental outcomes.

“...instead of trying to identify the single most effective intervention strategy, regulatory agencies should apply strategies based on what is most suitable for the regulatory context and environmental risk.”

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Read more about: [Environmental information services](#)

Communication and evaluation: key to effective Environment Enforcement Networks

Important factors in the creation and maintenance of effective Environmental Enforcement Networks (EENs) have been shared by the International Network on Environment Compliance and Enforcement (INECE), one of the first EENs to emerge. By disseminating these 'lessons learned' the INECE hopes to facilitate the creation of effective EENs in emerging networks, such as those in Eastern Africa, Western Africa and South America.

EENs generally exist to facilitate and enable cooperation and enforcement between government environmental regulators and agencies, international and non-governmental environmental organisations, as well as private organisations or individuals. Through facilitating collaboration and the sharing of information, resources, tools and best practices in environmental regulation, EENs can help resolve trans-boundary environmental problems and bolster the political will for more effective implementation and enforcement of environmental standards.

The INECE was one of the earliest EENs to emerge. It is a partnership of governmental and non-government enforcement and compliance practitioners from over 150 countries. Founded in 1985, the INECE has a history of supporting the development of regional EENs. While the specific needs, focuses and approaches to the enforcement of regional networks may vary, those geographic areas that have not yet benefited from regional networks can take advantage of the lessons learned from INECE.

The INECE approached 31 practitioners from 10 networks attending the INECE 'Summit of Regional Network Leadership'¹ in June 2011 to share their practical experiences in creating and sustaining such networks. The summit hoped to use these shared narrative experiences to identify the key lessons learned, with the hope that they could inform the development of emerging EENs, such as those in Eastern and Western Africa, and South America.

The INECE highlights that there are a number of challenges in creating a regional EEN. These include building a critical mass of members, recognising the different domestic agendas and goals of members, developing trust and identifying areas of overlap.

In addressing these challenges, the INECE notes that summit attendees identified a number of factors essential to success. These include developing a framework for the network, including committing to keep funding the network, an agreed guiding set of goals or principles, and a well-defined structure outlining the key roles and responsibilities for the network and its members.

In addition to this, agreed standard operating procedures or rules for how network leaders make decisions and manage tasks will be key — according to the summit attendees — and will provide transparency to decision making.

When developing work or strategic plans, burgeoning networks will need to prioritise projects and identify how these might be funded, as well as closely managing relationships between members. To help achieve this, networks could use performance measures to assess their achievements.

Communication is important for maintaining the support and participation of member agencies. Providing network members with timely, useful information using a range of communications and outreach activities will help to ease cooperation

Source: Gerardo, J., Koparova, M. & Zaelke, D. (2014). Developing and sustaining environmental compliance and enforcement networks : lessons learned from the International Network on Environmental Compliance and Enforcement. In Faure M., De Smedt, P & Stas A. ed. *Environmental Enforcement Networks: Concepts, Implementation and Effectiveness*. Cheltenham UK/ Northampton MA: Edward Elgar Publishing: 334–349.

between agencies from different countries. Translation of key materials into different languages is also likely to be necessary and provide more effective communications.

Communication tools, such as websites, emails, newsletters and social media, will also be essential in helping to advance the work of member agencies, reaching non-member target audiences, funders and other types of partners.

Finally, networks should periodically evaluate their performance and progress against their stated mission and goals. Active dissemination of information on outcomes of such evaluations will be important to communicate the value and benefits of the network to its members, prospective members and potential funders.

While these 'lessons learned'² were developed with emerging regional EENs in mind, they may be equally helpful for existing Environmental Enforcement Networks in determining their strategic direction, projects and assessing their performance.



Network/CC BY 2.0 Rosmarie Voegtli @Flickr

“...agreed standard operating procedures or rules for how network leaders make decisions and manage tasks will be key — according to the summit attendees — and will provide transparency to decision making.”

1. Summit report: http://inece.org/wp-content/uploads/2013/09/EWG_INECE-Summit-of-Regional-Network-Leadership_final.pdf

2. A more comprehensive document detailing the 'lessons learned' by the INECE is available at: http://inece.org/resource/network_manual/

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Read more about: [Environmental information services](#)

Getting the maximum benefit from Environmental Enforcement Networks

How environmental agencies can best engage with, and reap the benefits of, Environmental Enforcement Networks (EENs) has been identified in new research. The study used questionnaires and interviews with senior figures from eight environment agencies, spanning seven countries, to identify the key themes of, and ways of improving engagement with, EENs, to extract the maximum benefits. The input was then used to perform a SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis of engaging with EENs, from which options for improved engagement could be developed.

EENs bring together various forms of environmental regulatory entities, such as environmental protection agencies and natural resource management agencies, and their members. They exist to share expertise, information, ideas and to help refine existing, or develop new, environmental enforcement strategies and collaborations. Such networks can be informal, semi-formal or formal and span provincial, national, regional and international borders, reflecting that the natural environment is continuous and fluid, and does not stop at national boundaries.

EENs and their participants progress through different stages of professional development and proficiency. Consequently, as participants' awareness increases, so does their ability to obtain and realise benefits (at an individual and agency level). The researcher has divided these stages of development into five phases.

Phase 1 — 'exposed but sub-conscious': Participants are vaguely aware of EENs and have begun to attend network events but still have a limited understanding of EENs.

Phase 2 — 'increasingly aware but not involved': Participants attend network events but don't actively participate. Their understanding of EENs remains basic.

Phase 3 — 'aware and involved': Participants begin to actively engage and create a link between the network and their home agency, leading to greater coordination between the activities of the home agency and network. Participants have a good working knowledge of EENs.

Phase 4 — 'acutely aware and deeply involved': Participants take on a key, active role in the EEN. The participant's home agency recognises engagement with EENs as a core activity. This phase sees extensive coordination between the activities of the home agency and the EEN. Participants' knowledge of EENs is comprehensive.

Phase 5 — 'researching networks': Participants research EENs as a social construct in an effort to make them more effective for the individuals, agencies and institutions that support them. Phases 4 and 5 often occur simultaneously.

The researcher describes four 'broad areas' used to maximise benefits from network engagement. These areas include opportunities from network engagement for engaged bodies and provide categories of incentives for those who are thinking of joining the network.

Source: Pink, G. (2010). Environmental Enforcement Networks: A Qualitative Analysis. SSRN eLibrary. Available online at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1803179

1) **Involvement.** Why do agencies and people engage with networks?

2) **Value.** What is the value that agencies wish to get out of network interaction — and how is this value identified and measured?

3) **Effectiveness.** How practically do agencies consider the networks are operating, and how could networks operate more effectively?

4) **Support.** What support do networks require to be in a position to be able to support their members?

A strategy that focuses on increasing benefits from network engagement must recognise that benefits occur within a cycle and/or in phases. The researcher outlines five phases to a typical value cycle:

- *immediate value:* activities and interactions — i.e. when network members share experiences;
- *potential value:* knowledge capital — i.e. recognising that the value may be realised at a later date;
- *applied value:* changes in practice, approaches or organisation;
- *realised value:* performance improvement when applying a new practice;
- *reframing value:* re-evaluating the way in which success is defined, can involve reworking strategies and goals.

