

A Critical Study On Principles Of Environmental Law From An Economic Perspective

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Abstract

Sustainability and environmental law have never been more important. If there are new legal toolkits available for building a better, more sustainable world, there is a duty incumbent to explore and learn those new ideas, to transform our legal rules and institutions. This study presents research drawn from literature on the economic analysis of environmental law. Fundamentally, it presents a case that these methods share the established values and principles of environmental law, yet they extend the set of legal policy options to address the needs of environmental protection and sustainable development.

Keywords:

Sustainability, environmental protection, economic analysis

Introduction

Environmental Law and Economics

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Furthermore, it is shown that beyond the theoretical frameworks developed by environmental Law and Economics researchers, there now exists empirical data to evaluate the effectiveness of those models. This study will demonstrate that the models of environmental Law and Economics have been proven effective in real-world settings. Thus, there is a new legal toolset available to advance the goals of sustainability and environmental law. Despite all the progress made in environmental law over the six decades since Rachel Carson's Silent Spring, and then Earth Day 1970, more is needed; the world needs to expand its environmental law perspective to include sustainability perspectives. Daniel Esty's call for the inclusion of sustainability strategies in environmental law referred to a range of topics, including the 'end of externalities', a focus on 'choice' in lieu of mandates, a systems approach that acknowledges trade-offs and interconnections of environmental protection efforts, a priority on 'innovation', and the 'capacity to bring new technologies, information and learning to bear', and an increased focus on proven results. As this book will evidence, these sustainability approaches are closely related to the ideas found in the literature of environmental Law and Economics. Indeed, many of those approaches were first developed in environmental Law and Economics research. Thus, the need for a text such as Environmental Law and Economics: Theory and Practice is predicated on several observations. First, environmental law and its sibling international

environmental law have moved forward as critical and timely topics. Not only does the world face a global challenge from anthropogenic climate change, but the world is also facing novel environmental challenges from increasing levels of industrial pollution in developing economies, from advancing technologies such as carbon-fibre nano-technologies and genetic modification techniques, and from other large scale anthropogenic environmental events, such as the loss of the Aral Sea and the ongoing efforts to restore water flow to the lower Colorado River Basin. While the community of environmental lawyers has accomplished much in recent decades, new vital work continues to emerge, and the need for sound theoretical foundations for environmental law remains. The economic analysis of environmental law provides a theoretical core that enables novel responses to these emerging challenges. Second, the literature of Law and Economics provides a solid theoretical foundation for environmental law, one that strongly supports the UN's 2030 Agenda for Sustainable Development and its seventeen Sustainable Development Goals. An extensive body of literature has emerged to support legal reasoning and jurisprudential decision making with tools based on models from environmental Law and Economics. Many of these tools have opened up new legal approaches for environmental regulators, such as EIAs, cost-benefit analysis, and hedonic measurement analysis. More importantly, the literature of Law and Economics enables models that inform on the flow and exchange of information and how to enable the production and distribution of that information on environmental policies to stake holders and decision makers alike, facilitating environmental justice and equity. Third, the models resulting from the economic analysis of environmental law enable ground-breaking pathways to opening interdisciplinary policy discussions on environmental issues. The issues raised in environmental problems are not merely legal problems but complex multifaceted challenges. The economic analysis of environmental law brings tools from both Law and Economics, but it is also informed by tools from political science, public choice theory, game theory, and other schools of social science. By bringing these new tools to environmental legal analysis, policymakers and legal researchers can provide more robust answers. Finally, the ability to work with theoretical models enables environmental lawyers and policymakers to more readily discover deeper symmetries and affinities in otherwise disparate environmental concerns, enabling solutions from one set of concerns to be mapped into new application for a second set of environmental concerns. This reflects the underlying paradigm of interconnectedness in sustainability.

Environmental law provides laws, rules, and standards to protect a range of environmental conditions and settings from potential injury and harm. Environmental law begins with the recognition that legal rules and institutions could be responsive to these environmental injuries. As environmental law has developed over time, the categories of included injuries have broadened. Early cases recognised injuries to private property, such as injured farmland or polluted riparian sources. More recently, environmental law has encompassed injuries that did not traditionally have standing, as recognised in the EU's Environmental Liability Directive. While environmental law has evolved to include a broader range of environmentally-related injuries, it remains focused on the prevention and precaution of those injuries, on the identification and characterisations of those injuries, on potential remediation and compensation for those injuries.

