ELABORATION OF NORMS AND THE PROTECTION OF THE ENVIRONMENT

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INTRODUCTION

Incidents of severe environmental destruction are not unique to this century; they have a long historical development. For example, sailors who fell into the Thames in the late nineteenth century did not drown, but rather suffocated in the poisonous fumes of this London sewer. In 1915, the German "Reichsgericht" (Supreme Court) recognized in "sick and dead fruit trees . . . the typical character of an industrial region to which the population had resigned itself."[1]

This deplorable state of affairs was the consequence of a legal system that was concerned primarily with the optimal distribution of mineral resources and commercial exploitation of the environment, with no recognition of the potential threat and creeping destruction. An international ecological vacuum could be found in this area of law well into the 1960s. This vacuum filled gradually ending in a flood of new legislation in the 1980s. Even so, newly discovered threats to the environment alarm both the public and lawmakers worldwide. Changes in climate, the greenhouse effect, the hole in the ozone layer, acid deposition, as well as increased mortality rates caused by the emissions of modern industries have all become part of a scenario that demands basic decisions and a reevaluation of traditional principles.

Given these facts one suspects that the legislative activities have been half-hearted, uncoordinated and ineffective, or at least have led to discrepancies between the written law and its implementation. Before making such a determination, however, we must consider several points:

1. The protection of the environment is a societal issue affecting both how we live today and the needs of future generations. The crucial issues are (a) which hazards the state and society are willing to accept, and (b) who should have the authority to decide this.

2. Insufficient knowledge regarding the hazardous effects of activities, despite the fact that many well-organized and influential actors are engaged in the process of deciding which hazards are acceptable, indicates that direct influence by legal instruments is limited.

3. The regulation of environmental destruction presents difficult problems in criminal and tort law, both of which are based upon individual liability. The issue then becomes what kinds of regulatory changes will be necessary, and possible, without infringing on individual rights.

To address these issues this essay will examine the regulatory methods used by various countries. First, I shall give a short overview of regulations in the international sphere. Then I shall elaborate on the national legal programs, focusing on the criminal law sector.

THE INTERNATIONAL PLATFORM

The number of international agreements that target environmental protection is impressive,[2] suggesting that world leaders recognize the fact that

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environmental destruction pays no regard to national frontiers.[3] Ecologically effective measures require an international consensus; although the international community has made important progress toward this goal, consensus remains elusive. Moreover, conventions often leave implementation of the agreements to the discretion of the individual states. Even if binding regulations are enacted on the supranational level, as in the European Community ("EC"), national exceptions are made quite frequently.[4] Such exceptions will probably remain the rule for quite some time as the Eastern European countries, with their terrible environmental situation, associate with the EC. As a result, one may expect that interpretation and implementation of international instruments will remain inconsistent, at least for the time being.

The activities of the international community can influence the traditional values of economic expansion and establish the conviction that expansion into the Third World countries provides opportunities not only for economic development, but for development of solid environmental protection programs at the same time. Thus, while environmental politics on the international level remain very important, this fact does not relieve the individual states from taking effective measures at the national level before any conventions can be agreed on.

BASIC STRUCTURES OF NATIONAL PROGRAMS: CONSTITUTIONAL AND ADMINISTRATIVE LAW

A. Constitutional Law

A number of countries have strengthened the position of environmental protection by introducing constitutional guarantees for the protection of the natural foundations of life.[5] The Portuguese Constitution, for example, guarantees everybody "the right to a healthy and ecologically balanced human environment."[6] In both the Spanish and Portuguese Constitutions the duty to preserve the environment corresponds to this fundamental right.[7] On the basis of such a constitutional guarantee, environmental concerns should normally be considered in the decision-making processes of the governmental institutions. However, the example of the socialist countries shows that declarations alone do not promote environmental protection. We must examine the various legal sectors to determine how countries approach their environmental problems.[8]

B. Environmental Protection: A Domain of Administrative Law

Legislators worldwide have addressed environmental exploitation through a more or less comprehensive network of administrative regulations.[9] In order to shed light on this overwhelming field, it is useful to describe the formal systems, the principles of substantive law, and the decision-making processes.

1. Formal Systems

Federal legislators have introduced a central environmental code in many countries. Japan was the first (1967), followed by Sweden (1969), Denmark (1973), Norway (1981), Switzerland (1985), Greece (1986) and Great Britain (1991). The purpose of these codes is to insure that in administrative decisions the different environmental media, such as water, air and soil, would not be regarded independently; instead, the decision-making processes would integrate the different media and consider their interrelationship. The Swiss Code establishes additional important principles and procedures, such as the polluter-pays principle and binding administrative orders for legal implementation.[10]

In contrast to such integrated laws, other countries, such as Belgium and Italy, promulgated laws that regulate isolated environmental media (e.g., water protection) or react to certain abuses. Until April 1991, the British environmental law seemed to be incomplete and unstructured.[11] The implementation of laws compensates for the deficits caused by such disjointed legal regimes.