Overall, interviewees believed that EENs were useful, and that the benefits of being involved in them outweighed the costs. The top three beneficial themes identified were: contacts with people from other organisations leading to enhanced interoperability on cross-jurisdictional matters; operational benefits — with contacts established enabling operational activities to occur in a more coordinated manner; and sharing

of best practices to enable all agencies access to contemporary and effective approaches.

Other benefits included access to data and information, sharing experiences and training. The researcher also stresses the importance of factors such as a strong ongoing secretariat; developing commitment and leadership; and access to ad hoc resources from varying sources.

However, taking part in EENs was not without its problems. The top three challenges identified were levels of participation, resource and funding, and administration of the EEN. Other challenges included the existence of cliques and ‘opportunity costs’ of involvement. Opportunities, external to EENs themselves, included representation, reporting, communication, events and knowledge management. Threats (e.g. conditions that might be detrimental to the way in which the agency conducts its work) included the inability to maintain internal capacity, loss of key staff and inadequate distribution of information.

The researcher’s SWOT analysis identified six possible strategies that agencies could use in order to maximise their benefits from engaging with EENs. These strategies are essentially policy options for agencies, shaped and determined by a range of factors including budget, time, resources, opportunity costs and organisational structures.

- **Option 1** was to do nothing, accepting that the cost and benefits of the current levels of engagement are acceptable, but failing to maximise the benefits.

All other options were essentially variations of minor modifications to an agency’s network engagement strategy:

- **Option 2** focused on shoring up potential weaknesses in EEN engagement. This included using nominated staff for network engagement and liaison, succession planning to ensure continuity of representation in EENs, and internal sharing of the learnings from EENs.

- **Option 3** focused on protecting against the threats of engagement with EENs. This included aligning an agency's core functions and efforts with that of a given network(s) and ensuring staff shared and communicated their learning from networks to the agency more broadly.
- **Option 4** was based around using network engagement strengths to realise opportunities. This included creating and ensuring the sharing of reports on agency involvement in EENs, as well as communication strategies to share information from EENs with all agency staff and stakeholders.
- **Option 5** identified ways to use strengths to reduce the threats of engagement. This included allocating agency budgets towards support networks, senior agency staff taking lead roles within EENs and integrating EEN roles and responsibilities into the core duties of key agency staff.
- **Option 6**, the researcher's preferred option, incorporated all the elements of options two to five, representing an extensive EEN engagement strategy, which, the researcher says, would allow the optimal benefits of engaging with EENs to be realised.

In conclusion, the results suggest that the opportunities arising from involvement in EENs outweigh the threats. Involvement in EENs allows agencies to share resources, expertise and to carry out projects and initiatives that, without the network, would have been difficult or impossible to complete. The study also emphasises that trust and good relationships between people result in enhanced network benefits, such as flow of information. It is the latter which can lead to improvements in policy, such as harmonised laws and regulations, and enforcement — which overall help environmental enforcement agencies to be more effective.

“Involvement in Environmental Enforcement Networks (EENs) allows agencies to share resources, expertise and to carry out projects and initiatives that, without the network, would have been difficult or impossible to complete.”

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Read more about: [Environmental information services, Sustainable development and policy assessment](#)

Network for Ireland's Environmental Compliance and Enforcement (NIECE): a story of successful implementation

Ireland's Environmental Protection Agency (EPA) established the Network for Ireland's Environmental Compliance and Enforcement (NIECE) over 10 years ago to ensure an effective, integrated, national approach to the enforcement of environmental legislation, as presented in a recent conference paper and a report from the EPA.

"The Network for Ireland's Environmental Compliance and Enforcement is acknowledged internationally as a role model for other countries to follow."

Sources: O'Leary, G., Lynott, D. *The Effective Use of an environmental enforcement network in Ireland*. 9th International Conference on Environmental Compliance and Enforcement, INECE. Available from: http://inece.org/conference/9/papers/Leary_Ireland_Enforcement_Final.pdf

Office of Environmental Enforcement, The Environmental Protection Agency. (2014). *Focus on Environmental Enforcement in Ireland 2009–2012*. Available from: https://www.epa.ie/pubs/reports/enforcement/OEEFoEE2014_8th%20FINAL%20PROOF.pdf

The Network was partly established in response to criticism from the European Commission and Court of Justice about a lack of adequate measures to implement [Waste Directive \(75/442/EEC\)](#) correctly, and concerns of systematic failings. In 2016, the Network remains relevant to the Irish authorities and the model is now also used to tackle other challenges in the enforcement of water and air legislation, as described in a report which focuses on NIECE's main achievements from 2009–2012.

The NIECE network is acknowledged internationally as a role model for other countries to follow. The EPA and its partners in the network work together to enhance the ability of regulatory bodies with environmental protection responsibilities, and in doing so protect and improve Ireland's environment.

The core objective of the network is to improve cooperation and coordination between the various agencies involved in enforcement of environmental legislation so that 'a higher and more consistent' standard of environmental protection can be achieved in Ireland.

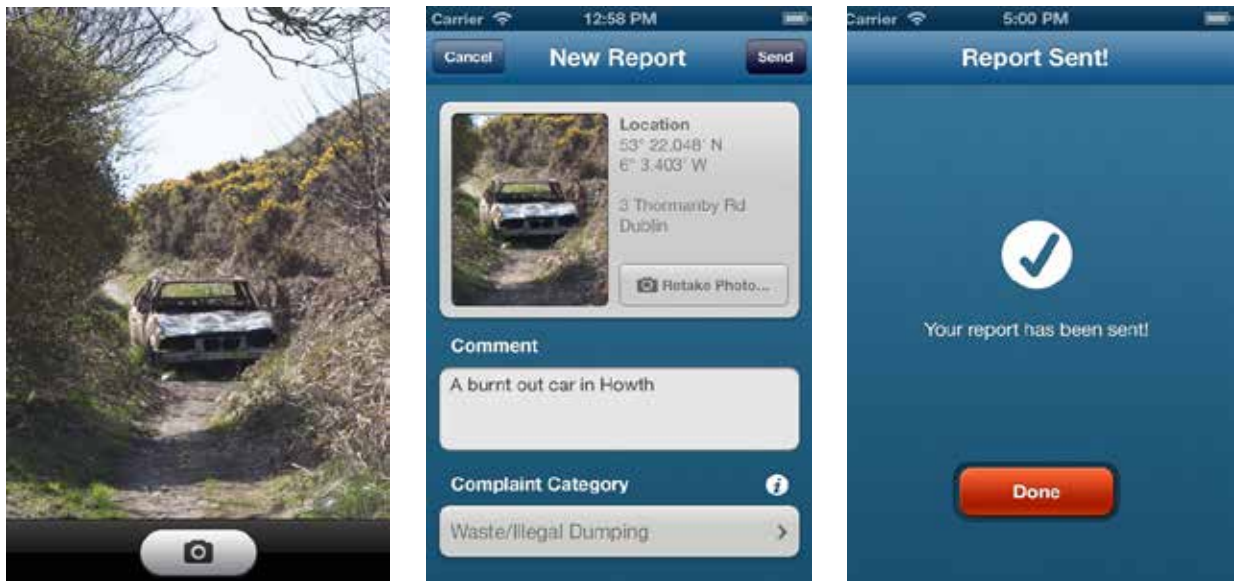
Building on earlier experiences, NIECE has developed a systematic approach to enforcement planning for all authorities based on the adoption of risk-based methodologies to determine priorities.