The economic analysis of environmental law enquires as to why there might be a need for environmental law; why might those injuries arise in the first place? One cause identified is the problem of missing information, known as 'externalities'. Externalities can occur when information necessary to make a full and completed decision is missing, or when information

regarding costs imposed on third parties is not included by the actor. For example, a law could be adopted to ensure that a manufacturer receives the full set of costs of their production activities, including those costs passed on to other parties such as caused by pollution injuries. Another issue identified by the economic analysis of environmental law is the application of Coase's Theorem to risky activities and environmental injuries, predicated on property rights. Coase demonstrated that '[i]f transaction costs are zero and property rights over the relevant resources are well-defined, parties involved in an externality situation will bargain to an efficient and invariant resolution, regardless of to whom the property rights are initially assigned'. This logically provides that when we do find unresolved negotiations, such as in environmental injuries, that transaction costs and the facility of negotiations are impaired; thus law might be able to provide new rules or standards to reduce those transaction costs and enable a more robust set of outcomes. Further, Coase recognised that the fundamental issue was the allocation of property rights, or as often stated, the misallocation of those rights. Thus, law could be an instrument to re-allocate rights to improve on the function of the market to enable private resolution of environmental risks and hazards.

A surprise might ensue for some readers, that while environmental Law and Economics is firmly located within the economic analysis of environmental law, this analysis is equally well founded on the recognition that markets do present various forms of market failure, even if granted the benefits of rationality, and the instruments of law can improve the function of the market to better protect rights and lower the transactional costs of justice, enabling better jurisprudence. This approach extends to the economic analysis of environmental law that markets surrounding environmental assets and activities present imperfect function and can be improved by legal instruments, resulting in improved appreciation and protection of those same assets.

In review, the economic analysis of environmental law builds on classical principle of environmental law, researches legal rules to restore a more complete awareness of impacts and costs of environmentally risky activities, seeks legal methods to enable improved discourse on environmental concerns leading to mutually beneficial outcomes, provides legal institutions to improve functionality of discovered market failures, and seeks to enhance our collective awareness of how we generate the norms and rules that underlay the legal processes and institutions of environmental legal advocacy.

Principles of Environmental Law, from an Economic Perspective

The economic analysis of environmental law begins with the same principles as all other analyses of environmental law; namely that of the Polluter Pays Principle (the Curative Model), the Principle of Prevention (the Preventive Model), and the Precautionary Principle (the Anticipatory Model). But the approach taken to these principles is from a different perspective, the perspective of the actor making decisions on environmentally risky activities as analysed from models derived from microeconomic theory. The economic analysis of environmental law examines how actors encounter these principles as an active process of applying rational decision-making tools to data and information related to the activities under examination. For example, how might a baker consider the impacts of their baking on the community surrounding their bakery? Would they only consider the data exchanges between them and their customers? What about the neighbour impacted by the smoke from the oven, or the villagers enjoying the smell of fresh bread? Might the baker be aware of the yeasts present in the village for raising their breads, or might they consider how a local tanner's outflows have altered the

water they use in their recipe? Those examples can be shown to represent the key principles of environmental law. Might the baker consider how they might compensate those offended by the smoke of their oven, or how they might need compensation to filter water? Those are questions from the Curative Model, but economists might see those as questions of externalities, of crucial data missing from decision making on activities that impact others. Might the baker install a taller chimney; might the tanner use more bio-friendly chemicals in producing hides? Those ideas reflect the preventive model, but the economic analysis of tort law might see elements of precaution and decisions of how careful to be in a given risky activity. Where the two modes of environmental legal research might be distinguished, and this is a necessary oversimplification, is that whereas classical environmental law primarily focused on the identification and protection of environmental victims, such as a wetlands or a protected species, economic analysis of environmental law has brought new focus on the potential environmental tortfeasors and how to impact their decision making to achieve similar results. The classical principles of environmental law are the same principles that guide the economic analysis of environmental law. The means of discussion might appear different, or may gather different principles together in novel ways of analysis, but the underlying core principles remain the same.

