Economic aspects of environmental liability: an introduction

MICHAEL FAURE
Maastricht University, Professor of Comparative and International Environmental Law

Abstract. The present article forms an introduction to those that follow. It sets the law relating to civil liability for environmental damage in the context of economic theory, and examines, inter alia, whether fault liability or strict liability is the better instrument for ensuring that environmental damage is minimised and whether the liability of individual industrial operators is best covered by insurance or whether specialist compensation funds are a more effective option.

Résumé. Cet article est une introduction aux contributions qui suivent. Il appréhende le droit de la responsabilité civile pour atteinte à l'environnement dans le cadre de la théorie économique et examine, entre autres choses, si le meilleur moyen pour limiter les dommages écologiques passe par la responsabilité pour faute ou par la responsabilité objective et si la responsabilité des entreprises est mieux couverte par l'assurance ou si le choix de fonds d'indemnisation ne serait pas plus efficace.

Zusammenfassung. Der vorliegende Aufsatz gibt eine Einführung in Bezug auf die folgenden Beiträge. Er betrachtet den Rechtszustand im Bereich der zivilrechtlichen Haftung für Umweltschäden im Kontext einer wirtschaftlichen Theorie und untersucht unter anderem, ob die Verschuldens- oder die Gefährdungshaftung ein besseres Instrument zur Minimierung der Umweltschäden darstellen, ob die Haftung eines individuellen Industrieanlegers durch eine Versicherung am besten abgedeckt ist oder ob spezielle Schadensersatzfonds eine effektivere Möglichkeit bieten.

1. Introduction*

In this issue of the European Review of Private Law, several papers are centred around one specific topic, that being environmental liability. It almost needs no explanation why the editors of this review have chosen to invite several papers on this important topic. Environmental liability is probably one of the areas where tort law has most rapidly evolved in recent years. All the classic issues in liability law, the choice between negligence and strict liability, the foreseeability requirement, the calculation of damages and causation issues, always play an important role when environmental liability is at stake. Environmental pollution has led to legislative action and to a growing body of case law in a number of European legal systems. In some cases, this evolution in

* I am grateful to Mathias Storme for useful comments on an earlier draft of this paper.
environmental liability has had a considerable influence on traditional tort law as well. Moreover, the social importance of environmental liability hardly needs to be explained. Many countries are still confronted with so many polluted sites, that everyone is aware of the fact that it goes far beyond the reach of traditional tort law to deal with the huge financial consequences of all these so-called "black points". There is another reason why specifically a European review of private law should pay attention to environmental liability. This is one of the areas where until now, apart from the green paper, little initiative has been taken yet at the European level. This, therefore, leads to the question whether solutions in the many legal systems still diverge considerably.

In addition to this introduction to the other papers, in which the economic aspects of environmental liability are discussed, the several papers included in this issue focus on legal aspects of environmental liability. This is more particularly the case for the paper by Barbara Pozzo, which discusses generally the liability problem in modern environmental statutes in a comparative perspective; the paper by Bierbooms and Kristensen-Edzes focuses on environmental damage and a public authority's right to sue. In that paper interdependencies between public law and tort law concerning soil clean-up actions in the Netherlands are discussed. Finally, Betlem pays attention to the well-known problem of trans-boundary pollution by discussing two highly interesting Dutch paradigmatic cases.

The joint papers on environmental liability presented in this issue are the joint effort of researchers at the law schools of the Universities of Maastricht, Utrecht and Leuven. These law faculties have joined forces as far as comparative legal research is concerned and have developed a research program with respect to a "ius commune". These papers are one of the results of this collaboration.

It may need a word of explanation why this paper, dealing with economic aspects of environmental liability, is presented as an introduction to the other papers. This has an advantage since one will obviously be confronted with the fact that solutions in various legal systems in the national member states may inevitably differ. Law and economics has the advantage that the solutions in the various legal systems can be looked at on a more abstract level, without having the need to discuss the state of the law in a particular country in too much detail. When one addresses general problems such as the question what kind of legal instruments can be used to control the environmental risk (which has different solutions in various countries) law and economics seems to allow for a more abstract approach. Thus it might contribute to the finding of a common law of Europe.1 By starting from an abstract look at a specific problem that is provided by economic analysis, we will then turn to the legal solutions in particular legal systems, when possible also indicating whether there can be an economic explanation for some of the established differences. Thus, we shall also try

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to apply the so-called comparative law and economics methodology as has been advocated by Mattei and others.²

Obviously it will not be possible within the limited scope of this paper to deal with all problems that could be interesting from an economic point of view. Therefore, unavoidably a selection of specific topics will be made, whereby an attempt will be made to provide a linkage between the other papers dealing with environmental liability included in this issue. Some of the legal issues that will be dealt with again in the specific papers will be indicated. Obviously it is not possible to provide an in-depth economic analysis of all aspects of environmental liability. Some aspects that will be discussed, are the meaning of cost benefit analysis for environmental liability (§ 2), the choice between negligence and strict liability (§ 3), the importance of financial caps (§ 4), channelling of liability and statutes of limitation (§ 5). Attention will also be paid to liability for clean up costs (§ 6) and to the related question whether there should be retroactive liability (§ 7). The importance of differentiation of risks will be discussed (§ 8) as well as compensation issues (§ 9). Finally a few concluding remarks will be formulated (§ 10).

2. Environmental pollution in an economic setting

a. Pollution and the Coase theorem

Let us start by focusing on the fundamental question what the role of the law should be in controlling environmental pollution. The problem of environmental pollution is caused by the fact that some activities which are as such beneficial, such as the production of pharmaceuticals, can cause negative side effects for third parties, the so-called externalities. These side effects or externalities are indeed external to the industrial activity itself, since the company that commits the pollution is in principal not affected by the negative side effect it causes by its action. Precisely because pollution is an externality, the starting point of the analysis is that a decision maker such as the pharmaceutical company will not take into account the externality when it takes decisions on, eg production level and investment in measures to avoid pollution, such as the instalement of a water treatment plant. Environmental pollution is considered by many scholars to be an example of an externality.³ In the absence of the law, there would be no incentive for the polluting factory to take into account the pollution it is causing. In other words: in the absence of legal rules, the externality will not be

³ A nice example is the fact that states also often externalise environmental pollution eg by granting licenses that allow a trans-boundary pollution of rivers. The question how the law can react to these externalities is addressed in the paper by Butlem. See, generally, Van den Broek, R., "Le Droit Civil face à l'Analyse Economique du Droit", Revue Internationale de Droit Economique, 1988, 234.
internalised. This immediately indicates in a very simple way the goal of environmental law: it should lead to an internalisation of the externality by forcing the potential polluter to take into account the pollution he is causing in its decision process. If this were the case, the pollution would no longer be external to the activity, but would be internalised, e.g. because the potential polluter decides as a consequence of the pollution to invest in abatement techniques.