A core part of the network is the working groups of experienced practitioners from relevant agencies to tackle particular implementation issues. These groups exchange best-practice and develop plans for tackling problems such as illegal dumping of waste, historic landfills, mining

regulations, sewage sludge, end-of-life vehicles, biodegradable municipal waste, food waste, waste tyres, drinking water (water safety plans), wastewater, water quality issues (nitrates, farm inspections, septic tanks), solvents/deco paints, noise and air quality matters (coal bans) and WEEE and battery regulations. The enforcement network now numbers over 1 000 public sector staff registered from around 50 agencies.

The main functions of NIECE are to:

- coordinate environmental enforcement activities to tackle national environmental issues;
- develop and sustain the capacity of enforcement agencies to detect, investigate and prosecute environmental crime,;
- build and retain experience in the implementation, application and enforcement of environmental legislation through coaching, mentoring and the use of electronic media;
- develop and maintain a consistent approach to the enforcement of environmental legislation;
- promote the use of best practice by local authorities through the development of guidance for legislation, inspection and prosecution techniques, coordinate the environmental enforcement activities to tackle national environmental issues (e.g. repatriation of illegal waste from Northern Ireland), and follow up criminal investigations;



1. Visit <http://goo.gl/gOJMa> (iPhone app) or <http://goo.gl/V7eNYe> (Android app) The 'See it? Say it!' Smartphone app makes it easy to report environmental pollution with the Global Positioning System (GPS) location and a photo submitted at the touch of a button.

- develop and sustain the capacity of enforcement agencies to detect, investigate and prosecute environmental crime, e.g. multiagency checkpoints to detect the movement of unauthorised [end-of-life vehicle waste](#).
- provide a mechanism for feedback to policymakers and legislators on the practical implementation of policies and regulations, e.g. national regulations for sewage sludge, nitrates and solvents;

The main achievements of the NIECE network from 2009-2012 were to:

- develop and maintain a consistent approach to the enforcement of environmental legislation, e.g. septic tank inspections registration and training;
- build capacity in the implementation, application and enforcement of environmental legislation through coaching, mentoring and the use of electronic media (e.g. waste workshops on calculating landfill gate fees), and workshops on food waste, outcomes and inspection planning;
- promote the use of best practice by local authorities through the development of guidance for legislation, inspection and prosecution techniques (e.g. waste characterisation guidance), enforcement of vehicle refinisher regulations, odour investigation and battery regulations;
- develop IT tools to facilitate citizens' involvement in environmental compliance assurance, such as an app and a website to allow easy submission of environmental complaints. The 'See it? Say it!' app makes it easy to report environmental pollution with the Global Positioning System (GPS) location and a photo submitted at the touch of a button¹, while the fixyourstreet.ie website facilitates the reporting of non-emergency issues including litter and illegal dumping to county and city councils all over Ireland.

The researchers highlight an OECD review in 2008, encouraging Ireland to “exploit agility, informality and openness and reduce duplication of coordination efforts”, which was followed by a 2010 OECD report, stating that: “NIECE... provides a mechanism for concentrating resources and promoting co-ordination and coherence across administrative divisions”.

These two studies demonstrate how effective networks can bring together otherwise disparate organisations, with similar or overlapping remits in the enforcement of environmental legislation, to meet policy obligations.

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Efforts to fight environmental crime in the EU evaluated

A SWOT (strengths, weaknesses, opportunities, threats) analysis of efforts to combat environmental crime in the EU has been recently conducted. It highlights a number of opportunities for improvement, including better crime data gathering across the EU and enhanced cooperation between Member States.

“...while the analysis shows that criminal law is important in tackling environmental crime, it also suggests that less costly, non-criminal sanctions (e.g. administrative or civil fines), as used in some Member States (such as Germany, France and Sweden), may also act as good deterrents.”

The extensive analysis was performed by EFFACE (European Union Action to Fight Environmental Crime),¹ an EU-funded project delivered by a pan-European team of researchers. It identifies critical issues associated with the battle against environmental crimes. A few examples of such crimes include the dumping of toxic waste, trade in endangered species and arson in forests. The results identify critical issues which provide a platform for developing specific policy recommendations.

The researchers conducted SWOT analyses of nine environmental crime themes (listed below) and considered how the results of each theme may interact.

1. Data and information management.
2. Further harmonisation of substantive environmental criminal law at the EU level (excluding sanctions).
3. System of sanctions (administrative vs criminal vs civil proceedings).
4. Functioning of enforcement institutions and cooperation between them.
5. Trust-based and cooperation-based approaches: environmental crime victims and civil society.
6. External dimensions of environmental crime — what the EU can do.
7. Use of environmental liability or the ‘polluter pays principle’ — an obligation based on the principle that a polluting party should pay for damage to the environment from its activities.²

8. Organised environmental crime.

9. Corporate responsibility and liability in relation to environmental crime.

From their results, the researchers present many opportunities which could be used to address environmental crime. Among these are a number of issues which concern the review of the [Environmental Crime Directive](#) and include opportunities to consider the effectiveness of criminal law, different forms of sanction and the relevance of criminal law to non-criminal law.

For instance, while the analysis shows that criminal law is important in tackling environmental crime, it also suggests that less costly, non-criminal sanctions (e.g. administrative or civil fines), as used in some Member States (such as Germany, France and Sweden), may also act as good deterrents. A mix of available sanctions is considered a strength by the study. However, data on the effectiveness of different types and sizes of sanction, and on environmental crime in general, is seriously lacking, and is threatened by budget cuts. This highlights an important opportunity to improve data gathering and analysis in the EU and individual Member States, for example, through new software and reporting practices.

Good data on environmental crime is important to help understand its extent, its impacts and where combative actions will be most effective. The study concluded that data for soils, waste shipment, pollution incidents, fisheries and logging can be considered strengths, in terms of data sources for managing environmental crime. For instance, there is good availability for national-level data on soil in countries where the

Source: EFFACE. (2015). Evaluation of the strengths, weaknesses, threats and opportunities associated with EU efforts to combat environmental crime. Available at: <http://efface.eu/swot>

management of contaminated sites is centralised. For waste movement, there are also effective shared systems (including for data sharing) and cooperation between Member States.

There are a number of major gaps in data and information in the EU, however. These include a lack of quantitative information on certain crimes, such as the economic impacts of soil contamination, the costs of pollution incidents and the volume of waste movements. IT-based opportunities for improving information exchange could allow information to quickly translate from detection to enforcement and improve the ability to analyse large databases to identify criminal organisations and activities rapidly, among other opportunities. The study acknowledges that data gathering is costly, and pressures on public budgets could threaten efforts in this area.