2. Principles of Substantive Law

The "classical" principles, such as the polluter-pays principle or the common burden principle (in which all of society shares the costs for repairing ecological damage), are quite well known. Very often, however, these principles are reduced to mere platforms, distorted or even abandoned in the implementation of the environmental laws. Therefore, permissible emission levels are better indicators of environmental policies and, in particular, of which environmental hazards the policies prioritize.

To strengthen the implementation phase there are a great variety of legal solutions. On the one hand, there are standards like "best practicable means,"[12] which start out from a rather pragmatic and economically oriented view. Applying this standard, environmental protection by legal means is designed only to "prevent unacceptable burdens and create a climate in which business can flourish."[13] Other countries, on the other hand, set higher standards. In Switzerland, for instance, the laws require the administration to consider particularly sensitive groups of the population, such as "children, sick persons, aged people and pregnant women,"[14] when establishing permissible emission levels. In addition, Swiss standards for soil pollution are oriented according to the actual load capacity of specific soil types.[15]

In this context the provisions in US environmental law become important. US environmental laws provide a scale of different standards from "best conventional pollution control technology" to "best practicable technology" to "best available technology economically achievable." This scale could function as a model for other countries.[16] However, there are many practical problems associated with such standards. Much depends on whether, and to what extent, administrative agencies have the power to make discretionary decisions in individual cases.

3. Decision-Making Processes

In an effort to develop uniform standards, many countries have introduced binding emissions standards for pollutants.[17] These are usually determined by authorized institutions (such as federal environmental agencies) after hearing testimony from different social interest groups. These agencies are then often absolutely bound to uphold the regulations they promulgate. In this way they can limit ecological risks, and, ideally, with adequate participation of the persons and entities potentially affected by the standards, establish a broad consensus.

One must also note that in the process of determining such standards, policymakers are weighing economic and technical considerations, as well as regional considerations. Therefore, there is a danger that, under pressure from these different sectors, lawmakers will set the standards too low from the beginning. This may explain the phenomenon in Japan, which established standards during the sixties, where enterprises and government administrations are entering into "local environmental agreements" on a voluntary basis. The agreements usually contain marginal values that are far

stricter than the ones set up nationally.

In contrast to these techniques of developing uniform standards, other countries support a concept of strict decentralization of environmental policy. They give environmental administrative agencies broad discretionary powers to decide when, where and how to intervene.[18] Therefore, pragmatic solutions can be achieved and environmental improvements can be introduced step by step. However, we have to raise the question whether the individual agencies possess sufficient legitimacy to bear the responsibility for the enormous risks with which they are dealing. There is also the apprehension that cooperation between companies and regulatory agencies might result in "agency capture" and thereby compromise environmental policies.[19]

Administrative law no doubt plays the biggest role in developing an environmental policy oriented toward the prevention of damage. We still must ask the question how the legal order can enforce environmentally considerate behavior by means of criminal law. Before I try to give an answer by legal comparison, I must address another task of the legal system: the compensation for damages.

COMPENSATION FOR DAMAGES (TORT LAW)

In contrast to the internationally recognized polluter-pays principle, in many places the victims or the public provides compensation for environmental damages. Traditional legal instruments hold no one liable if the destruction was caused by the accumulation of many different emissions from many different sources. Destruction caused by acid deposition is one example. For this reason, Japan introduced "no-fault" liability for certain environmental damages in reaction to the "Big Four Pollutions." Entities may offer statistical proof, but exculpation is possible only if there is evidence that the emitter has used the best methods available *worldwide*. Actions for damages may even be successful in cases where the polluter acted according to an administrative permit, but only if the pollution exceeds the socially accepted level.[20] This form of strict liability is expected to deter much environmentally unsound behavior.

European governments took legislative action to address problems of liability much later than Japan. Germany, for example, did not introduce absolute liability until January 1, 1991.[21] These no-fault claims, however, are limited to damages for which an individual actor can be held responsible. Such claims are not possible in many cases due to the cumulative effects of emissions.

In an effort to correct the perceived inequities of such a system, many countries are creating compensation funds, which are financed by contributions of polluters according to their emissions. In Japan, for example, the money is being used to compensate damages to human health caused by air or water pollution.[22] In these cases no evidence of any individual causation is necessary.

Furthermore, taxes scaled according to the environmental risk of the pollution may also work as incentives for reducing ecological dangers. There is considerable resistance against such solutions, however, because of the potentially high costs associated with such a regulatory structure. The difficulties of putting such controlling mechanisms into effect may be one reason for the increasing emphasis on international criminal law.