The crucial question that obviously arises in this context is how the law can contribute to such an internalisation of the pollution-externality? First, another question should be asked, being whether the legal system should intervene at all to reach such an internalisation. Coase taught us that in a world in which there is only one polluter and a few possible victims, an intervention by the legal system is not necessary at all. In the assumption of zero transaction costs the potential polluter and the victims would negotiate and an optimal allocation of resources (possibly the instalment of the water treatment plant) would automatically follow. This result holds, no matter what the contents of the legal rule are. Of course, the Coase theorem only works in a zero transaction costs world. In some small cases of pollution it might well therefore be useful, as has been indicated in the literature. However, in most large scale pollution cases the number of victims will be too large and transaction costs will be prohibitive. In a prohibitive transaction costs setting an absence of a legal rule will not lead to an internalisation of the pollution. Hence, some kind of intervention of the legal system is needed to effectuate the internalisation. Before addressing the question of what kind of legal rule should be used in what circumstances to reach this internalisation, let us first examine more closely what this exactly internalisation means in practice.

b. Applying cost/benefit analysis

The answer is obviously that a marginal cost/marginal benefit test should be applied, whereby the marginal costs of further pollution abatement are compared with a further reduction in environmental damage. This weighing of marginal costs and benefits can be translated into an environmental standard. Hence, many economists argue that environmental standards should take into account marginal costs and benefits. These standards are indeed the cornerstone of environmental policy, since they will determine the quality and quantity of the emissions that are allowed into the environment and therefore also the measures that should be taken by the industry. Environmental standards can take different forms. If quality standards are used, the appropriate quality

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of a certain environmental component is defined *ex ante* and the licence conditions are fixed correspondingly. Most commonly used are the emission standards that fix how much of a certain substance and of what quality can be emitted into the surface waters. Production standards would go even further in that they would also indicate the production technology that should be used by the industry. The disadvantage of these production standards, that are not very often used, is that they can have anti-competitive effects. Most frequently used are the emission standards. They could use the mentioned cost/benefit analysis to determine whether a more stringent standard, which would involve additional costs of pollution abatement, would result in an additional benefit in the reduction of environmental damage.

This weighing of marginal costs/marginal benefit has long been advocated by economic scholars interested in shaping an efficient environmental policy. It also explains why society does not want to prevent environmental pollution at all costs. Investing in expensive cleaning technology that would not additionally reduce environmental damage would mean a waste of scarce resources. Hence, first the question should be addressed what is the optimal way of reducing the environmental damage; next the question will be addressed through what kind of a legal rule this optimum can be reached. We indicated that this optimum can be found by using cost/benefit analysis. This is also accepted in legal writing, not only with respect to emission standards, but also with respect to environmental liability law. The point is accepted that in answering the question what kind of abatement measures can be required from the industry, the costs of these measures should be weighed against their potential benefit in reduction of environmental damage.

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c. **Cost/benefit analysis in the BATNEEC-principle**

It is worth mentioning that the policy makers who are shaping environmental law, have increasingly been occupied with the question how a guideline for environmental standard setting could be given, especially for those cases where fixed environmental standards would not exist. This has brought about an interest in formulating general principles of environmental law.  

Some of these might be less useful in practice, although they play an important role at the political level. This is for instance true for the "polluter pays" principle. Although this principle could be reshaped in economic terms by referring to the necessity that externalities are internalised, it nevertheless does not inform us why a polluter should pay and to what extent he should invest *ex ante* in preventive measures to avoid the pollution occuring. More interesting, from an economic point of view, are recently discussed principles that force a potential polluter to apply "Best Practicable Means" (BPM) or to reduce the pollution "As Low As Reasonably Achievable" (ALARA). In the legal literature discussing these principles it is noted that in estimating the best practicable means the costs of applying those means should be taken into account.  

The economic approach to environmental standard setting is probably best represented in a recently introduced principle of environmental law, forcing the potential polluter to take into account the "Best Available Technology Not Entailing Excessive Costs" (BATNEEC). The last part of this phrase, "not entailing excessive costs", could be interpreted as referring to a marginal cost/marginal benefit approach. The notion makes clear that the potential polluter should in principle apply the best available technology. On the other hand, the costs associated with applying this technology should be taken into account as well. By mentioning that these costs may not be "excessive" it could be argued that one should examine whether the marginal costs of additional abatement measures would outweigh the marginal benefits in further reduction of environmental damage. If the answer is no, the costs could be considered as excessive. This BATNEEC-principle has recently been introduced in a draft of a European directive on integrated pollution prevention and control and thus becomes introduced into environmental law.  

This might give an explicit basis for a more economics oriented approach to the environmental standard setting process. Moreover, the BATNEEC-criterion may play an important role in environmental liability as well, for instance when establishing what further preventive measures could have been asked from an injurer in a negligence case. Also when decisions have to be made as to how far a particular polluted soil should be cleaned up, the BATNEEC-criterion may prove to be useful.  

Having defined the importance of cost benefit analysis for environmental standard setting, next the question arises what kind of a legal rule should be applied to achieve

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14 We will discuss clean up decisions in § 6. The New Flemish Decree on Soil Clean up of 22 February 1995 explicitly refers to BATNEEC as far as the duty to clean up is considered in art. 8.
the internalisation of the externality. In other words, how can the potential polluter be forced to follow the optimal standard? One possibility is to use the deterrent effect of a liability rule. In the economic analysis of tort law it has been demonstrated that liability rules can induce potential parties in an accident setting to follow an optimal care level. Thus the total sum of accident costs can be optimally reduced. This idea can also be applied with respect to environmental damage. By using liability law a potential polluter could in principle be given an incentive not to pollute or to invest in cleaning equipment of which the marginal costs are lower than the marginal benefit in reduction of additional environmental damage. In other words, an efficiently applied liability law could give incentives to potential polluters to follow the optimal standard. Then the question arises as to what type of liability rule should be used to reach this goal.