It also comments on the need to address gaps and inconsistencies in EU environmental criminal law. It points to a gap between those measures addressing environmental crime and measures addressing organised crime more broadly — such as the lack of criminalisation (at the EU level) of wildlife trafficking and organised waste trafficking. It also points to a lack of clarity in the relationship between criminal and administrative law in environmental

protection. The analysis also highlights an opportunity to assess if enforcement is effective. The effectiveness of the EU's current regulatory framework on environmental crime depends significantly on the degree to which it is properly enforced by Member States. The study suggests enforcement is more effective if specialist agencies are in operation (e.g. France's inter-institutional unit, [OCLAESP](#), in charge of investigating environmental crime, or Spain's specialised police force for environmental crime, [SEPRONA](#)). It is also more effective if Member States prioritise it as a political issue, where there is good cooperation between administrative and criminal authorities, and where there is good cooperation with other Member States. The EU could therefore consider opportunities to support these competencies. For example, it could enhance transboundary cooperation by providing additional support to [Europol](#) and [Eurojust](#).

Cooperation needs to be not only between EU Member States, but also with non-EU countries. International treaties therefore present key opportunities to address transboundary crime, data sharing, criminalisation and enforcement in the fight against environmental crime, the study suggests.

1. *EFFACE (European Union Action to Fight Environmental Crime)* was conducted under the EU's Seventh Framework Programme.

See: <http://efface.eu/>

2. *Environmental Liability Directive 2004*: <http://ec.europa.eu/environment/legal/liability/>

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Read more about: [Environmental information services](#), [Environmental technologies](#)

Satellites could help prosecute environmental criminals

Satellite images can provide important evidence of environmental crime, according to a UK researcher. Satellites are now able to take near-photographic pictures of objects on Earth as small as 0.3 metres which means that individual trees, cars and industrial pipes, for example, can be monitored from space.

“Earth observation technologies cannot replace ground-based monitoring, the researcher writes, but could support current enforcement methods.”

The use of Earth Observation (EO) technologies, such as satellites, in regulatory compliance assurance and enforcement is not new. For example, satellite images of farmland are used by many regulators in Europe to check whether farmers are meeting requirements of subsidies they claim under the [Common Agricultural Policy](#).

However, significant improvements in EO technologies are opening up new opportunities in the fight against environmental crime. Writing in a 2009 paper, this British researcher gives an overview of EO technologies for environmental lawyers and regulators. At the time of writing, satellites could observe objects on Earth down to a resolution of 0.3 metres in size, compared with 10 metres in the 1990s. Thus, in theory, it is now possible for satellites to show individual factory pipes discharging pollution.

The researcher illustrates three compliance uses of EO with case studies. The first use is monitoring as part of enforcement strategies. In an Australian example, satellite images are used to reduce illegal deforestation by showing where individual trees have been removed by farmers to create farmland. These images alert enforcement bodies to suspicious behaviour before physical inspections are needed. The local authority believes that they significantly deter farmers from cutting down trees.

The second use of EO is to monitor high-risk offenders, particularly the behaviour of criminals after successful prosecution. In the

UK, for example, an individual was found guilty in 2005 of storing around 50 scrap cars without a waste management license. However, satellite images taken in 2006 showed that he was still storing vehicles and had not complied with the court order. Again, these images reduced the need for site inspections.

EO data also provide historical evidence. In a major UK criminal case, an offender was prosecuted in 2006 for managing an illegal landfill site where hazardous waste was burned. At trial, the regulator (the [Environment Agency](#)) believed that the offence took place in 2005–2006. However, historical satellite images later accessed showed that there was burned land at the site in 2004, which suggested illegal activity had been taking place for longer than thought. If this evidence had been available at court, prosecutors could have pushed for a tougher sentence.

Looking to the future, ‘nano-satellites’ (just 1–10 kg) may even allow each regulatory agency to have its own satellite. These have mission costs as little as \$5 million (c. €4.4 million), compared with over \$500 million (c. €440 million) for more conventional satellites. Unmanned aerial vehicles, or ‘drones’, could also be a powerful tool. At a cost of around €18 500 upwards, they can monitor smaller sites and produce even higher quality images. (Costs given are those at the time of writing in 2009.)

The study highlights the need for environmental lawyers to engage with EO technical specialists,

Source: Purdy, R. (2009). Using earth observation technologies for better regulatory compliance and enforcement of environmental laws.

Journal of Environmental Law. 22(1): 59-87. DOI: 10.1093/jel/eqp027.

who, in turn, need to be able to communicate complex technical information clearly. This would mean that EOs could be designed with the legal sector in mind.

EO technologies cannot replace ground-based monitoring, the researcher writes, but could support current enforcement methods. Their usefulness depends on each individual case as they have limitations. For instance, they cannot: monitor indoor activity, identify

exact pollutants or monitor continuously (and are likely to miss the precise moment a ship discharges oil at sea, for example).

However, by cutting the number of physical inspections, EO technologies could potentially reduce overall monitoring costs. This would also improve safety for inspectors who often face violent and threatening behaviour when conducting investigations.



Chemical pollution site. © microgen @iStock.

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Read more about: [Environmental information services](#), [Environmental technologies](#), [Sustainable development and policy assessment](#)

Satellite images as evidence in court: legal obstacles to their use in environmental investigations

Satellite images could be used as evidence in environmental crime cases in the future, a Belgian judge and researcher predicts. However, there are several obstacles to their use at present. Notably, they do not provide sufficiently detailed evidence for the courtroom.

“Satellite images already play an important role in monitoring compliance with some environmental laws, and provide alerts for regulators to investigate potential breaches further.”

The author discusses the use of satellite images as evidence for environmental crime in Europe in a 2012 book. She draws on Belgian experiences, but suggests that these have wider relevance, partly because the [European Convention on Human Rights](#) standardises certain aspects of evidence across Europe, but also due to a common denominator in EU and Belgian law, namely the use of a ‘two-track model’ of criminal and administrative sanctions to penalise environmental offences.

Satellite images already play an important role in monitoring compliance with some environmental laws, and provide alerts for regulators to investigate potential breaches further. However, to the researcher’s knowledge, not one sentence has been passed in Belgium where satellite images provided proof of an environmental crime.

This is partly due to technological reasons. For example, in Belgium satellite images are used to detect pollution spills from ships. However, they do not show which vessel is responsible for a spill (ships appear as white dots), nor do they clearly distinguish between natural phenomena and pollution discharges, and so often raise false alarms. The images alone are therefore not enough to prosecute. Instead, they prompt investigators to verify a spill by conducting aerial surveillance flights or inspections of the suspected vessel (identified by cross-referencing the images with data on known movements of ships).

Nonetheless, thanks to technological improvements, satellite images may well be used as criminal evidence in environmental cases in the medium term, the researcher posits. However, the standards and procedures of law enforcement currently present ‘major obstacles’ to their use in court.

To determine whether air, water or soil emission standards have been breached, for instance, precise details are needed. These may include specific chemicals, units (e.g. micrograms of a pollutant per litre) and levels (e.g. calculated average levels of emissions). Satellite images cannot give these details and so will never make it to the courtroom as evidence that such standards have been violated, the researcher writes.

Furthermore, satellite images may not comply with regulations governing ‘proactive investigations’. These are investigations which gather data on crimes that are yet to be committed, or which may have been committed but not yet detected. They are generally prohibited in Belgium, but can be used in some exceptions, for example, if a criminal organisation commits the act, or in the case of specific offences that are legally permitted to be investigated this way.

As an example, Belgium’s [Privacy Commission](#) decided that the use of satellite images to detect potential breaches of planning law counts as proactive investigation, and is therefore prohibited in principle.