POSSIBLE PURPOSES OF CRIMINAL LAW: PREVENTING ENVIRONMENTAL DAMAGE, ENHANCING ENVIRONMENTAL AWARENESS, AND SUPPORTING ADMINISTRATIVE LAW

A. Reforms

The world has seen a new boom in criminal law during the last twenty years. The trend toward criminalization was triggered by the worldwide discovery of environmental calamities that triggered the public's interest. The wave of reform in Europe began in Sweden and the Netherlands in 1969 and took hold in most other countries in the seventies and eighties. Table 1 illustrates this development. Some countries have incorporated environmental offenses into their penal codes or have established basic eco-offenses. Other countries have created regulatory offenses exclusively in administrative environmental legislation.

It is noteworthy that in many countries further reforms have been carried out (especially in Sweden and Austria) or are being prepared (especially in Germany, Finland, Belgium, Switzerland and Brazil).[23] All of these reforms aim to expand and strengthen environmental protection; they are motivated by the poor results of the practical implementation of the previous regulations. In fact, criminal law was, and is still, very limited in its application, particularly as applied to the more serious types of pollution. As a rule, in many countries only minor sanctions are being imposed.[24]

Indeed, environmental protection by means of criminal law poses a number of basic problems, a few of which I will outline below.

1. The Relationship Between Criminal Law and Administrative Law

As I have demonstrated, administrative law plays a dominant role in the protection of the environment. It has made fundamental determinations as to the extent of permissible pollution and acceptable risks in broad areas, frequently leaving to the administrative agencies the task of establishing the allowable level of pollution in individual cases. In order to ascertain the scope of criminal liability, penal law has generally deferred to the definitions of socially acceptable behavior found in the administrative law.

Basic unresolved problems arise from the existence of these *mala administratione prohibita*, no matter which type of legal system is involved. Thus, where penal and administrative law are closely interconnected, as in the Anglo-American states (and those legally influenced by them), there is danger of "inflation" of criminal law and thus of an impairment of its value. The credibility of penal law is affected not only by the highly selective prosecution by environmental administrative agencies, but also by relatively low penal sanctions.[25] Where criminal law and administrative law are strictly separated in both organization and structure (as, for example, in many European continental states), it has been said that one can even observe conditions resembling "civil war" between prosecutorial and administrative agencies in their aspirations for primacy in environmental protection.[26]

Three models represent the possible relationships between criminal law and administrative law (Table 2). Model one is the classical (subsidiary) criminal law that is absolutely subordinate to administrative law. In the second model we find a recent trend toward criminal statutes which are only relatively

dependent on administrative law. In the third model, criminal norms are absolutely independent of administrative processes in special cases. Some countries have chosen criminal programs that incorporate all of these systems.

a. Independent Criminal Law

Criminal laws that are absolutely independent of administrative law and administrative decisions (Model 1) generally cover those cases where there is evidence that environmental damage leads to "concrete endangerment" of life and limb.[27] Presumably, the particularly serious types of behavior penalized are variants of public safety offenses for which administrative consent would be unavailable anyway. Nevertheless, proving causal links between acts of pollution and concrete endangerment is still extremely difficult.[28] To overcome this problem, Japanese legislators have introduced a legally binding presumption of causation, according to which a substance is presumed to have caused a danger if substances of the same type would normally cause that danger if released in a hazardous manner.[29]

b. Criminal Offenses Which Are Relatively Dependent on Administrative Law

Other countries have attempted to avoid such drastic inroads into the traditional domain of criminal law by reducing the thresholds of liability. Model 1 requires a concrete endangerment to life and limb for penal liability. In Model 2 this threshold is reduced: instead of a concrete endangerment, an abstract risk to human health or risk to environmental media is sufficient for penal liability. This prerequisite can be proved more easily than concrete endangerments.

The next distinction is that in Model 1, behavior cannot be legalized by an administrative permit because the agency has no right to allow concrete endangerments of persons. By contrast, in Model 2 one enters the field of the administrative agencies: they determine the socially acceptable risks of endangerment. Concrete endangerment limits their discretion, but they do have the power to allow abstract risks. Bringing the regulated behavior under the direction of the administrative agencies has the disadvantage of making environmental protection dependent on the forms of administrative law. In effect, if pollution is legal with an agency permit, the court has no authority to impose criminal sanctions.

As a consequence of this dependence, actors (administrative agencies, industrial companies, and social organizations) and non-criminal administrative entities are engaged in defining the criminal wrong.[30] For example, Sweden has criminalized any pollution of water, air or land constituting an abstract risk to human health.[31] These countries have facilitated an expansion of criminal responsibility not even reached by the Swedish risk offenses, which require that the pollution of the environmental media pose at least an abstract risk to human health. These regimes forbid any pollution in the absence of an administrative permit. Therefore, expansion of penal liability relies on the interpretation of environmental media: when is water or land polluted sufficiently to warrant criminal liability?

