Financial Assurance Issues of Environmental Liability

Report

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Reading Suggestion

An Executive Summary of the main conclusions of the report is provided before the Table of Contents. The reader will find the most important arguments and the relevant policy conclusions summarized in this Executive Summary.

The reasoning behind these policy recommendations are given in the main report, which consists of 9 chapters. Chapter 1 contains the introduction and a justification of the methodology used. Chapters 2-3 discuss the principles of liability and safety regulation, as well as the possible defenses, from an economic perspective. Chapter 4 provides a brief insight into the environmental liability system of a few legal systems. Chapters 5-9 deal with the core of the financial assurance issues, being insurability of environmental harm and alternatives to liability insurance. Hence, the reader who is mainly interested in the financial assurance issues could go directly to chapter 5.
Executive Summary

§ 1. Efficiency of the white paper liability regime

A. Importance of some theoretical principles

In this summary we should obviously try to answer the questions which constituted the starting point for this study being first of all whether the environmental liability regime as proposed in the white paper can be considered as insurable and second how the insurability of this liability may be increased if other financial arrangements would be used than traditional liability insurance.

In most of the chapters which address various aspects of these questions we provide some conclusions and indicated the importance for the regime proposed in the white paper. Hence, we can partially refer to the conclusions presented there and be brief here.

The first chapters (2–3) provide the theoretical foundations for environmental liability. We believe it to be important first of all to outline the functions of environmental liability from a theoretical point of view. This provides not only some insight into the efficiency of the regime proposed in the white paper. It is also essential to have some insight in the function of liability rules in the deterrence of environmental harm to be able to assess the effects of financial security arrangements. Indeed, to some extent financial security arrangements will dilute the preventive effect which tort liability is supposed to have. Some basis insight into the function of liability rules is also useful when specific features of liability rules which are sometimes defended on insurability grounds, such as financial caps on liability, are examined.

B. Mitigated strict liability rule

Our assessment of the regime proposed in the white paper indicates that this regime corresponds to a large extent with the theoretical foundations, which are sketched in the report and can hence be considered efficient. The reason is that the white paper does not impose a general strict liability rule for any type of environmental harm, but comes with a balanced proposal to limit the strict liability rule to specific types of activities which are considered to be dangerous. Moreover, the White Paper proposes a contributory negligence defence to cope with the victim’s care if the damage-situations concerned were considered bilateral. However, a final assessment of the proposed regime is obviously not possible since some of the specific features are not known yet. But in general, from the perspectives offered in this study, we can only recommend to continue to follow the lines chosen so far in the white paper of limiting the strict liability regime (with contributory negligence) to dangerous activities, or at least for activities where one can assume that the influence of the victim on the accident risk will be relatively small (so called unilateral accidents). Even if accident situations are bilateral (and thus a contributory negligence defence should be added to the strict liability rule), strict liability remains the preferred rule in case of dangerous activities. There the injurie’s influence on the risk can be considered more important than the victim’s. The reverse may be true in case of bilateral
accidents caused by non-dangerous activities. In those situations the White Paper rightly prescribes a fault-based liability.

C. NO RETROACTIVITY

The same is true for the starting point in the white paper that the new environmental liability regime should not be retroactive. If one believes, as the white paper apparently does, that environmental liability should have a positive effect on incentives to prevent damage, this is a principle to which the European policy maker should certainly stick. There are, in addition, a few other recommendations concerning the structure of environmental liability which are largely related to the insurability of the risk, to which we will come back below.

However, our conclusion that a non retroactive strict liability for environmental damage caused by dangerous activities seems efficient holds only in case the potentially responsible party has money at stake to compensate for the losses he causes and hence no insolvency problem arises. If, to the contrary, the defendant would show to be judgement proof a solution for this insolvency problem should be sought since otherwise strict liability could lead to underdeterrence (and obviously to undercompensation as well). Moreover, even if, from a deterrence perspective, a retrospective liability is rejected, the policy maker still might want to think about additional financial arrangements to cover these "sins of the past". If these are lacking one cannot escape the tendency of judges (and legislators) to (inefficiently) hold polluters today liable for damage caused in the past. Such a tendency can only effectively be avoided in other financing mechanisms are available to provide compensation for historical pollution. This study, however, does not deal with the question how compensation should be provided if there is no liable responsible party.