3. Strict liability versus negligence

One possible liability rule which will give the polluter an incentive to spend on care to reach the optimal standard is the negligence rule. Assuming that under a negligence rule the potential polluter will only have to pay compensation if he spends less on care than the legal system wants him to (due care) the firm will have an incentive to spend on care, since it is a way to avoid liability which will maximise his utility. Provided that the legal system defines the due care level as the optimal standard, a negligence rule will therefore give the polluter incentives to follow the optimal standard. Also a strict liability rule will lead to optimal incentives for care taking for the polluter, since taking efficient care will minimise the expected accident costs which the potential polluter has to bear under a strict liability system. Therefore, the literature generally accepts that both a negligence rule and a strict liability rule will provide a potential polluter with incentives to take the efficient care level. However, this is only valid in a unilateral accident setting, in an accident whereby only the injurer can influence the accident risk. If victims were also given incentives for accident reduction a contributory negligence defence should be added to the strict liability rule. Under negligence victims will always have an incentive to take efficient care as well since they will in principle not be compensated by the injurer who, under a negligence rule, will take efficient care to avoid liability.

However, the accident risk is not only influenced by the level of care, but also by the number of times that the parties are involved in the risky activity, ie the activity level. Hence, an optimal liability rule should also give the parties in a potential accident setting incentives to adopt an optimal activity level. A negligence rule will not give

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optimal incentives to the injurer to adopt an optimal activity level since the activity level is not incorporated in the due care standard which the court applies. 19 Hence, under a negligence rule the injurer only has an incentive to take efficient care (to escape liability) but not to adopt an efficient activity level. Under a strict liability rule, on the contrary, an injurer has an incentive to adopt an efficient activity level since this is also a way to minimise the total expected accident costs which he has to bear. In a unilateral accident model (whereby only the behaviour of the injurer influences the accident risk) strict liability is the efficient liability rule since it leads both to efficient care and to an optimal activity level.

The reason that is often advanced in legal literature in favour of strict environmental liability is that strict liability will help the victim in obtaining compensation since he is released from the heavy burden of proving fault under the negligence rule. However, from a deterrence point of view victim compensation is not as such a goal of accident law. The duty of the injurer to compensate his victim is only an instrument to reach deterrence efficiency. Moreover, the victim compensation argument for introducing strict liability for environmental pollution is not that convincing in all cases. Indeed, many legal systems qualify every violation of a statutory or regulatory norm as a civil fault. 20 Most industries are subjected to extensive safety regulation. Hence, in these systems the victim only has to prove the violation of one of these regulations to establish a fault. 21 If, in addition, the victim can prove a causal relationship with the loss suffered, he will be able to claim compensation. In many accident cases this burden of proof will therefore not be as heavy as has been argued. It is, therefore, at least questionable whether a strict liability rule substantially improves the situation of the victim in comparison with an already existing broadly interpreted civil fault regime. It should also not be overlooked that under the general fault regime of tort law no limitations apply and the victim is entitled to full compensation. In many of the environmental cases where strict liability was first introduced, more particularly in the international conventions concerning nuclear accidents and oil pollution, 22 financial caps and other limitations on the victim’s rights were introduced. The alleged compensating benefit of the strict liability is therefore doubtful.

Although the classic victim compensation argument as such may not justify the introduction of strict liability for environmental pollution, there are on the other hand


20 See for Dutch case law eg the so called Jumbo II case of 1 October 1993 of the Hoge Raad (Dutch Supreme Court) (Nederlandse Jurisprudentie, 1995, 182).

21 Examples of breaches of statutory duties are provided in the paper by Beltem.

economic reasons based on deterrence efficiency for introducing a strict liability rule. A nuclear accident can certainly be considered a unilateral accident, i.e., an accident whereby only the injurer can influence the accident risk. In this case we noted that the advantage of the strict liability rule is that it will give the injurer an incentive both to adopt an optimal activity level and to take efficient care. Since the victim cannot influence the accident risk, strict liability seems to be the first best solution to give the potential polluter optimal incentives for accident reduction. Both the economic rationale behind strict environmental liability and the statutory or jurisprudential tendencies from negligence towards strict liability in many legal systems are discussed in Pozzo’s paper.

4. Financial caps

An important condition, however, for a strict liability rule to be efficient is that the amount of compensation to be paid to the victim should be equal to the actual costs incurred by the victim. This brings us to a feature of the environmental liability regime under many international conventions: the limitation of compensation. An obvious disadvantage is that this seriously impairs the rights of the victim to full compensation. If there is only liability up to a lower amount than the expected losses caused by the polluter, not only would the rights of victims to compensation be seriously limited, but there would also not be a full internalisation of the externality caused by the polluting activity. From an economic point of view a limitation of the compensation is therefore a serious problem, since it will not lead to an internalisation of this risky activity.

If one believes that the exposure to liability has a deterrent effect, a limitation of the amount of compensation due to victims poses another problem. There is a direct linear relationship between the magnitude of the accident risk and the amount spent on care by the potential polluter. If the liability therefore is limited to a certain amount, the potential injurer will consider the accident as one with a magnitude of the limited amount. Hence, the amount he will spend on care to avoid an accident being caused will be equal to the limited amount and he will not take the care necessary to reduce the total accident costs. Obviously, the amount of care taken by the potential injurer will be lower and a problem of under deterrence arises. The optimal amount of care, reflected in the optimal standard, i.e., the care necessary to reduce the total accident costs efficiently, will be higher than the amount of care the potential injurer will take to avoid an accident equal to the statutorily limited amount.

24 More specifically the conventions on nuclear liability and on liability for marine oil pollution.
In fact, if a certain industry is protected by a statutory limitation of compensation this also constitutes an indirect subsidy of that particular industry. This point was also raised in the Netherlands during the parliamentary debate preceding a recent statutory change of the nuclear liability statute. The amount of guarantee provided by the Dutch state was increased to the exceptional amount of 5 billion Dutch guilders. It was mentioned in parliament that the ministry of finance will have to charge the licensee of a nuclear power plant for this guarantee provided by the state. If this was not the case the nuclear energy would remain too cheap, since the energy price would not reflect the true costs of the nuclear risk. Of course this problem of "over-consumption of nuclear power" would be reduced if other energy producers enjoyed a limitation of liability as well. In that case a second-best solution could be achieved. However, it seems that nuclear energy producers are the only ones enjoying the benefit of the limitation of liability.

5. Channelling of liability and statutes of limitation

Another deviation from the general tort rules that can often be found in international conventions is the channelling of liability. This means that the victim of eg a nuclear accident can only sue the licensee of the nuclear plant and cannot sue a third party, even if the loss was actually caused by him. Some statutes implementing international conventions even exclude the possibility of the victim suing either the licensee or a third party under the common fault regime to claim full compensation. This channelling of liability clearly limits the rights of the victim to full compensation, but it can also have negative effects for the incentives to take efficient care. Since channelling leads to the liability of only one injurer who can be sued by the victim, other parties that could also influence the accident risk might have insufficient incentives to take efficient care.