Pollution As An Externality

External Effects for Firms and States

The economic analysis of environmental law begins with actions, as it recognises the occurrence of 'risky activities', which place environmental settings in the path of potential harm. These risky activities are undertaken by actors; the actors make choices, i.e. they make decisions, based on their awareness of the benefits and costs of their actions. The quality of the decision much depends on the quality and completeness of the data available to the decision maker. Environmental Law and Economics recognises that better results will be obtained if the data presented to the actor is more complete and robust and attempts to determine what kind of legal rules or institutions might enable that improvement in available information and thus in decision making on environmental issues. When actors are poorly informed as to the dangers and harms of their risky activities, they will not be able to make decisions that reflect the environmental norms and legal rules of their society. Worse, if the actors are presented with better data on the benefits of the activity than the risks and harms, then they would likely overindulge in the risky activity. A key discovery results from this economic analysis of environmental law, that there are some activities which may be beneficial to a buyer and a seller, such as the production and consumption of pharmaceuticals, while simultaneously causing negative side effects for third parties. An economic activity that is volitional and rational for two parties may have unnoticed impacts, and costs, for parties beyond the negotiated bargain; thus, the transaction actually includes more than the two original parties but the data from the extra parties remains external to the two parties' decision making and thus delicts can result.

Thus, while the manufacturer sells a product, and a buyer purchases the product, the market will expose a third party beyond this sales agreement to potential harm. For example, a drug manufacturer who receives profits from their sales but faces few of the costs induced by environmental injuries, e.g. damage caused to fish in stream impacted by chemical effluents, caused by their facilities, would likely produce too many products. Meanwhile, the fish are harmed and those individuals depending on those fish for food, sustenance, and a place of home are harmed without compensation or remediation. This form of environmental pollution is

described in environmental Law and Economics as being created by the existence of ‘externalities’; of data missing from or ignored by the decision maker, as might happen when the market does not require the decision maker to pay those costs. These side effects are indeed external to the industrial activity itself since the company committing the pollution is in principle not affected by the negative side effects it causes by its actions. Environmental Law and Economics makes the argument that this form of pollution could be prevented by ensuring the decision makers include the externalised costs, to internalise them, by ensuring that they bear the costs of the injuries and damages they impose on those third parties. Environmental Law and Economics holds that if the costs, and any attending benefits, of the third party could be brought to bear on the original two actors, then the resulting new bargain would reflect the conditions obtained by a volitionally negotiated three-way bargain. Precisely because pollution is an externality, the starting point of the economic analysis of environmental pollution is that a decision maker, such as the pharmaceutical company of our example, will not take into account the externality when it takes decisions on the production level and the investments in measures to avoid pollution, such as the instalment of a water treatment plant. Environmental pollution is considered by many scholars to be the classic example of an externality. Externalities do not only cause pollution problems for third party humans or communities; the impact could be transboundary or transnational in scope. From an economic perspective, the basic problem is that local industry, governed by local rules, exports environmental pollution to other legal jurisdictions downstream or downwind, leading to a de facto ‘externalisation’ of pollution problems.

Economists have often argued that the reasons for the transboundary character of environmental pollution problems are well known: local politicians will not have many incentives to act strongly against polluters who may be able to export large quantities of pollution outside the borders of the national territory. Thus the polluting activity could result in ‘local’ socio-economic benefits for the upstream nation (increased tax revenues and job security), whereas the costs of the negative effects are exported to the neighbouring downstream countries and the costs of those damages become externalised to the government of the upstream state governing their production and emission. Because politicians need to be re-elected by the citizens within their particular state, their primary concern may not be with the transboundary effects of pollution caused by factories within their nation. Seen in this context, it is unsurprising that such an externalisation of pollution to other countries takes place.