D. DEFENSES

Since liability should only be used if it can affect future incentives we found that a variety of defenses could play a role in environmental liability:

- the defense of force majeure could generally be accepted in cases where it can be shown that the polluter's behaviour could never have influenced the accident risk;
- a contributory or comparative negligence defense should be added to the strict liability rule to provide the victim with incentives to preventive measures as well;
- following regulation or the conditions of a license (regulatory compliance defense) should as a general rule not exclude from liability, unless in exceptional circumstances;
- a development risk defense should, as a general rule not be accepted since liability for development risks might positively affect incentives to obtain information on optimal precautionary measures; however, the policy maker should be careful that the liability for the development risk does not become a retrospective liability "in disguise" whereby in fact the contents of the liability rule has changed;
- a "first use" defense will generally not be accepted unless in cases where the "coming to the nuisance" might be judged as contributory negligence of the victim;
finally we found no reason to exclude or mitigate the environmental liability regime proposed in the white paper for small and medium sized enterprises.

§ 2. Insurability of the white paper liability regime

A. "Willingness to Insure" is Decisive

Let us now turn to the central question of the study, being whether the liability regime proposed in the white paper is insurable. The report indicates that it is difficult to provide a firm answer to that question since it depends on a lot of variables and most of all since it is difficult to answer this question merely in a theoretical manner. Finally it will be the insurance and financial markets which will decide in practice whether they are willing to provide coverage for a certain risk. Insurability is therefore ultimately the "willingness to insure" of the financial and insurance market. Taking into account this limitation, nevertheless some observations can be made on issues which influence the insurability. Thus it becomes at least possible to indicate how e.g. the (European) policy maker can take action to facilitate the insurability.

B. Predictability

One key issue to determine the insurability of environmental liability is whether the scope of liability is determined with enough certainty to make the risk predictable and thus insurable. At this stage it is questionable whether a liability for a vague notion such as damage to biodiversity can be considered as predictable. However, the report indicates that the white paper provides for several features to increase this predictability, which seem to align with practices in some member states. Insurance practice showed that liability for the issues covered under the white paper are today usually insured as "remediation costs". The scope of remediation costs may to some extent be better predictable than a rather vague notion as "damage to biodiversity". However, the white paper applies to contaminated land as well and in that respect insurance practice in many countries has obviously shown that remediation costs for polluted soils are insurable.

A point of worry remains the fact that the proposed regime will come on top of existing national regimes, which may endanger the legal clarity necessary to make the risk insurable. In that respect the subsidiarity issue, briefly touched upon in the introduction (chapter 1), becomes important. The white paper proposes an additional combined fault / strict liability regime, precisely for those areas where member states would not have issued liability rules yet. This cautious approach may, however, lead to an increasing complexity of the legal regime applicable to a specific case.

C. Advice to Insurers

The report notices that the insurability of environmental liability can to a large extent be influenced by insurance practice. In that respect recommendations can be formulated to insurers on how to increase the insurability of environmental liability and to limit their own exposure to risk. These advises, which are developed chapter 5, are relatively straightforward:
- control moral hazard effectively;
- reduce adverse selection;
- apply an effective risk differentiation and
- provide coverage of the environmental risk on a "claims made" basis.

D. ADVICE TO THE POLICY MAKER

However, there are some recommendations which can be formulated to the policy maker (and which are thus relevant for a future European environmental liability regime) since these features may influence the insurability of the liability risk:

- be cautious with a shift of the burden of proof as far as causation is concerned;
- if the risk of causal uncertainty is shifted to responsible parties there is a threat of uninsurability;
- the same risk exists with the use of joint and several liability systems; a policy maker wishing to increase insurability should avoid joint and several liability;
- obviously retrospective liability should be avoided; this is not only inefficient from a deterrence perspective, but may equally be uninsurable;
- allow a claims made coverage of the environmental risk.

The reasons for these recommendations are obviously given in the specific chapters. If these conditions are met the question which constitutes the starting point of the study, being whether environmental liability is insurable, could be answered positively.

In any case the legislator should not introduce financial caps on liability with the argument that these would be necessary to increase insurability. Caps are not necessary to increase insurability, since insurers could put themselves a financial limit on liability; caps may lead to underdeterrence, undercompensation and violate the polluter pays principle. Hence they should in principle be avoided in a future environmental liability regime.