Satellite images must comply with privacy law (Belgium’s is implemented under the EU [Data Protection Directive](#)) if used in non-proactive investigation. For example, their detail must be no greater than needed for the specific objective of the case, they should not be kept longer than necessary and they must be destroyed once they have no further use. However, they pose no legal problem if they are used to deter crimes or to trigger remedial administrative sanctions. Satellite images would also be permissible in proactive investigations into environmental crimes conducted by criminal organisations, such as illegal waste trafficking.

Source: Billiet, C.M. (2012). Satellite Images as Evidence for Environmental Crime in Europe: A Judge’s Perspective. In: Purdy, R. and Leung, D. (2012) *Evidence from Earth Observation Satellites*. Leiden: Brill: 321–355.

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Punishments for breaking environmental law: lawyer calls for integrated sanction system

Enforcement of environmental law needs an integrated administrative and criminal sanction system, according to a UK lawyer and researcher. Writing in a recent paper, he argues that an integrated system allows the most appropriate response to each individual case of the law being broken.

An effective sanctioning system does not simply mean bigger penalties, according to the researcher of this study. Instead, he believes that the most appropriate type of sanction needs careful consideration. A fully integrated system of criminal responses and administrative responses (which can be issued by a regulator, such as a local authority or environmental protection agency, without the need to involve police or courts) enables this careful judgment and increases the regulated community's confidence in the sanction system, the researcher says.

In most jurisdictions, different bodies are responsible for criminal prosecution and the imposition of administrative sanctions, with little effective coordination between them. There are exceptions such as Flanders (Belgium) and Scotland where real effort has gone into improving liaison systems. In England, the main environmental regulator, the [Environment Agency](#), both initiates criminal prosecutions and imposes administrative sanctions — but this is the exception.

An integrated system helps address key challenges for sanctioning identified by the researcher. For instance, breaches occur within a wide range of circumstances. Some breaches are deliberate, and offenders will calculate how much money they can make by committing the act, and how they can avoid being caught. At the other end of the spectrum, breaches may be careless or accidental (such as the breakdown of waste management equipment), but still require some sanctioning response beyond a mere warning because of

serious consequences. In some countries, such careless or accidental behaviour can even be taken before the criminal courts, since criminal offences in environmental law are often drafted so as not to require any proof of intent or recklessness.

Furthermore, a huge variety of sanctions can be used. Traditional criminal sanctions are fines and imprisonment, but in some countries courts can force the guilty company to publically admit their offence in the media. As an alternative to imprisonment, criminal courts often have power to order offenders to complete community service or other forms of rehabilitation.

Administrative sanctions are often fines, and regulators can also order offenders to take action, such as cleaning up pollution or introducing measures to stop the offence re-occurring. In non-serious cases, many enforcement bodies also give formal warnings or cautions rather than impose a sanction.

The researcher proposes a number of principles that should underlie any sanction systems. He believes that sanctions should not be purely about punishment, but intended to change behaviour. They should ensure no financial gain from non-compliance, be appropriate to particular circumstances, encourage restoration and deter future non-compliance.

This complex environment of sanctions and breaches requires a sophisticated, flexible system, which is why the researcher argues for an integrated administrative and criminal-

Source: Macrory, R. (2015). Environmental sanctions – challenges and opportunities.

Environmental Policy and Law. 45(6): 276-281.

DOI: 10.3233/EPL-45603.

law sanctioning system. The criminal and administrative responses can be undertaken by different bodies, but those responsible should coordinate and agree the appropriate response to any particular breach, viewing the system as an integrated whole. There should be a common (jointly issued) enforcement policy. Ideally, when a breach occurs, a single investigation should be conducted before deciding on the sanction.

Robust research is lacking on the impacts of different sanctions, because there are so many other factors that may influence compliance behaviour. The researcher highlights a significant Canadian study¹ which compared sanctions for breaking workplace safety laws in Ontario (where only criminal sanctions are used) with those in British Columbia (where administrative penalties are used).

In British Columbia, inspections were twice as likely to lead to penalties as in Ontario, but there were fewer appeals against the administrative

penalties than criminal penalties. On average, there were 500 days between the crime and trial in Ontario, but just 70 days between the breach and penalty confirmation in British Columbia.

It remains extremely difficult to prove sanctions' impacts on actual behaviour, the researcher writes. However, this gap in knowledge should not prevent the development of better sanctioning systems.

In conclusion, the researcher highlights recent improvements in exchange of information between European national bodies engaged in environmental enforcement issues (such as the [European Network of Prosecutors for the Environment](#)). However, he emphasises how vital it is for these bodies not to work in silos, and to recognise enforcement and sanctions, both administrative and criminal, as an integrated system.

“In some countries, such careless or accidental behaviour can even be taken before the criminal courts, since criminal offences in environmental law are often drafted so as not to require any proof of intent or recklessness.”

1. Brown, R.M. (1992). Administrative and Criminal Penalties in the Enforcement of Occupational Health and Safety Legislation. Osgoode Hall Law Journal. 30(3): 691–735.

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Read more about: [Sustainable development and policy assessment](#)

Is prison a real threat for environmental offenders?

Alongside fines, prison sentences are important punishments for environmental crime, but there is uncertainty about how often they are used. This study summarises evidence from several countries, showing that prison is indeed a genuine threat for environmental criminals, but that more needs to be done to improve its credibility.

Sanctions imposed when laws are broken are a crucial element of deterrence. The most common sanctioning instruments are monetary fines and prison sentences. In environmental law, criminal sanctions (such as prison sentences) have traditionally been unusual, but are gradually becoming more common.¹ The EU has reinforced criminal enforcement by introducing the [Directive on the Protection of the Environment through Criminal Law](#).² Yet currently, less than 2.5% of environmental-crime court cases in the EU result in prison.

Prison sentences have advantages over financial sanctions, especially in cases where the offender has limited wealth, or where there is the possibility for fines to be passed on to customers or shareholders. Prison sentences also carry additional, social weight due to loss of status and stigma. However, it is unclear how prison sentences for environmental crime are used and whether they imply a real threat to violators. This study explored this question using evidence from a number of countries.

In the EU, fines are generally more popular than prison sentences. In the UK for example, the vast majority of environmental offenses (84%) receive a fine, and less than 1% receive a prison sentence (2002 data). The researchers say this is likely because most prosecuted cases are minor or involve first-time offenders. It may also be because environmental criminal prosecution is relatively new in Europe, and therefore precedent to guide legal decisions is lacking.

As a case study, the authors looked at prosecution for environmental crime in Flanders, Belgium, using data from the resort of the Court of Appeal of Ghent between 2003 and 2007. Within this period, in that area, a total of 1882 defendants

were tried in 1156 criminal prosecutions. Eighty percent of defendants were individuals, the remainder being legal entities.

Three quarters of defendants were convicted. Of the type of sanctions imposed by the courts, fining was the most frequently used — applied in over 95% of convictions. Fines for legal entities were on average €12 651, while fines for individuals were lower, on average €5 924.

Approximately 10–15% of convictions combined a prison sentence and a fine — the convictions imposing only a prison sentence were the exception. The average duration of a prison sentence was 5.3 months. Offences damaging to public health such as noise violations or ‘priority offences’ (such as disposal of hazardous waste) were more likely to receive a prison sentence, while offenders who took action to limit the damage caused were less likely to go to prison.