Internalising the Externality as Goal of Environmental Law The economic analysis of environmental law holds that if society can correctly assess the level of costs, to identify the full set of environmental impacts, then actors undertaking risky environmental activities should be able to set their behavioural standards to match society’s environmental norms. However, when environmental externalities exist, when actors are unable to discern the costs of environmental damages, then those harms are likely to continue; for the market cannot function properly when data, especially cost data, is missing. By re-connecting that data to the actor, by making them aware of the costs they imposed on third parties, the decisions of the actor(s) will become responsive to those acts that create those environmental injuries and their damages. This analysis indicates an economic goal of environmental law: environmental rules should (i) force the potential polluter to include in their decisions the damages caused by the pollution emitted by their activity choices by (ii) enabling the internalisation of related externalities back into their decision process. If those damages can be internalised into the potential polluter’s decision process, then the polluter would be faced with new logical consequences. First option, they could decide to act as before, pollute, and pay the full damages. Second option, they could

incur the costs of abatement technology. And the third option, they could choose to reduce their outputs to reduce their pollution levels and thus reduce the resultant damages. If society could set its standards clearly, then the potential polluter would be properly presented with the correct activity choices as the logical choice; ergo, the pollution and its consequences will have become fully internalised by them prior to their actions. In the absence of such a law, there would be no incentive for the polluting factory to take into account the pollution it is causing; in the absence of curative legal rules, the externality will not be internalised, and behaviours will not be changed. The potential polluter would not bear the damages of their pollution and they would continue to exclude it from their activity decisions. The need for environmental rules to connect potential polluters to the consequences of their acts is clear from the economic analysis of environmental law. Thus, the scholar and policymaker of environmental law turn their focus to developing legal policies to solve the problem of externalities.

The Coase Theorem

Reciprocal Nature of Harm

Arthur Pigou is best known for formalising the ideas now known as externalities. By capturing these 'lost costs', market failures could be re-corrected to function properly. When the costs are environmental costs of pollution damages, the restoration of the market function enables the correct level of activity to provide for the socially desirable level of environmental engagement.

While one might re-connect those externalised costs in several different manners, traditionally, economists advocated the imposition of a tax on polluting activities in order to optimally internalise externalities such as environmental pollution. Since this idea builds on Pigou's work, this tax is usually referred to as a 'Pigouvian tax'. By equalling the marginal tax rate to the marginal costs caused by the harmful activity, a potential polluter would face the correct costs of those environmental harms at the correct amount at every incremental decision point, preventing excessive production and polluting emissions. This makes sense if the polluter is the only one 'at fault' of the environmental injuries. However, in his seminal article, 'The Problem of Social Cost', Ronald Coase opposed this idea; Coase stressed the reciprocal nature of harm. In a theoretical twist on 'it takes two to tango', Coase observed that the pollution is not just caused by the fact that the factory is emitting harmful substances, but also by the presence of neighbours who are injured through the plant's emissions. Either party could yield ground and eliminate the conflict. Coase stressed that in these situations the actual point of conflict is a contrasting set of claims to the property right entitlements; that two parties seek to exercise rights that are somehow exclusive to each other. For example, a family has two children, a daughter and a son. The father may have given permission to the daughter to enjoy watching her favourite show on the TV. Meanwhile, the mother may have permitted their son to play a video game on the same TV. Both children arrive at the TV, with countervailing claims to rights of use, but just as clearly they cannot both have control over it at the same time. They will need to find some way to allocate the use of the commonly claimed right to the TV. Similarly, Coase saw that the plant operator could claim a right to use the ambient air to emit and dissipate smoke, while a homeowner might claim an equally well founded right to enjoy the ambient air for breathing and refreshment. The problem is the underlying clash of claimed rights. The pollution problem could be solved unilaterally by either party yielding their claim to the other. Lawyers traditionally see situations of environmental harm as rather one-sided affairs, wherein the factory operator limits the rights of the victims by emitting harmful substances. One could, however, equally argue that the victims limit the right of the factory to

perform its socially beneficial activities by their presence in the neighbourhood of the factory. One should therefore not automatically ask the question how the law should give incentives to force the factory to reduce emissions. First the question should be asked which of the several actors (factory or victims) should be limited in their property rights. The answer to this question will depend on which of the various actors could more efficiently take precautions to reduce or prevent the harm.