Two points may illustrate the relative dependence on administrative law: first, mere disobedience of administrative orders is not criminal, and second, the government imposes criminal sanctions only where acts have led to *actual* damaging effects to the environment. A permit legalizes acts,[32] but this does not mean that a permit grants absolute rights upon the polluter. For example, in some cases emissions may cause damage to human health despite the emitter's compliance with all of the emission

standards established by the authorities. The emitter may also possess an outdated permit that does not correspond with current ecological requirements.[33] In both of these cases the question arises whether the administrative authorities would have to revoke the license before further measures could be taken against the polluter.[34] There is a tendency to refuse a criminal defense based on possession of a permit in these cases, and, as a result, the license holder is subject to criminal liability;[35] in Germany, the authorities base liability on the concept of an abusive exercise of a right.[36]

c. Criminal Offenses Which Are Absolutely Dependent on Administrative Law

These issues do not arise with criminal offenses that are absolutely dependent on administrative provisions (Model 3). The principal aim is to guarantee the enforcement of administrative regulations and the cooperation of industries with the administrative agencies. This is especially the case in countries such as Great Britain and Canada, where administrative enforcement mechanisms are virtually nonexistent and the threat of invoking criminal sanctions remains the only means of governmental coercion.[37] The subordinate function of criminal law is particularly evident where the violation of an administrative regulation itself does not lead to criminal liability, but merely allows the administration either to issue a warning and set a date for compliance (Italy) or to serve an "abatement notice" (United Kingdom).[38] Under this regime only a repeated or continuing violation is subject to criminal prosecution — and, moreover, actual prosecution often lies within the discretion of an administrative agency.[39]

The role and function of criminal law is quite different in the various countries. Regardless of the several concepts, however, there is a general tendency toward facilitating criminal liability.

2. Facilitating the Attribution of Criminal Liability

Frequently, ecological damage can only be ascertained statistically, as it is often caused by the cumulative effects of diverse emissions. As a result, many national criminal law regimes attempt to protect the environment not only from actual damage, but from potential damage as well. This is quite common in the regulation of specific hazardous industrial activities.[40] For example, Switzerland has extended criminal liability in the area of water use, subjecting everyone to the risk of criminal prosecution.[41] The Swiss Federal Court has approved the policy of prosecuting "pollution as a mass phenomenon in every single case."[42]

This system of mass liability is problematic because (1) with limited resources, it is impossible to prosecute a mass phenomenon in every single case, and (2) criminal law functions only if it has to regulate the "hypersensitive," isolated conduct of outsiders, not if it must monitor the conduct of the masses. If legislators make it easier to prove individual liability, then the issue of limited resources and prosecutorial discretion arises. Who will they target for enforcement when resources prevent them from prosecuting each individual? This is a special problem when criminal laws in the field of environmental protection are addressed to everybody, industries and private persons alike. In the US one does not have these problems because environmental criminal law is focused on industrial behavior.

Another important issue is one of notice: to what extent must the target of a criminal provision have notice of the implementing administrative regulation?

The answer to this question is by no means self-evident. The relevant administrative rules may fill a whole bookcase or may not be easily accessible. Statutes and the courts often do not require actual notice of the relevant provisions to impose criminal liability. This may pose serious questions of fairness in countries such as Great Britain, where many administrative laws create strict liability offenses.[43]

In countries where criminal law is based on principles of individual responsibility and a concept of ethical guilt, the legal regimes require strict proof of personal fault. These countries do allow some presumptions of notice, however. For example, Austria recently passed legislation establishing liability for environmental endangerment, even though the defendant was not aware of the relevant administrative provision, provided that he or she should have had knowledge thereof.[44] In other countries, such as Germany, Switzerland and the US, courts have taken the initiative and will presume the defendant's increased awareness of statutory duties, depending on the class and profession of the defendant.[45] Therefore, the courts may expect that operators of dangerous plants have notice of the relevant regulations.

In practice, environmental administrative agencies have developed their own criteria for determining whether an offender merits punishment. As a rule, they tend to pursue a policy of cooperation and persuasion rather than confrontation. Prosecution is limited to those cases where the agency suspects intentional violations.[46] In countries where the administrative agencies have indirect influence on prosecution (Germany, Austria, Switzerland and others),[47] only the persistent perpetrators are handed over to the prosecutorial agencies.

3. From Individual Responsibility to Collective Liability

We have seen that worldwide there is a tendency to attribute responsibility on an impersonal basis. Researchers with a traditional orientation recognize with astonishment or fear that this tendency is dissolving basic principles of criminal law. This may be so, but it is necessary because the conventional principles of individual fault are becoming counter-productive in the context of mass contaminations, where individual causation is difficult to prove. Because of this fact, some legislators are of the opinion that criminal liability based only on the determination of personal fault is not sufficient to protect the environment from the enormous pollution caused by big enterprises.