The researchers also looked at evidence from the US. Overall, they found that imprisonment is more popular in criminal cases in the US than Europe — over 30% of criminal sentences include a prison sentence, compared to just 0.5–2.5% in the EU.³ The authors suggest this may be because administrative and civil judicial actions are generally used for environmental offences in the US, and criminal prosecution is only used in serious cases — such as persistent offenders or violations that have caused considerable damage to the environment. This means that only serious environmental crimes make it to the criminal courts. This focus of US criminal prosecutions on more serious crimes naturally leads to more frequent use of prison sentences in criminal cases, the researchers say. In Europe however, the evidence shows that environmental offenders are generally fined rather than imprisoned.

Source: Billiet, C. and Rousseau, S. (2014). How real is the threat of imprisonment for environmental crime? *European Journal of Law and Economics*, 37(2):183–198. DOI: 10.1007/s10657-011-9267-2.

Overall, the results show that prison sentences are used by courts as part of a set of sanctions for environmental crime, including other penalties such as fines or community service. However, fines are still far more frequently imposed. Of the evidence assessed in the study, over 90% of sentenced offenders paid a fine. Prison sentences are also rarely imposed alone, and are often used as a suspended or probationary sanction — which means the offender does not have to serve the sentence if they meet certain conditions or refrain from certain activities.

Finally, the researchers highlight some issues

that may prevent imprisonment from being a credible punishment for environmental crime. They discuss the practice in Belgium of issuing — but not implementing — ‘short’ prison sentences (those with a maximum term of six months). They also discuss lack of space in prison facilities, which may influence the failure to execute prison sentences. The authors say that, while prison sentences do not have to occur frequently, they should be implemented occasionally to deter criminals and retain the credibility of the threat. This is important, as the effectiveness of other enforcement practices hinges on the presence of this ‘ultimate threat’.



Philadelphia-style prison wing, Turku, Finland CC BY 2.0 Henry Hagnäs, 2010 @Flickr.

“...imprisonment is more popular in criminal cases in the US than Europe — over 30% of criminal sentences include a prison sentence, compared to just 0.5–2.5% in the EU.”

1. In the US, for example, the number of defendants prosecuted in criminal environmental cases increased by more than 10 times between 1984 and 2001.
2. Directive 2008/99/EC. See: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32008L0099>
3. The US figure refers to the period 1996–2002 and only to US federal courts, while the EU margin refers to UK courts in 2002 (0.5%) and the Netherlands 2008 (2.5%). The main reason for this significant difference is the selection of the cases that are sent to these courts. Only serious criminal cases are sent to the federal criminal courts in the US because the majority is treated by administrative and civil sanctions. In the EU at that time the administrative track was less developed and more cases ended up in a criminal court.

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Environmental criminal enforcement: most effective when combined with administrative sanctions

Administrative sanctions against environmental crime, such as fines, are generally easier and cheaper to implement than criminal punishment methods, such as prison sentences. This study explored enforcement methods for environmental crime in four Western European areas: Flanders (Belgium), Germany, the Netherlands and the UK. Based on their findings, the authors say it is most cost-effective — and may increase deterrence — to use both forms of enforcement.

Criminal law, which focuses on crimes that threaten public safety and imposes punishments such as prison sentences, can be expensive to enforce. Due to financial costs to society, it has been suggested that criminal sanctions should only be used for very serious crimes.

However, many European countries use criminal law as the primary enforcement instrument for environmental crime. In 2008, the Directive¹ on the protection of the environment through criminal law was adopted to strengthen the role of criminal law in relation to environmental compliance assurance. It requires Member States to criminalise specific offences and to ensure that serious breaches are punishable by effective, dissuasive and proportional penalties.

This conflicts with a growing trend towards administrative fines in some European countries, which raises the question of whether relying primarily on criminal law is always the most effective option. To answer this question, this study looked at data from four Western European regions: the Flemish region of Belgium and the UK, which have traditionally

relied on criminal sanctions; and Germany and the Netherlands, where administrative sanctions are the main enforcement tool to address environmental offences.

The major difference between the sanctioning systems is that administrative sanctions are easier to impose (and therefore assumed to be cheaper) than criminal sanctions, due to complex criminal procedure and the cost effectiveness of criminal sanctions. This study looked at which was more effective at encouraging compliance (given a fixed budget): a criminal system alone, or a combined criminal and administrative system.

In sum, the Flemish region relies mainly on criminal law but only a minority of violations are prosecuted (7% between 1998–2004). In England and Wales, even fewer incidents were prosecuted (3% between 2000–2007). This suggests there are many offences which require some form of enforcement but do not fulfil the requirements for costly criminal prosecution, and are therefore not prosecuted due to the lack of a valuable alternative.

Source: Faure, M. and Svatikova, K. (2012). Criminal or Administrative Law to Protect the Environment? Evidence from Western Europe. *Journal of Environmental Law*, 24(2): 253–286. DOI: 10.1093/jel/eqs005.

In the Netherlands, administrative fines are not permitted for environmental crime. Administrative orders are often used in their place (such as an ‘order under penalty’, as a result of which the offender can be forced to pay a monetary sum). Here, such administrative measures are used for around 40% of all violations. In Germany, administrative fines are permitted and are used in over 50% of violations. The researchers suggest that the possibility of facing an administrative measure may increase the level of deterrence, by increasing the likelihood and severity of sanctioning.

Overall, the findings suggest that a combination of administrative and criminal enforcement is the most effective. The researchers say that administrative sanctions are needed for those crimes that do not merit the high-cost criminal procedure, but still require some form of punishment. Without administrative options,

many moderately serious cases may not be prosecuted. Although less likely to be imposed, criminal prosecution is also important for serious cases. Thus, a balanced use of criminal law (combining it with administrative law for minor or moderately serious crimes) is more efficient than relying solely on criminal law.

It should be noted that the researchers did not test the effectiveness of the different approaches in terms of whether companies improved their compliance with environmental regulation or whether better environmental protection was achieved. In addition, the researchers highlight limitations caused by a lack of data. Reliable data on the number of violations and their consequences was not available in many cases. They therefore recommend that a harmonised system of data collection on inspections, violations, measures taken and sanctions be established across Europe.

“Overall, the findings suggest that a combination of administrative and criminal enforcement is the most effective.”

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Read more about: [Environmental information services, Waste](#)

Tackling environmental crime with intelligence-led policing: the case of e-waste

Transnational environmental crime is notoriously difficult to control. Intelligence-led policing (ILP) has been suggested as one way of tackling the complex issue. This study assessed the use of ILP to prevent the illegal export of e-waste in the UK. The authors found that ILP successfully generated intelligence to address the problem and recommend that cross-border ILP be established to tackle environmental crime in Europe.

Transnational crimes involve movement across national borders. Examples of such offences, defined as crimes in which 'offenders or victims are located in or operate through more than one country', include human trafficking and terrorism. In the environmental arena, it includes the illegal trade and smuggling of plants, animals, resources and pollutants, with risks including habitat destruction, species decline and pollution.

Tackling the problem poses many challenges, due to the scale of trade and number of people involved, which often means there are many

smaller, interconnected crimes to deal with. Transnational crime is also complicated by the varying legal requirements of different countries.