Example of Conflicting Coasean Property Rights-

The Coasean results can be illustrated with a simple example. Assuming the following facts: There is a neighbourhood with three individuals.

- In that neighbourhood is a factory emitting pollution.
- When exposed to pollution, each individual suffers \$200 of damages.
- In the neighbourhood, only these three individuals can be damaged by pollution.
- These three individuals have no means of preventing pollution nor the harm it causes them.

An ombudsman is called, reminded of the polluter pays principle, and is presented with several options: If nothing is done, the three neighbours will each continue to suffer for a total of \$600 in damages. The factory could eliminate all the pollution by spending \$300 to install a pollution removing filter. The three neighbours could be relocated to new housing, safely away from the pollution, for \$400. In this case, the ombudsman is likely to see that the factory could spend \$600 to continue polluting as is, or it could spend \$400 to relocate the neighbours away from the pollution, or, it could pay \$300 to install the filter to eliminate the pollution from being emitted. The rational outcome would be for the plant to install the filter. But what if the bill were to be faced by the residents, instead of the operator? That is, what if there was no pollution liability rule in place and the residents were left with merely 'self-curing' options? Well, they would still face the same three options:

- (i) they could do nothing and suffer \$600 in damages,
- (ii) they could pay \$400 for their own costs of relocation, or
- (iii) they could pay the operator \$300 to install the anti-pollution filter.

Again, the logical outcome would be the same, that the filter would be installed, the only difference being who pays. The theoretical question then arises of whether the optimal solution will always follow; in this case whether the filter will be installed. Coase holds that if the transaction costs are zero an optimal allocation of resources will always take place, irrespective of the contents of the governing legal rule. This is usually known as the Coase Theorem. To put it otherwise, Coase's Theorem holds that when the transaction costs are zero, the same invariant optimal outcome will result, no matter how the property rights were originally allocated. This result, the symmetrical pathways to address the property rights problem, is considered quite revolutionary. It shows that when bargaining is possible between parties conflicting over pollution, then the optimal solution (in this case installation of the filter) will always follow, even if there is no liability for the pollution.³⁵ Even stronger: the result will also follow, irrespective of the legal rule, since parties may bargain around in efficient legal rules. Thus, the allure of Coase's Theorem; it does several important things for the economic analysis of environmental law. First, it provides theoretical foundations for understanding how the market would cure pollution if the market were fully functioning, albeit the question of who would bear the costs of the solution would differ. Second, the theorem enables us to detect market failure better, by noticing where that symmetrical result is not self-fulfilling. And finally, it enables to understand the importance of how to assign or re-allocate rights to enable the costs of cure most efficiently, by assigning them to the party which can cure at the least cost.

Conclusion

This work presented the initial foundations of how environmental injuries are approached from the Law and Economics perspective. We began with coverage of the fundamental principles of environmental law; how they can be reframed from a rational actor cum decision maker perspective. Once so reframed, the tools of Law and Economics can be brought to bear on policy questions within environmental law. Thus, it is paramount to recognise that the approach taken in this book is to build on the existing consensus in international environmental law and to provide it with new analytical tools to improve the design of legal rules and to enable prospective modelling of the effects of rules in pre implementation stages of evaluation and deliberation. If we see it from the Pigouvian idea of environmental injuries as economic externalities. The core idea of Pigou's model is that manufacturing costs that are excluded from the decision-making process will inherently not be reflected in the decision making of producers, and thus, manufacturing costs will be incorrectly perceived as lower than they actually are to the community-at-large, and that in turn will lead on to higher-than-optimal production levels. If those costs reflect injuries from pollution, then overproduction will co-produce 'surplus' environmental injuries, meaning those surplus injuries that are not already accounted by the costs of prevention activities or in repair and rehabilitation costs. Thus, a key objective, to ensure better decision making and to better prevent environmental injuries, is to find strategies to 'internalise' the cost externalities so that the marginal costs of the damages from the injuries can be included in the marginal analysis of the firm's production decisions. From another perspective, rational actors who are forced to bear the costs of the injuries resulting from their production activities will set optimal levels of production inclusive of minimising the costs of pollution injuries via reducing the incidence of those pollution injuries.

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