Also the short periods of limitation and the special terms in which the suit has to be brought impair the situation of the victim. Due to latency problems, diseases might only appear several years after the nuclear accident. Therefore, the short periods of limitation and special time bars might seriously limit the victim’s right to compensation. If the risk that an injurer will be held liable decreases as a consequence of time bars, this can have a negative effect on his incentives to take care. If the consequences of damage only manifest themselves after the statute of limitations has expired the licensee will not be held liable and will therefore have reduced incentives for accident reduction.

27 FACRI, M., "De verzekering van het nucleaire risico", in: In Volle Verzekerdheid, Opstellenbundel ter gelegenheid van het afscheid van Prof. Mr. O. van Wassenaer van Catwijk, Zwolle, Tjeenk Willink, 1993, 247-260.
6. Liability for clean up costs and clean up decisions

A highly debated issue in most legal systems is the liability for clean up of polluted sites. Concerning the first question, whether there should in principle be strict liability for clean up of polluted soils, we can generally refer to the theory presented above which indicates a preference for strict liability for environmental damage. This obviously applies to soil clean up liability as well. Polinsky and Shavell, who studied the optimal liability rule for environmentally harmful discharges, also conclude that it is socially optimal to make firms responsible for "clean up" and strictly liable for any remaining harm. 28 A major issue related to liability for polluted soils nowadays is probably not whether a negligence or a strict liability rule should be applied, but whether firms can be held liable today for pollution which has been caused some 10 or 20 years ago, when environmental awareness was non-existent or minimal. Most criticism of expanding environmental liability is indeed not directed towards the introduction of strict liability as such, but towards its retroactive application. The question whether from an economic point of view retroactive application of a liability rule makes sense will be discussed below. A related question, under what circumstances public authorities can use private law to recover clean up costs is addressed in the paper by Bierbooms and Kottenhagen-Edzes.

Another interesting question relating to liability for soil clean up, and which is important in practice as well, concerns the kind of criteria on which the decision to clean up a polluted site should be based. Obviously this is closely related to the aforementioned liability issue itself. Indeed, in most legal systems where authorities are confronted with polluted sites a decision to clean up is made through eg an administrative order and the costs of this clean up action are recovered from the one who discharged the waste in the past on the basis of a strict liability rule. Hence, the question of the grounds on which a decision to clean up is made, is closely connected to the liability issue itself.

Indeed, in most European countries the decision to clean up is made by administrative authorities. In most cases so-called black points are identified and on the basis of a subsequent priority list decisions to clean up are taken. In some countries, like for example the Netherlands, these black points have been identified since the second half of the 1970's and extensive cleaning operations have already taken place or are still in the course of execution. In other countries like eg Belgium, polluted sites have only been discovered more recently and important decisions concerning the clean up still have to be taken. From an economic point of view one can understand that it would be important to base a clean up decision on the previously mentioned balancing of marginal costs and marginal benefits. 29 The various costs of different modes of a clean up operation will in most cases be known. The benefits associated with these different clean up techniques on the other hand are not always that easily assessed. One difficulty in the calculation of the benefits is whether the future use of the site

29 See § 2.
can be taken into account when fixing criteria for clean up. Indeed, the question whether a site should be cleaned up, and to what level, may well depend upon the future use of that site. If for instance the future use is the construction of a factory and health risks are totally excluded, one may not insist on a highly costly clean up of that particular polluted soil. A total clean up might well be inefficient, given this future use. If, on the other hand, that particular site were to be used for vegetable growing in the near future, the potential health damage caused by eg pesticides might well outweigh the marginal costs of a clean up action. Therefore, from an economic point of view it seems to make sense to take into account the future use of a particular site when deciding upon a possible clean up. In that respect it would be interesting to examine the kind of criteria on which the administrative authorities base their decision to clean up. Can eg an administrative authority decide that a particular polluted site can only be used for certain industrial goals in the future and not for vegetable growing any more? A related question is whether an administrative authority could require a total clean up of a certain site eg merely for ecological reasons notwithstanding the future use of the particular site.

The reason why it seems efficient to take into account future use is that there is a relationship between the possible magnitude of the harm and the level of efficient care discussed above. The higher the potential damage, the more care will be required. The magnitude of the damage may well depend specifically upon the future use of the soil. Therefore, it seems useful to weigh the costs of clean up on the one hand against the benefits from reducing possible harm on the other hand, the latter also depending upon the future use of a site. Interestingly enough, this idea now also seems to be accepted in recent legislation concerning soil clean up. For instance in the Netherlands the classic “multifunctionality criterion” is now relaxed and in Flanders a new Soil Clean Up Decree provides a ground of excuse for the owner of a polluted site who is in good faith, ie who was not aware of the fact that the particular site was polluted.

7. Retroactive liability?

In the previous section we have already mentioned that a hot topic in the legal literature concerning liability for hazardous waste and clean up of polluted soils nowadays is whether liability should be applied retroactively.

A first point to be remembered in that respect is that in using the economic approach, deterrence efficiency is considered the main goal of accident law. Liability of an injurer therefore only makes sense if the liability is instrumental, ie to influence the injurer’s incentives to spend on care. All the arguments which one can often find in legal doctrine to justify the liability of a firm for the “clean up” costs based on the polluter pays and

30 An economist would of course also argue that an obvious alternative would be not to use that particular site for vegetable growing in the future any more.

31 According to art. 31 § 2 of the Soil Clean up Decree of 22 February 1995, there is no duty to clean up in the case of historic pollution if the user of the soil was in good faith (see DEKETING, M., “Aansprakelijkheid voor historische, nieuwe en gemengde bodemverontreiniging”, in Deketelaere, K. (ed), *Het decreet betreffende de bodemsanering*, Brugge, Die Keure, 1995, 135-142).
other vague principles are often only “deepest pocket”—arguments which do not comply with the economic model of accident law based on deterrence. 32 If compensation of damage is to be achieved, systems other than tort law are far more effective to reach that goal. One can think of private insurance mechanisms or collective insurance schemes such as compensation funds. 33 We shall discuss some of these compensation issues in § 9. Using liability law for compensatory goals often leads to an arbitrary decision to let the firms that can still be found and are solvent pay for the costs incurred by the government. 34 The arbitrary character of those decisions has been severely criticised in Dutch legal doctrine: it gives tort law more the nature of a lottery. 35

If one agrees that tort law should in principle not be used for compensatory goals but only to reach deterrence efficiency, the question is of course whether the exposure to liability would influence the incentives of the injurer. This question should not be answered by the knowledge we have in 1996, but by the knowledge the firm had or should have had at the time the pollution was caused. Under the negligence rule this means that the judge would have to examine whether it could be considered negligent for instance in 1970 to put certain toxic substances in the soil. But a strict liability rule should not automatically lead to liability either. For liability to have a meaningful influence on the incentives of the injurer the crucial question is whether it was reasonably foreseeable in 1970 that the action would cause damage 25 years later, taking into account the “environmental knowledge” firms should have had in 1970.