There is evidence of an international trend to make criminal law more prominent, especially where the enterprise itself has traditionally been subject to criminal liability.[48] Even in states that have traditionally adhered to the principle of *societas delinquere non potest* ("enterprises cannot be criminal") there is a growing tendency toward imposing criminal liability on enterprises. Commissions of experts are examining such proposals in Belgium and Switzerland and have written drafts in Finland and France.

Other countries adhere *formally* to the principle that an enterprise cannot be criminal, but they have looked for ways to impose non-criminal sanctions on those enterprises. Austria, for example, introduced a peculiar form of sanction in 1988: an enterprise may be fined if it has obtained benefits from the commission of a crime. Austria's courts will disgorge extra profits upon a finding of the managing director's grossly negligent acts. In contrast, Sweden imposes an environmental protection fee levied on the basis of strict liability and the violation of emissions standards.[49] This

leads us to an examination of the requirements of enterprise liability.

Traditionally, the basis for corporate liability has been a criminal act by some organ of the enterprise that was then attributed to the corporation as a whole. This basis for liability is especially common in Great Britain and Canada.[50] More recent statutory regulations have moved away from this *respondeat superior* theory, and instead require the breach of a duty resulting from some organizational defect in the company followed by the occurrence of certain effects (e.g., "serious damage" in Sweden).[51] The violation of an obligation to supervise is frequently regarded as such a defect.[52]

The crucial question regarding the phenomenon of "organized personal irresponsibility" is whether corporate liability requires a finding of individual fault at all. The trend in the international community is not to require a finding of individual culpability, especially if the organization's defect itself bars criminal liability. For example, the Swedish law mentioned above does not require such a management defect, but merely requires a finding that the company violated specific administrative duties and that those violations benefitted the company. It remains an open question if, and to what extent, such models of sanctioning, which go much further than civil law liability, are still compatible with basic theories of criminal law.

CONCLUSIONS

Our *tour d'horizon* of the international platform and the national programs of environmental law have addressed some crucial points. These issues, in one respect or another, affect important principles of the different legal systems, principles that guarantee a functioning legal system. The existing ecological threats suggest that we abandon some basic legal principles in favor of more effective environmental protection; many countries have either done so, or are in the process of transition.

Given this trend, the basic question becomes what price are we willing to pay for better ecological safeguards? In answering this question we should note that the classical principles of criminal liability become counterproductive when we take into consideration the practical limitations of environmental criminal law:[53] a large number of the prosecutions are for petty cases, high dismissal rates are typical, and sanctions are low, sometimes comparable to those imposed for shoplifting.

On the other hand, it should be emphasized that criminal law does not constitute a universal remedy for straightening out legal systems in disarray. Sometimes it seems that legislators have made tremendous progress, but they have not taken measures that are effective and well structured. Efficiency may result from their efforts, but efficiency should be more than the short-sighted effect of a statutory measure that the legislature enacts in reaction to some spectacular incident.

There is no doubt that further research is imperative in order to judge which roles and functions criminal law should fulfill with respect to environmental protection and which it can fulfill without accepting a serious erosion of its concepts. There is, for example, the danger of inflating the criminal law: in the regulatory regime in which criminal sanctions are absolutely subordinate to administrative law, the label of "criminal" can become quite diffuse, diluting its moral impact. Public perception of what is truly blameworthy criminal conduct can diminish when both murder and mere disobedience of administrative orders are defined as

criminal.

Additionally, it is difficult to define with certainty and clarity those forms of unlawful environmental pollution that are worthy of being criminalized. One solution is to incorporate serious violations in the penal code and to establish a collateral system on the basis of a more objective, non-personal liability tailored to the specific technical problems of modern society.

A complete and integrated analysis should not only address these principal problems and the possibilities for adequate implementation, but must also take into consideration the consequences for the overall structure of the legal instruments, as well as their credibility. Hopefully, legislators will realize that effective environmental protection also requires economic incentives, accompanied by precise regulations in all of the different legal sectors. The two crucial barriers are the deficient implementation of existing laws (for example, soft implementation and economic interests) and the lack of consistent ecological policies set forth in coherent legal regimes. If cohesive and uniform ecological policies and strategies are established, criminal law will provide a powerful structure for reducing environmental crimes.

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1. On the historic problems, legislation, and jurisdiction, see Günter Heine, *Ökologie und Recht: Zur historischen Entwicklung normativen Umweltschutzes*, in *Goltdammer's Archiv für Strafrecht 136* at 116-31 (R.v. Decker's Verlag, 1989). For material specifically referring to the Middle Ages, see Günter Heine, *Umweltbezogenes Recht im Mittelalter*, in Bernd Herrmann, ed, *Umwelt in der Geschichte* 111-28 (Kleine Vandenhoeck-Reihe, 1989).

2. See Bernd Rüster & Bruno Simma, *International Protection of the Environment: Treaties and Related Documents* (Oceana, 1975); Hans-Jürgen Rapsch & Gerhard M. Veh, *Reinhaltung des Meeres: Nationale Rechtsvorschriften und internationale Ubereinkommen* (Carl Heymanns Verlag, 1986).