There is a pressing need for new approaches to intervention. This study evaluated one such approach — intelligence-led policing (ILP) — whereby agencies collect information about crime to react in a strategic and targeted way.

As a case study, the researchers focused on the UK [Environment Agency](#) (EA) Securing Compliant Waste Exports project, which



Source: Gibbs, C., McGarrell, E. & Sullivan, B. (2015). Intelligence-led policing and transnational environmental crime: A process evaluation. *European Journal of Criminology*, 12(2), pp.242–259. DOI: 10.1177/1477370815571947.

Electronic Waste, Martinique SDC10402 CC BY-NC-ND 2.0 SnarkleMotion, 2011 @Flickr.

aimed to reduce illegal exports of electronic waste (E-waste), such as computers. It is illegal in the EU to export hazardous materials found in waste electrical equipment to countries that do not belong to the [OECD](#). The UK therefore prohibits the export of hazardous wastes for disposal, and limits the export of electrical equipment intended for other purposes (such as re-use).

The researchers used qualitative methods (interviews with the leadership team) and quantitative data describing the intelligence process to assess how the programme was implemented. They used a method called 'process evaluation' which is used to assess the effectiveness of agency's operations, implementation and service delivery.

Through the project, the agency developed a range of preventative measures including compliance letters, stop shipment notices and formal prosecution. During the period of study (June–November 2009), 21 notices were served (either to stop a shipment for inspection or return it to the exporter), 39 compliance letters were sent and 67 investigations were initiated. To target resources as effectively as possible, cases were prioritised based on the number of organisations involved and scale of the illegal exports.

Although the project was successfully implemented, there were some challenges along the way, including limited resources,

time-consuming data processing, resistance to new ways of thinking and developing accurate metrics of success. The team was largely able to overcome these challenges, although some insurmountable obstacles were faced when the project was translated to an international scale (the agency was asked to lead a newly formed INTERPOL Global E-Waste Crime Group). These challenges included a lack of virtual communication, lack of secure data storage and lack of adequate legislation to prosecute in some countries.

Overall however the agency was fully able to implement ILP and meet UK National Intelligence Model requirements. The EA linked regulatory and enforcement information to develop risk registers which could guide further intelligence gathering and limited investigation resources. The study suggests that administrative and enforcement data can be combined to generate actionable intelligence, and that it is feasible to use ILP to address transnational environmental crime.

For the future, the study recommends that researchers collaborate with law enforcement agencies. Furthermore, given the legal basis for EU coordination and cooperation, the researchers suggest it would be useful to establish cross-border ILP in Europe.

“Transnational crime is also complicated by the varying legal requirements of different countries.”

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Read more about: [Biodiversity, Sustainable development and policy assessment](#)

Wildlife law enforcement: the vital role of NGOs

Wildlife laws are important to protect animals from harmful human activity, and are largely enforced by state authorities, but occasionally by non-governmental organisations (NGOs). By reviewing academic literature and government legislation, this study explored the different perspectives and ideologies of NGOs and how they enforce wildlife law in practice, focusing on the UK and the US. The study concludes that environmental NGOs are vital for the effective policing of wildlife legislation.

Although animal protection legislation has improved in recent years, criminal justice systems still do not prioritise it in many cases. And, although specific treaties do exist (against wildlife trade for example), there remains no international legal standard for the protection of animals. Animal protection therefore relies upon domestic legislation, enforcement of which is complicated by political factors and practical limitations.

Wildlife law — defined by this study as ‘any legislation which seeks to provide protection for wildlife by prohibiting specific harmful acts, and defining these acts within legislation, or by providing wildlife protection via legislative conditions’ — is a marginal area of policing. It is usually the responsibility of small, specialist agencies with limited powers, or added to the already long list of duties of untrained police officers — neither of which is ideal.

Due to limited resources among police services, NGOs have adopted roles in wildlife law enforcement. This study explored these roles, focusing on the UK and the US.

NGOs in both countries have a range of roles in environmental law enforcement, acting as policy advisors, researchers, expert witnesses and in some cases independent investigators and prosecutors — such as the UK’s [Royal Society for the Protection of Animals](#) (RSPCA).

The study describes three main categories of NGOs: **Campaigning NGOs**, whose primary aim is to raise public awareness of wildlife crime, such as the [World Wide Fund for Nature](#) (WWF); **law enforcement NGOs**, who aim to ensure that wildlife laws are properly enforced, such as the

RSPCA in the UK and the [American Society for the Prevention of Cruelty to Animals](#) (ASPCA) in the US; and **political lobbying NGOs**, whose main goal is to influence the political agenda, such as [Wildlife Link](#), an umbrella organisation for various NGOs in the UK.

NGOs can also be classified based on the ideological foundation for their work. Via a literature review and discussions with NGOs, the researcher says wildlife crime NGOs work from three positions: *moral culpability* (censuring activities they believe are morally wrong); *political priorities* (e.g. highlighting activities they think should be given a higher public profile/issues that require legislative change); and *animal rights* (e.g. demonstrating the case for more animal rights, or highlighting breaches of existing rights).

As well as campaigning activity, NGOs are actively involved in policing against wildlife crime. Due to the varied nature of wildlife crime and lack of police resources, wildlife crime law enforcement has become dependent on public reporting of crimes to NGOs. This is partly because most mainstream police officers have little training in wildlife crime and because it often takes place in remote locations, outside police patrol areas. In the US, public cooperation with NGOs has become critical to so-called ‘green policing’ and may also help to prevent wildlife crime, by providing an informal control.

Challenges for the enforcement of wildlife law include limited resources and the specialist knowledge required, which does not form a core part of police training. The researcher also says wildlife law may be poorly enforced due to

Source: Nurse, A. (2013). Privatising the green police: the role of NGOs in wildlife law enforcement. *Crime Law Soc Change*, 59(3): 305-318. DOI 10.1007/s10611-013-9417-2.



The Greater Manchester Animal Hospital, Salford, UK. CC BY-SA 2.0 The Laird of Oldham, 2014 @Flickr.

a perception among governments that wildlife crime is an environmental, rather than a criminal justice, issue.

However, NGOs can help to address these problems by providing advice to the police force, specialist investigators and other enforcement authorities. Consequently, these agencies rely on the expertise of NGOs, which have developed their own policing to address ineffective mainstream criminal justice, to ensure that appropriate protection is provided for wildlife.

To facilitate this, the researcher recommends that centralised resources are made available to statutory agencies. Likewise, conservation bodies may lack the appropriate criminal justice enforcement skills. There is therefore a need for coordinated action against wildlife crime.

Overall, the NGO private 'green police' is a powerful tool for proper enforcement of wildlife legislation, indirectly by challenging government decisions (such as reductions in the legal protection given to animals) or directly, by actively policing against wildlife crime.

“Overall, the NGO private ‘green police’ is a powerful tool for proper enforcement of wildlife legislation, indirectly by challenging government decisions...or directly, by actively policing against wildlife crime.”

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Read more about: [Biodiversity](#), [Chemicals](#)

Clamping down on illegal poisoning: Spain's VENENO project

Poisoned bait is a major threat to endangered bird species in Europe. The LIFE+ VENENO project was set up to tackle this problem in Spain, developing an action plan for eradication of the illegal use of poison and protocols for law enforcement. As well as improving the prosecution of illegal poisoning in Spain, LIFE+ VENENO provides a useful model for other European countries.