The importance of the foreseeability requirement has often been stressed in the law and economics literature: if ex post liability is to have an ex ante effect on the incentives of the potential injurer to take care, the latter should at least know that his behaviour can cause a certain damage, so that he can adapt his behaviour accordingly. 36 If persons are made liable merely on the base of the ex post knowledge that the emissions were harmful and on the need of the government to find funds to cover the costs of “clean up”, this finding of liability could never have influenced the incentives for prevention ex ante if the damages were not foreseeable. A liability without foreseeability therefore does not fit into a model of deterrence efficiency.

This does not mean, of course, that there should never be liability for harmful discharges of eg hazardous waste that took place in the past. The relevant question is whether at the time of pollution it was known that the waste could cause damage in

32 For a critical analysis of the polluter pays principle see Adams, M., “Das Verursacherprinzip als Leerformel” Jusriszentining, 1989, 787-789. This polluter pays principle is further analysed in Pozzo’s paper.


34 Also: Ward, J., Civil Liability for Soil Pollution caused by the Mismanagement of Waste in the European Community, A Comparative and Economic Analysis of Strict and Negligence Liability, University of Bristol, unpublished manuscript, 51.


the future. If this was known or should have been known the potential polluter should have taken measures to prevent this pollution taking place. Hence, a liability rule could have affected his incentives and therefore makes sense from an economic point of view. In some cases it might well be the case that even by the standards of 1970 a company should have known that simply discharging hazardous waste on a particular site without protective measures would cause damage in the future. In that case there would be liability, even by the running negligence standard of 1970. However, merely introducing a newly adopted strict liability rule and applying this retroactively could not have affected the incentives in a positive way, especially in cases where the damage was unforeseeable. The reason for such a legal rule would therefore not be deterrence but merely compensation. The question then of course arises whether it is fair to hold firms which have the bad luck still to be in business today liable for unforeseeable damage which they caused some 25 years ago where on the other hand many others will escape. The question whether the consequences should in that case fall on the shoulders of these firms or on society as a whole via the tax system is of course a distributional issue. The question of the moment from which it was reasonably foreseeable that the government would eg restore polluted soil and would try to claim the costs from the polluter will inevitably have to be decided in case law. In the Netherlands this gave rise to an interesting Hoge Raad decision, discussed in the paper by Bierbooms and Kottenhagen-Edzes. The foreseeability question inevitably arises in all legal systems dealing with environmental liability. One can also refer to the recent House of Lords decisions Cambridge Water Co. v. Eastern Leather PLC where liability was denied because the foreseeability requirement was not met in this case of historic pollution.

8. Differentiation and optimal specificity

Until now we have discussed the goals of environmental liability assuming a harmonised legal system would be applicable to all kinds of different situations. Obviously, the risk that harm will be caused through eg hazardous waste might well vary depending upon eg specific hydro-geological conditions. The propensity to accumulate will inevitably vary with local and hydro-geological conditions. This brings us to the argument that is often advanced by economists that in general environmental standards should not be uniform, but should be differentiated according not only to region, local needs and industry branch, but also the preferences of the public. Indeed, it is argued that in different regions citizens might have different preferences regarding

38 Journal of Environmental Law, 1994, 137 with case note by Ogas.
the appropriate trade off between environmental quality and industrial production. An argument for differentiation can also be found in the economics literature with respect to optimal specificity. This theory has been advanced in an Ehrlich/Posner article, but recently also in the work of Anthony Ogus.

We have already indicated that in environmental liability there are some obvious possibilities of differentiation as well, especially with respect to the decision to clean up. In that case it is relatively easy to assess the future use of a certain site and to take the decision to clean up in accordance with that use. In that case also the costs of differentiation might not be too high. Indeed, the literature also indicated that there is a trade off between the benefits of a detailed adaptation to location specific circumstances on the one hand and the increasing information, administrative and enforcement costs of such a differentiation on the other hand. The question is whether the benefits of particularisation outweigh their costs. Although in some cases information and administrative costs might be too high for a detailed differentiation, in many other cases location specific circumstances can be recognised relatively easily at low costs. The future use of a site is a good example. This leads to the conclusion that when the effectiveness of environmental law is assessed, the question one should also examine whether some kind of differentiation of legal rules, standards and criteria for liability is applied. As long as the benefits of this further differentiation outweigh their costs, the differentiation is obviously efficient.

There is another area where the choice between harmonisation and differentiation may play a role as well. This concerns the optimal level of government for legal rule making with respect to environmental liability. The question inevitably arises how environmental liability should be regulated in the European Community context. In answering this question, one should look at the now guiding principle for European action in the future; the subsidiarity principle. This states in Article 3B(2) of the Treaty, that the Community shall take action "only if and in so far as the objectives of the proposed action can not be sufficiently achieved by the Member States and can therefore, by reason or the scale of effects of the proposed action, be better achieved by the Community".

The question arises how this subsidiarity principle can be interpreted in an economic way. This question has been addressed in the recent inauguration address of the Utrecht law and economics Professor Roger van den Berg. Under the provocative title "Adieu

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Bruxelles?”, he shed light on the economic analysis of the subsidiarity principle. 44 Van den Bergh argues that one should start with the theory of Tiebout about the optimal provision of local public goods. 45 Tiebout argues that when people with the same preferences cluster together in communities, competition between local authorities will, under certain restrictive conditions, lead to allocative efficiency. Well informed citizens will move to the Community that provides the services that are best adapted to their personal preferences. Building upon this model, Van den Bergh argues that a similar point could be made in favour of a competition between legislators. Citizens would move (the so-called voting with the feet) to the Community that provides legislation that corresponds best with their preferences. Van den Bergh therefore argues that from an economic point of view decentralisation should be the starting point, since competition between legislators will lead to allocative efficiency.