3. As examples, consider the Geneva Convention of 1979 on trans-boundary air pollution, the Vienna Convention of 1985 on the protection of the ozone layer, and the Montreal Protocol of 1987.

4. This is demonstrated by the dispute over EC regulation of drinking water. See Jörg Martin, *Was kostet ein Menschenleben?*, in Natur 23-24 (Oct 89).

5. See, for example, China Const, Art 26 (1983); Greece Const, Art 24, § 1 (1988); India Const, Arts 48A & 51A(g) (1990); Italy Const, Art 9 (1987); Netherlands Const, Art 21 (1990); Portugal Const, Art 66 (1991); Switzerland Const, Art 24bis (1982); Turkey Const, Art 56 (1984).

6. Portugal Const, Art 66 (1991).

7. Id; Spain Const, Art 45 (1991).

8. Czecho-Slovakia Const, Art 15, § 2 (1974); Hungary Const, ch 12, § 70/D (1990); Poland Const, Art 71 (1991); USSR Const, Arts 18 & 67 (1990).

9. See Gyorgy Enyedi, August J. Gijswijt, & Barbara Rhode, eds, *Environmental Policies in East and West* (Taylor Graham, 1987).

10. The polluter-pays principle requires that the source of the pollution bear the cost for its abatement instead of society as a whole. Environmental Code (Switzerland), Art 2. For details, see Günter Heine, *Umweltschutzrecht in der Schweiz*, in *Umwelt — und Planungsrecht 1985* at 345-53 (Kommunalschriften-Verlag, 1985).

11. See David Hughes, *Environmental Law* 9 et seq (Butterworth, 1986). In April 1991, Parliament enacted the Environmental Act of 1990, including modern principles of environmental protection.

12. Generra Richardson, Anthony Ogus, & Paul Burrows, *Policing Pollution: A Study of Regulation and Enforcement* 30 & 124

(Clarendon, 1982).

13. Central Directorate of Environmental Protection, Pollution Control in England (Oct 1987). See also Nigel Haigh, *EEC Environmental Policy and Britain* (Longman, 2d ed 1989).

14. Environmental Code (Switzerland), Art 13(2). See generally Alfred Kölz & Hans-Ulrich Müller, eds, *Kommentar zum Umweltschutzgesetz* (Schulthess Polygraphischer Verlag, 1991).

15. For details, see Kölz, *Kommentar zum Umweltschutzgesetz* (cited in note 14).

16. For details, see Frederick R. Anderson, Daniel R. Mandelker, & A. Dan Tarlock, *Environmental Protection: Law and Policy* (Little Brown, 1984); J. Gordon Arbuckle, et al, *Environmental Law Handbook* (Government Institutes, 9th ed 1987).

17. For example, the United States, Japan, Denmark, Switzerland and Italy introduced such standards in 1988 in reaction to EC policies. For further references, see Günter Heine, *Zur Rolle des strafrechtlichen Umweltschutzes*, in *Zeitschrift für die gesamte Strafrechtwissenschaft 101* (De Gruyter, 1989); Günter Heine & Mauro Catenacci, *Umweltstrafrecht in Italien*, in *Zeitschrift für die gesamte Strafrechtwissenschaft 101* (De Gruyter, 1989) (addressing Italian standards).

18. Keith Hawkins, *Environment and Enforcement* 23-36 & 105-28 (Clarendon, 1984).

19. For details regarding Austria, see Herbert Wegscheider, *Österreiches Umweltstrafrecht* 40, 65, & 76 (Universitatsverlag R. Trauner Linz, 1987).

20. See Yoshiro Nomura, *Japan's Pollution Legislations*, in Science Council of Japan, ed, *Science for Better Environment: Proceedings of the International Congress on the Human Environment* 102 (Pergamon, 1977). For the dominant role of jurisdiction in ecological development, see Julian Gresser, Koichiro Fujikura, & Akio Morishima, *Environmental Law in Japan* 57-63, 66-83, & 106-24 (MIT, 1981).

21. See Franz-Josef Feldmann, *Umwelthaftung aus umweltpolitischer Sicht*, in *Umwelt- und Planungsrecht* 45-50 (cited in note 10).

22. These funds are partially realized in Canada and some states of the United States in the field of water pollution. In the Netherlands compensation is established for harms caused by air emissions.

23. See Günter Heine & Volker Meinberg, *Environmental Criminal Law in Europe*, in Günther Kaiser & Hans-Jörg Albrecht, eds, *Crime and Criminal Policy in Europe* 5-23 (Eigenverlag Max-Planck Institut für auslandisches und internationales Strafrecht, 1990).