Poisoned bait has been used as a method of pest control for hundreds of years. Poisons are used to kill animals that are regarded as detrimental to agriculture or hunting, such as wolves and raptors, as well as those seen as a nuisance, including feral dogs and cats. However, this poses a threat to biodiversity. Poisons used in baits are also often non-selective and therefore affect non-target species, including domestic animals and endangered species.

During the past 10 years, approximately 7 000 endangered animals have been killed by poison, including eagles, kites, vultures and brown bears. Poison also kills hundreds of pets every year and poses a risk to public health, as it may contaminate game species, such as rabbits, wild boar and partridge, which are consumed by people.

In Spain, poison use of this kind has been a documented activity for over 100 years, but was made illegal in 1983. Despite the change in law, the practice has continued.

Illegal use of poison is a threat to some of the most endangered species of bird in the 'Red Book' of Spanish Birds (*Libro Rojo de las Aves de España*), as large raptors may feed on the remains of poisoned animals or ingest the poisoned baits directly. Threatened species include

the Spanish imperial eagle (*Aquila adalberti*), monk vulture (*Aegypius monachus*), red kite (*Milvus milvus*) and Egyptian vulture (*Neophron percnopterus*) — all of which are protected under Annex I of the [Birds Directive](#).

The [VENENO project](#), funded by the EU [LIFE](#) programme, ran from 2010 to 2014 and aimed to protect these species and reduce illegal poison use in Spain. Evidence shows that legal instruments and action against wildlife poisoning can reduce the number of incidents. Thus, a major goal of VENENO was to develop action plans — which describe how illegal poisoning can be avoided — and to establish protocols to be used to pursue and penalise those responsible. As well as creating an [Action Plan for the Eradication of the Illegal Use of Poison in the Countryside](#), four protocols were developed, including procedural protocols for wildlife



Egyptian vulture on the branch. CC BY-ND 2.0 Tambako the Jaguar, 2013 @Flickr.

Source: <http://www.venenono.org>; LIFE+ Project VENENO (2014) *Final Report: Covering the project activities from 01/01/2010 to 30/03/2014*. Edited by SEO/BirdLife. Available from: http://www.venenono.org/wp-content/uploads/2015/07/Informe_final_Life+-VENENO_Junio2015_SEO_BirdLife.pdf



Red Kite _MG_1795. CC BY-NC-ND 2.0 kevin champion 2014 @Flickr.

rescue centres and toxicology laboratories and a legal protocol for administrative action and criminal proceedings.

The project also created a 'Poison Investigation Unit' comprising two patrols of forest rangers operating in Birds Directive Special Protection Areas (SPAs). Over the course of the project, 19 training courses on the investigation of the illegal use of poison were given to over 500 police officers and forest rangers in seven different regions of Spain, which has improved monitoring and detection of poisoning across the country.

The project has also led to criminal proceedings, with the assistance of NGOs. Through LIFE+ VENENO, Birdlife and the Black Vulture Conservation Foundation took part in 24 criminal proceedings for the illegal use of poison, achieving 10 separate convictions. Some of the convictions involved prison terms (up to 16 months in length) and fines of up to €33 000.

This project provides an example of good practice in achieving environmental change. During its four years of operation, VENENO

achieved legislative change, ensuring that regional governments in Spain implement tools for preventing and prosecuting poisoning cases. The project had a clear impact on the prosecution of illegal poisoning cases and increased awareness among judges and prosecutors, as well as members of the public. The project has also improved public involvement and awareness of illegal poisoning via the [Network of Volunteers against Poisoning](#) and Freephone SOS VENENO, through which members of the public can report cases of poisoning. Between 2010 and 2011 there were 609 calls to Freephone SOS VENENO, which generated 26 actions by competent authorities collecting animals and poisoned baits.

Although some of these outcomes are specific to Spain, the results are transferable. The protocols used expert knowledge to create step-by-step guidance on how to manage cases of illegal poisoning and are available in English, making them useful to a wide audience. It is hoped that VENENO's model of how to tackle the illegal use of poison can be replicated in other European countries.

“During its four years of operation, VENENO achieved legislative change, ensuring that regional governments in Spain implement tools for preventing and prosecuting poisoning cases.”

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http://ec.europa.eu/environment/integration/research/newsalert/pdf/94na6_en.pdf

Complying with emissions regulations: calculating the acid plume from ships' desulphurisation equipment (October 2015)

Marine diesel contains sulphur compounds, which generate sulphur oxide (SO_x) pollution and acid rain. Ships can use mitigating technologies to reduce their SO_x emissions, but these can also have a negative environmental impact. The International Maritime Organization (IMO) introduced stringent legislation to control these, aspects of which are incorporated into EU policy. This study examined the implications of the IMO's policy and recommends a number of design solutions to help ships comply.

http://ec.europa.eu/environment/integration/research/newsalert/pdf/complying_with_emissions_regulations_calculating_the_acid_plume_from_ships_desulphurisation_equipment_433na6_en.pdf

Future Briefs

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Earth observation from space by satellites, combined with ground-level observations, can provide a wealth of data relating to the land, oceans and atmosphere. This Future Brief examines how the data can inform Europe's environmental policy.

http://ec.europa.eu/environment/integration/research/newsalert/pdf/FB6_en.pdf

Sustainable aquaculture (May 2015)

Aquaculture is the fastest growing sector of worldwide food production and is facing a new era of expansion in Europe. What are the environmental implications of this, and can the sector expand sustainably? This Future Brief presents an overview of research into aquaculture's impacts, and considers how it could develop in balance with environmental goals.

http://ec.europa.eu/environment/integration/research/newsalert/pdf/sustainable_aquaculture_FB11_en.pdf

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How do we safeguard both water quality and quantity? This brief looks at the best ways to recycle and re-use water, the latest water treatment technologies, and innovation within water governance itself.

http://ec.europa.eu/environment/integration/research/newsalert/pdf/innovation_european_water_sector_FB10_en.pdf

Thematic Issues

Ship recycling: reducing human and environmental impacts (June 2016)

The ship-recycling industry — which dismantles old and decommissioned ships, enabling the re-use of valuable materials — is a major supplier of steel and an important part of the economy in many countries, such as Bangladesh, India, Pakistan and Turkey. However, mounting evidence of negative impacts undermines the industry's contribution to sustainable development. This Thematic Issue presents a selection of recent research on the environmental and human impacts of shipbreaking.

http://ec.europa.eu/environment/integration/research/newsalert/pdf/ship_recycling_reducing_human_and_environmental_impacts_55si_en.pdf

Noise impacts on health (January 2015)

Exposure to excessive noise is recognised as a major environmental health concern. This Thematic Issue examines the impact of noise on human health and outlines how policy initiatives may limit health effects from noise annoyance - and improve wellbeing.

<http://ec.europa.eu/environment/integration/research/newsalert/pdf/47si.pdf>

In-Depth Reports

Ecosystem Services and Biodiversity (May 2015)

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http://ec.europa.eu/environment/integration/research/newsalert/pdf/ecosystem_services_biodiversity_IR11_en.pdf

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