However, there are certain conditions under which Tiebout competition will not work and which can therefore constitute arguments in favour of centralisation. The most important argument in favour of centralisation is the existence of trans-boundary externalities. If the externalities that have to be regulated, cross national borders, there may be an economics of scale argument to shift powers to a higher legal order that has competence to deal with the externality over a larger territory. A second argument in favour of centralisation is the so-called prisoners’ dilemmas. 45a This is the risk that “a race for the bottom” between countries would emerge to attract foreign investments. As a result of these prisoners’ dilemmas, countries would fail to enact or enforce efficient legislation.

Both arguments may play a role in favour of centralisation at the European level if one applies Van den Bergh’s criteria to environmental problems. 46 With respect to environmental problems, it can certainly be argued that they are often trans-boundary. The prisoners’ dilemma argument is often found as well. There it is disguised as the argument that the creation of equal conditions of competition is necessary for the functioning of the common market.

There is, however, probably a third reason for environmental action at the European level, which has to do with guaranteeing all Europeans a similar environmental quality. Sometimes this is referred to as the protection of the “European environmental and cultural heritage and human health”. If one looks at Tiebout’s theory of competition between legal orders, this “ecological heritage” reason for Community action seems rather weak. One can, however, see European intervention to guarantee a minimum environmental quality to all its citizens as a necessary consequence of the wish to realise a “Europe for citizens”. If the goal of the union is to create an ever closer union among


46 See R. Van den Bergh, loc cit, 345.

the people of Europe (as is stated in Article A of the Treaty), Brussels may argue that it wishes to guarantee all citizens a basic environmental quality.

A consequence is that if Europe indeed wishes to guarantee a basic environmental quality to all of its citizens, irrespective of their individual preferences, the way this can be realised, is to set harmonised quality standards at the European level and differentiated emission limit values at the Member State level. 47 This idea can be applied to quality standards for the soil or ground water as well. The reason for harmonised quality standards is obvious: if one accepts the idea that Europe should guarantee a basic environmental quality for all of its citizens, the legal instrument to reach this goal is the setting of quality standards to which the environmental components (such as ground water), no matter where they are within the union, should in principle correspond. However, the theory of optimal specificity has taught that the costs to reach a certain level of environmental protection may well vary with location specific circumstances. Therefore, as a result of different local circumstances the emission limit values to reach a similar environmental quality may well vary. In principle the differentiation of emission standards should be carried through as long as the advantages of further differentiation outweigh the administrative and information costs that are incurred with a highly detailed standard setting process.

9. Compensation issues

a. Introduction

Until now we have mainly looked at the problem of damage caused by environmental pollution from a preventive point of view. The question was raised as to how legal rules can be used to prevent damage. Legal rules, however, may aim both at an optimal prevention of damage and at an optimal compensation of losses if damage nevertheless occurs.

We will now turn to the compensation issue and ask the question how optimal compensation can be achieved. If tort law itself should be used for compensatory goals strict liability is a better solution than negligence. Indeed, only under a strict liability rule is a potential polluter in principle always bound to compensate the damage he caused by his actions. However, strict liability alone will not of course guarantee a compensation of the damage done, given the problem of insolvency. The amount of the harm caused can often exceed the individual wealth of the injurer, which makes him judgement proof. This will create a demand for insurance. However, it is well known that environmental damage is not always as such insurable. Problems often arise as far as the period of insurance coverage is concerned. Gradual pollution is sometimes uninsurable, given the fact that insurance is often seen as protecting only

against an accident, a sudden loss. Therefore, in many legal systems it has been questioned whether compensation for environmental damage should be provided through compensation funds. In this respect of course the United States Superfund, which has led to a lot of criticism, is well known. Also in several European legal systems pleas can be heard in favour of installing compensation funds to cover environmental damage. In the Netherlands this has been proposed in the literature and in Flanders an Interuniversity Commission for the Reform of Environmental Law recently proposed the introduction of a compensation fund as well.

In this paper, dealing with the economic analysis of environmental liability, I will briefly address the usefulness of compensation funds, especially in comparison to classic insurance instruments.

b. Prevention and distributional effect

An important point to remember is that no matter how a compensation system is organised, either through private insurance or through a compensation fund, the incentives for prevention of damage should always remain untouched. As a consequence the costs of harmful behaviour should as far as possible be attributed to the one who caused the harm. Second, as far as possible a system of risk differentiation should be included in the financing of a compensation system as well. This means that in principle bad risks should contribute more to a compensation system than the good risks. These principles of risk differentiation are essential for the functioning of insurance markets, but should be applied if a compensation fund is installed as well. Third, in addition to this efficiency aspect, meaning that the way a compensation system is financed should have a positive influence on incentives to prevent the damage occurring, a compensation system should also avoid a negative redistribution. This means that in principle the compensation mechanism should be financed principally by the ones who really contributed to the damage and not by others.

c. Funds versus insurance for future loss

To discuss the question whether compensation for environmental damage should be provided through a fund or through insurance mechanisms, we should first focus on what the difference between both compensation mechanisms is as far as future losses are concerned. Apparently the current debate focuses mainly on the question whether

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compensation funds should be used for damage that has already occurred in the past. Before focusing on this retroactivity problem, let us first have a look at the difference between insurance and compensation funds if one wishes to introduce some kind of a compensation guarantee for future loss. It seems fair to argue that some kind of a regulatory intervention is necessary in that respect since it is quite likely that environmental damage might outweigh the individual wealth of an injurer, which justifies the question how compensation for eg soil clean up can be organised.

Discussing the matter in abstracto, there are not as such many reasons why a compensation fund would provide better protection against insolvency at the same or lower costs than the private insurance market. Obviously such a comparison is only possible if one assumes that insurance markets are perfectly competitive. In the absence of competition on insurance markets, either the supply of insurance coverage might be too limited or premiums might be excessively high which might justify a preference for a compensation fund. 52

Obviously such a comparison not only depends upon the characteristics of the insurance market one analyses but also upon the type of compensation fund under discussion. In most cases one immediately thinks of a compensation fund run by a government or regulatory authority. If that is the case, one can of course refer to the literature on the negative effects of bureaucracies to argue that a government operated compensation fund would not necessarily provide compensation at lower costs than the private insurance market. One can also not see why classic insurance problems such as moral hazard and adverse selection would better be dealt with through compensation funds than through the private insurance markets. The effective control of moral hazard supposes adequate information on the risk run and the charging of a corresponding premium or financial contribution to the fund. This supposes that the agency or the insurer who charges the contribution or premium has adequate information on the risks posed by the particular contributors or insured. As such again one can not see why as a matter of principle a government agency running a compensation fund would have better information on risks than an insurer. Indeed, insurers are essentially traders in risk. The costs of risk spreading might be lower with an insurance company than with a compensation fund. Insurers are indeed specialised in methods for acquiring information on differentiation of risks. In addition, it has been argued in the literature that insurance provides for a reduction of transaction costs between contracting parties, because parties can ex ante agree on a distribution of risks and losses in the case of an incident. 53