24. For Germany, see Volker Meinberg, *Empirische Erkenntnisse zum Vollzug des Umweltstrafrechts*, in *Zeitschrift für die gesamte Strafrechtswissenschaft 100* at 112-57 (De Gruyter, 1988); Cornélie Waling, *Das niederlandische Umweltstrafrecht* 151 et seq (Freiburg, 1991).

25. Richardson, *Policing Pollution* at 197-99 (cited in note 12).

26. See Bernd Schunemann, *Die Strafbarkeit von Armstragern im Gewässerstrafrecht*, in Zeitschrift für Wirtschaft-Steuer-Strafrecht (wistra) 235-46 (Nov 15, 1986); Klaus Tiedemann, *Die Neuordnung des Umweltstrafrechts* (De Gruyter, 1980). See also Heine, *Environmental Criminal Law* (cited in note 23).

27. Compare Penal Code (Poland), Art 14, § 1, cl 2 (1973).

28. Gunter Heine, *Strafrechtlicher Umweltschutz in Westeuropa*, in M.G. Faure, J.C. Oudijk, & D. Schaffmeister, eds, *Zorgen van Heden: Opstellen over het Milieustrafrecht in Theorie en Praktijk* 461 et seq (Arnhem, 1991).

29. See also Gresser, *Environmental Law in Japan* (cited in note 20).

30. The Swedish legislature wanted to

ensure criminal punishment even if complete technical evidence of the environmental effects could not be procured.

31. See, for example, Penal Code (Austria), § 180 (1987), in 359 der Beilagen zu den Stenographischen Protokollen des Nationalrates XVII.GP at 77; Laws of Kenya, ch 372, § 158 (1962) (The Water Ordinance). See also Code Rural (France), Livre Premier, Art 407 (1989).

32. In Germany, for example, the majority of contraventions for mere disobedience to administrative orders are classified as so-called "Ordnungswidrigkeiten" (similar to regulatory offenses in the Anglo-American systems, but administrative rather than really criminal in character), which are prosecuted by an administrative agency.

33. Another example would be where the industrialist has obtained a license for the emission of harmful substances by deceit, threat or collusion with the environmental administrative agency.

34. Günter Heine, *Verwaltungsakzessorietät des Umweltstrafrecht*, in *Neue Juristische Wochenschrift* 2425-34 (C.H. Beckische Verlagsbuchhandlung, 1990). See also Theodor Lenckner, *Behördliche Genehmigungen und der Gedanke des Rechtsmissbrauchs im Strafrecht*, in Otto Friedrich Freiherr von Gamm, Peter Raisch, & Klaus Tiedemann, eds, *Strafrecht, Unternehmensrecht,Anwaltsrecht:Festschrift für Gerd Pfeiffer* 27 et seq (Carl Heymanns Verlag, 1988); Tiedemann, *Die Neuordnung* at 27 et seq (cited in note 26).

35. Cornélie Waling, *Het materiële Milieustrafrecht* 53 et seq (Arnhem, 1990). For a comparison, see Günter Heine, *Erkennung und Verfolgung von Umweltstraftaten im europäischen Rechtsraum*, in *Umwelt- und Planungsrecht 1987* at 281-85 (Kommunalschriften-Verlag, 1987).

36. See text accompanying note 34; Tiedemann, *Die Neuordnung* at 61 (cited in note 26); Klaus Tiedemann & Urs Kindhäuser, *Umweltstrafrecht — Bewährung oder Reform?*, in 8 Neue Zeitschrift fur Straftrecht 337-46 (Aug 15, 1988); Rolf Keller, *Zur straftrechlichen Verantwortlichkeit des Amsträgers für fehlerhafte Genehmigungen im Umweltrecht*, in *Festschrift für Kurt Rebmann* 241-57 (C.H. Beckische Verlagsbuchhandlung, 1989).

37. For Great Britain, see Richardson, *Policing Pollution* (cited in note 12). For Canada, see Murray Rankin & Peter Finkle, *The Enforcement of Environmental Law: Taking the Environment Seriously*, in Peter Finkle & Alastair R. Lucas, eds, *Environmental Law in the 1980s: A New Beginning* 169-95 (Canadian Institute of Resources Law, 1982). See generally Ursel Spreng, *Umweltrecht in Kanada* (Pfaffenweiler, 1988).

38. See Heine, *Umweltstrafrecht in Italien* at 166 et seq (cited in note 17). For the United Kingdom, see Hughes, *Environmental Law* at 9 et seq (cited in note 11). See also Environmental Protection Law (Turkey), Art 15.

39. This exists mostly in the states influenced by the Anglo-American legal system.

40. For a comparison, see Heine, *Zur Rolle des strafredchtlichen* (cited in note 17); Clean Water Act, 33 USC § 1319(c)(1) (1988).

41. Water Pollution Protection Act (Switzerland), Art 37, which sanctions the unlawful deposit and the seepage of substances capable of polluting water. See Günter Heine, *Umweltschutzrecht in der Schweiz*, in *Berlin Conference on the Law of the World* (World Peace Through Law Centre, 1985).