There are, however, certainly cases where one could argue that it might not be that easy for an insurance company to acquire information on risk. Especially concerning very technical matters, manufacturers or operators of certain facilities might be in a much better position than an insurance company to monitor each other. This point has been made for instance concerning compensation for nuclear damage. There, one could


argue that a risk sharing agreement between nuclear power plant operators could lead to an optimal monitoring between the operators since they possess much better information on prevention and good and bad risks than an insurance company would. Also in maritime insurance the so-called protection and indemnity clubs which are based on a mutual risk sharing between tanker owners play a crucial role. Therefore, one could argue that with respect to these highly specialised matters the operators themselves might in some cases be more suited than an insurance company to control the moral hazard problem since they are better able to process information on that particular risk. However, even with the examples mentioned, the private insurance sector still plays a role e.g. through re-insurance. In addition it should be mentioned that with the given examples of risk sharing agreements no use is made of a government run compensation fund. The advantages of a risk sharing agreement by e.g. hazardous waste facility operators (information advantage) would not of course apply to a government run compensation fund.

In addition to the moral hazard problem one could address the adverse selection problem. It could be argued that a mandatory contribution to a fund avoids the adverse selection problem since both the good risks and the bad risks are forced to join the fund. This argument, however, does not answer the question why, if one considers mandatory contribution as a solution to the adverse selection problem, this should be preferred to another option, i.e. compulsory insurance. Although compulsory insurance might have disadvantages as well, one advantage is that one can use an already existing insurance market whereby only the demand for insurance will be made compulsory. In the end the costs of compulsory insurance will probably be lower than the costs of a totally new bureaucracy associated with the creation of a compensation fund. However, both options only become an issue if other mechanisms to control the adverse selection problem have failed. The first answer to adverse selection advanced in the literature is an optimal risk differentiation. But this again supposes that there is information on the risk.

d. Failing insurance markets?

From the analysis above it follows that as such there are only few arguments that can be made in abstracto in favour of a compensation fund instead of private insurance markets. Indeed, if comparative insurance markets can provide an adequate solution

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for the insolvency problem, there seems to be little justification for regulatory intervention to create a compensation fund. Discussions concerning compensation funds will therefore mainly arise in cases where private insurance markets fail. This might be the case because of a uncontrollable moral hazard problem or because insurance is impossible for technical reasons. One always has to analyse the reasons why insurance markets fail and then ask the question whether a compensation fund does indeed provide a remedy for the failure that has been established. If eg moral hazard caused by information problems is the reason for un(insurability), the question arises whether a compensation fund is the appropriate remedy. Also in that case for the fund to be efficient the agency will have to distinguish between good and bad risks and differentiate the contribution to the fund accordingly. Again the question arises why a fund would possess better information than the insurance companies, unless it is run by operators who themselves have something at stake. That will of course give them an incentive for an optimal control of the fellow contributors.

Technical difficulties relate especially to the risks whereby a large time lapse occurs between the moment of exposure to the risk and the moment that the damage occurs. These latency problems related to so-called long tail risks cause many insurers great worries since they might be confronted with claims even years after the insurance policy has expired. Insurers seek to overcome some of these technical difficulties eg by proposing a so-called "claims made" policy, meaning that the claim to the insurance company should have been made during the period of insurance coverage. This obviously does not provide that much coverage and protection to the insured which led eg the Belgian legislator initially to prohibit these claims made policies. Also in other legal systems claims made policies are looked at with great scepticism by the legal community. These problems might indeed lead to uninsurability of certain long tail environmental risks. This might make classic insurance less suited to cover long tail environmental risks. But even if one considers installing a compensation fund for long tail risks such as damage caused by environmental waste, one should still be able to charge contributions in relation to the risk posed in order to avoid the moral hazard problem and to avoid a negative redistribution. The German example of compulsory environmental insurance, discussed by Pozzo, also shows that environmental risks are not necessarily uninsurable in all circumstances.

e. Funds for "old diseases"

In political discussions nowadays compensation funds are mostly advanced as a solution for damage that occurred in the past and for which no "deep pocket" can be

37 See H. COMBEY "‘Païta Re‘: een kostbericht over de wijzigingen van de gewijzigde wetgeving inzake verzekeringen", Tijdschrift voor Belgisch Handelsrecht, 1995, 470-471.

38 Indeed one can notice in some legal systems that private insurers withdraw from the pollution market altogether. This is according to Boeken largely the case in Belgium (see BOEKEN, H., "La Réparation des Domnages causés par la Pollution en Droit Belge. La Situation en 1992", Tijdschrift voor Belgisch burgerlijk recht, 1992, 284-327; BOEKEN, H., "L’Assurance Responsabilité Civile pour Domnages Caused par la Pollution", in Les Assurances de l’Entreprise, Actes du Colloque tenu à l’Université Libre de Bruxelles les 2 et 3 décembre 1993, Brussel, Bruyant, 1993, 239-280).
found. The American Superfund is an example of such a compensation system which is financed with contributions today for harm that occurred in the past. Installing a compensation fund and using it for damage that occurred in the past creates a double risk, i.e. that the principles concerning both efficiency (prevention) and distribution (fair compensation and payment by the contributor to the damage) will be violated. The two problems are obviously connected. The crucial question concerning a compensation fund is of course who should pay the contributions to the fund. Indeed, those persons’ incentives will also be affected. This immediately creates the problem that one is confronted with damage that has been caused in the past, for which apparently no responsible party or insurer can be found any more today. Therefore, a compensation fund often leads to contributions by parties other than the ones who originally caused the damage and whose incentives therefore needed to be influenced. In other words: no matter how a financial contribution to the fund for “old diseases” is organised, it will never be able to have a positive preventive effect, since the person who caused the harm will not be the one who contributes to the fund. If that person was known and solvent there would indeed be no need to install a compensation fund in the first place. Therefore, such a “retroactive compensation fund” cannot serve preventive goals. In that respect we can also refer to the discussion of retroactive liability in general in § 7.

Moreover questions from a distributional point of view are also raised if one considers the question who should contribute to a compensation fund. In general several options are open. An ideal first possibility would be to have the compensation fund financed by those who caused the harm in the past in the first place. However, in many cases it will not be possible to identify them or they will be insolvent. These were exactly the reasons for installing the fund. A second possibility which is often heard, is to ask for a contribution to the fund from those who are nowadays engaged in activities similar to the ones that caused harm in the past. This might seem fair at first blush. However, this has the disadvantage that firms will have to pay now although they might be acting in good faith and strictly obeying the current requirements of the legislation. Why should the current operators as such have to finance problems that have been caused by their competitors in the past? A third “deepest pocket” argument that is sometimes advanced, is that insurers should in general contribute to the fund. Again this could be limited by forcing only insurers of operators who exercise similar activities to the ones who caused harm in the past to finance the fund but this seems to run contrary to fundamental principles of insurance. Indeed, an insurance organisation does not, as such, have capital of its own that it can simply distribute to e.g. a fund. An insurance company only manages funds that it has received from its insured via premium payments for a future loss. The deepest pocket approach that would force an insurance company to contribute to the fund would therefore directly harm the current insured. It could inevitably lead to a premium increase for the insured today. No matter which option one chooses, there will always be negative distributional consequences. There will always be innocent contributors who did not cause the harm in the first place. If at the political level one chooses to provide this specific form of victim protection via a compensation fund, it seems more reasonable to share the costs of these “old diseases” via the tax system over the population at large. Thus the negative distributional consequences can be kept as low as possible.
f. Funds as solution for all problems?

One cannot escape the impression that within certain circles compensation funds are advanced as the miracle-solution for all problems of financing damage caused by hazardous waste. If one takes a closer look at these funds, however, especially at the financing mechanism, it seems that exactly the same problems that arise with insurance will arise with compensation funds as well. Therefore, up until now not many Western European legal systems have used compensation funds as an alternative to classic compensation mechanisms such as insurance. Until now funds are only used in cases where there is no insurance coverage available or if eg an insurance company has gone bankrupt. Therefore, most systems still rely on classic tort liability covered by private insurance, supplemented with compensation funds where necessary. In that case compensation funds function more as a guarantee fund and do not completely replace the private insurance system.59

Sometimes, compensation funds are also advanced for the wrong reasons. Indeed, sometimes the reasons why adequate compensation, eg for toxic torts, is lacking, do not have to do with failing insurance markets, but with problems within the liability system. One obvious example that often leads to under compensation of victims is causal uncertainty. All problems concerning causal uncertainty would be avoided if a fund could compensate anyone who had a certain disease (eg cancer) and no proof of causation was required. If that was the solution, the first question would of course be whether this was just and secondly it would negatively affect the incentives for prevention. Therefore, once more one can note that many of the problems of the liability system will arise with compensation funds as well.

10. Concluding remarks

These concluding remarks can be short. Indeed, this paper on economic aspects of environmental liability was merely presented as an introduction to the other papers. The reader will therefore largely have to draw his own conclusions after reading the subsequent papers that deal with specific aspects of the law in various legal systems. Nevertheless, in this paper an attempt was made to look at various aspects of environmental liability that inevitably will play a role in any case that a judge has to decide or with every statutory provision that has to be fixed by the legislator. It was shown how cost benefit analysis can be used in environmental law in general and in environmental liability more specifically. It was also shown how some of the economic approaches towards eg the standard setting problem can be found increasingly within the legal system as well eg through notions such as BATNEEC.

To a large extent special features of environmental liability law have found their origins in international conventions. For instance, the strict liability rule, combined with financial caps and a channelling of liability found its origin in the international conventions on nuclear accidents and oil pollution. One of the advantages of using the economic analysis of law to address problems of accident law is that the specific functions of accident law, deterrence and compensation, can be distinguished. Looking at these two functions we have argued that from an economic point of view strict liability should not be proclaimed so much for reasons of compensation, but rather for its superior deterrent effect. This, however, at the same time supposes that strict liability does not limit compensation to a certain amount, as is often the case in the traditional international conventions. Such financial caps could, moreover, be criticised not only from a deterrence point of view, but also looking at the compensation issue. With caps victims can hardly be guaranteed full compensation.

Special attention was given to efficiency considerations related to current debates concerning liability for clean up costs and clean up decisions. Since these usually concern cases of historic pollution, the question inevitably arises whether liability should be imposed in a retrospective way. That question clearly illustrates the dilemma between deterrence and compensation. Retroactive liability makes no sense from a deterrence point of view since this can never affect the future incentives of the particular polluter. Liability could be defended on compensatory grounds, but then the question arises whether it is just to inflict the costs of historic pollution only on the few entrepreneurs who can still be found today.

Compensation issues were more particularly addressed in § 9 which was to a large extent devoted to the desirability of compensation funds. Given the huge problems that environmental liability is facing nowadays, many have rightly argued that environmental liability will not be able to cope with the huge costs involved with, eg, cleaning up all the so-called blackpoints. It is often argued that therefore compensation funds will have to be installed to finance these clean up operations. However, if one believes that a contribution to the fund should only be asked from those who contributed to the risk (which could be defended both from a deterrence and from a distributive point of view) it does not seem that clear that compensation funds will better be able to deal with the many problems related to eg causal uncertainty than liability and insurance. Compensation funds will undoubtedly play a supplementary role in compensating environmental damage, but it seems highly doubtful that they can completely replace the liability system.

One advantage of the economic analysis of law is that the problems related to environmental liability can be analysed in a more abstract way without focusing on the specific solutions in the various countries. Obviously the economic methodology is not the only way in which legal problems can be analysed, but, as I hope to have shown, is certainly a highly useful additional tool. By focusing more on general problems that are common to all legal systems instead of focusing on specific details of one particular legal rule an attempt can be made to construct an environmental ius commune. This being said, the question also arises whether, in addition to this growing ius commune through case law and international conventions, there should be an explicit task for Europe with respect to environmental liability. So far the activities with respect
to liability law have been rather modest. This can be understood since the scope of liability is traditionally very much related to national legal culture. Given subsidiarity, the Commission should also analyse the extent to which it should regulate environmental liability now that new legislative actions at the European level following the Green Paper on Remedying Environmental Damage have been announced. In that respect the analysis provided in § 8 discussing the subsidiarity principle from an economic point of view might well be a source of inspiration. This teaches that Union wide quality standards could be set eg for ground water, but that emission limit values may well depend upon the local hydro-geological conditions and should therefore be differentiated. It is equally questionable whether a full harmonisation of environmental liability law is indeed needed. Perhaps it is more useful to respect differences in legal cultures and to try to search for common roots and principles within these various cultures. I hope to have shown that law and economics may be a useful methodology in the search for these common principles.