42. Gunter Heine, *Aspekte des Umweltstrafrechts im Internationalen Vergleich*, in Paul-Gunther Potz, ed, *Goltdammer's Archiv für Strafrecht* 68-88 (R. v. Decker's Verlag, G. Schenk, 1986) (for the facts and circumstances included).

43. Hughes, *Environmental Law* at 41 et seq (cited in note 11). In this respect, considerable similarities to the so-called "faute contraventionelle" in France are revealed.

44. Penal Code (Austria), § 183a at 78 (cited in note 31).

45. See, for example, *US v Intl Minerals & Chemical Corp.*, 402 US 505 (1971). For a comparison, see Heine, *Zur Rolle des strafrechtlichen* at 744 (cited in note 17).

46. For the situation in the UK, see Richardson, *Policing Pollution* at 197-99 (cited in note 12). For Canada, see Spreng, *Umweltrecht in Kanada* (cited in note 37).

47. For comparative results, see Heine, *Zur Rolle des strafrechtlichen* at 747 et seq (cited in note 17).

48. Heine, *Strafrechtlicher Umweltschutz in Westeuropa* (cited in note 28).

49. See Penal Code (Austria), § 20a (1987), at 73 (cited in note 31); Environmental Protectional Act (Sweden), § 45, ¶ 1.

50. L.H. Leigh, *The Criminal Liability of Corporations and Other Groups: A Comparative View*, 80 Mich L Rev 1508 (1982).

51. See Penal Code (Sweden), ch 36, ¶ 7; Penal Code (Netherlands), § 51; Environmental Protection Act (Denmark), § 83.

52. See, for example, Draft (Finland), § 2 (1991); Ordnungswidrigkeitengesetz (Germany), §§ 30 & 130; Predraft (Switzerland), Art 100quater (1990).

53. For an international comparison, see Heine, *Zur Rolle des strafrechtlichen* at 748 (cited in note 17).

TABLE 1: REFORM STAGES IN THE FIELD OF ENVIRONMENTAL PROTECTION BY MEANS OF CRIMINAL LAW*

1.1 Penal sanctions situated in the penal code or in basic eco-offenses

Country	Years of Reform	Location	
		penal code	basic eco-regulation
India	1960/1986	+/-	-/+
Sweden (S)	1969/1981/1989	-/+/+	+/+/+
Netherlands (NL)	1969/1989	+/+	-/-
Japan	1970	-	+
USSR	1970/1974/1980/1982	+/+/+/+	-/-/-/-
Poland (Pol)	1970/1980	+/-	-/+
Denmark (DK)	1973/1987	-/-	+/+
Austria (A)	1976/1989	+/+	-/-
Yugoslavia (Yu)	1977	+	-
East Germany (GDR)	1977/1989	+/+	-/-
South Korea	1977	-	+
China	1979	+	-
West Germany (FRG)	1980	+	-
Colombia	1981	+	-
Norway	1981	-	+
Portugal (P)	1983	+	-
Spain (Sp)	1983	+	-
Turkey	1983	+	+
Switzerland (CH)	1985	-	+
Greece	1986	-	+
Cuba	1987	+	-
Czechoslovakia	1989	+	-

* Selected reforms
+ Indicates penal sanctions added in reform year.
- Indicates no penal sanctions added in reform year.

1.2 Penal Sanctions Exclusively in Administrative Laws

Country	Years of Reform
France (F)	1964/1976/1984
Belgium (B)	1964/1971/1979
Italy	1966/1976/1982/1988
United Kingdom (GB)	1968/1974/1975/1991
USA	1970-1978/1987
Canada (CDN)	1970-1976

TABLE 2: INTERNATIONAL MODELS FOR THE RELATIONSHIP BETWEEN CRIMINAL LAW AND ADMINISTRATIVE LAW IN THE FIELD OF ENVIRONMENTAL PROTECTION

Model 1
Criminal law *absolutely independent* of administrative provisions
- injury to the environment and public danger/ concrete danger to life and limb (FRG, DK, NL, P, Pol)

Model 2
Criminal law *relatively subordinate* to administrative provisions/ decision-making
- injury to the environment and abstract risk of danger to human health, without permit (S, Sp)
- pollution of the water, without permit (FRG, CH)
- lasting pollution, infraction of a legal administrative obligation (A, Sp, Yu)

Model 3
Criminal law *absolutely dependent* on administrative provisions/decision making
- breach of an administrative provision (B, CDN, F, UK)
- discharge/emission without license or consent (GB, USA)
- contravention of the obligation to inform the administrative agency (F, B)

DIAGRAM: BASIC STRUCTURES OF CRIMINAL LIABILITY IN THE CASE OF ENTERPRISE DELINQUENCY