However, even though theoretically all the conditions for an optimal insurability of environmental liability could be met insurance doctrine has indicated that in many countries (such as in Belgium) the environmental liability market is still relatively weakly developed. There are still no sufficient statistics to accurately assess the risk and the large numbers, necessary to avoid adverse selection may be lacking, simply because of a lacking demand. A lacking demand for coverage for environmental risks may to some extent be due to information deficiencies: potentially responsible parties may not be sufficiently aware of the risks of the possibilities of financial coverage. Hence they may underinsure and the judgement proof problem as a result of insolvency will still arise. This inevitably poses the important question at the policy level whether an obligation to seek financial security should be imposed upon potentially responsible parties. This question has to be answered in a very balanced manner for the simple reason that theoretically the arguments in favour of such a duty are strong, but there may be many dangers, loopholes and practical problems. The theoretical case is relatively
simple: without a financial security against insolvency strict liability may lead to underdeterrence. Insolvency indeed poses larger problems under strict liability than under negligence. We would therefore not support the proposal made in the white paper not to impose an obligation to have financial security yet, in order to allow the necessary flexibility as long as experience with the new (strict liability) regime still had to be gathered. From a theoretical perspective one could make the case that a strict liability regime should not be introduced without financial guarantees if a serious insolvency risk emerges. If prevention of damage were the goal of a liability system in that case it were better to opt for a negligence rule. Hence, we believe that the desirability of a strict liability rule decisively hangs upon the availability of financial security. Simply trying the new strict liability regime and wait for financial and insurance markets to develop the necessary mechanisms to provide security seems like a dangerous route to go.

If one believes that the liability regime proposed in the white paper should be strict (and we believe that there are strong reasons in favour of that statement) then the strict liability regime should be combined with some kind of obligation to provide financial security if one can assume that a insolvency risk may emerge. However:

- this financial security should not necessarily be liability insurance;
- the policy maker could indicate that a wide variety of mechanisms may be used to provide this financial security;
- the type of financial security provided should not be regulated in a general matter, but its adequacy may be assessed e.g. by the administrative authorities who can require financial security as a condition in the license;
- at the same time the administrative authorities can equally determine the required amount of financial security on a case by case basis;
- there should certainly not be the introduction of a duty to accept risks on liability insurers, since this may have negative effects on the control of moral hazard;
- the administrative authorities imposing such a duty to provide financial security should make sure that sufficient varieties of financial securities exist on financial and insurance markets in order to avoid that governments or administrative authorities would become dependant upon the financial or insurance industry, which would then effectively become the licensor of industrial activities;
- the proposed regime corresponds with the proposals made by the Interuniversity Commission in the Flemish Region. These proposals were promulgated as the result of information provided by insurers and the regime moreover applies in the Flemish soil pollution decree. Hence, there is some empirical evidence which shows that such a balanced and mitigated obligation to provide financial security in limited cases may work effectively.

§ 3. Alternative financial arrangements

The second major question put forward in this study is whether other financial arrangements could be advanced, other than traditional liability insurance, to cover damage caused to biodiversity and natural resources. This question is a crucial one, in the light of the findings above, being that:
strict environmental liability with an insolvency risk is only efficient if the insolvency problem can be cured through financial security;
- the development of the liability insurance market in some countries is still weak and
- the policy maker might not want to become too much dependent upon the liability insurance market.

This hence justifies the question whether alternatives are available. Although many alternatives, such as using capital markets, could be developed theoretically, the report addresses a few alternatives with which there already have been positive experiences today:

- the Dutch experience with environmental damage insurance shows that effective compensation can be provided in a better way through first party insurance than through liability insurance. Although the scope of coverage of this policy evidently depends upon the insurance contract the reactions of the industry so far and the first experiences seem quite promising.
- risk sharing agreements by operators may provide better results if either capacity on insurance markets is limited or if it can be assumed that information necessary to optimally control risk (and moral hazard) is better available with operators than with insurers. Some experiences with larger risks (oil pollution and nuclear liability) have shown that these risk sharing agreements may in some cases provide better results than traditional liability insurance. An advantage of these alternative arrangements is, moreover, that one does not necessarily need adequate information on the predictability of the risk \textit{ex ante}, provided that an adequate monitoring is possible.
- finally a variety of arrangements provided by financial markets could be used, such as \textit{ex ante} guarantees and deposits into an environmental savings account. Again, the proposals by the Flemish Interuniversity Commission seem quite interesting in that respect since they allow for a variety of financial instruments which could be used by the operator to meet his duty to provide financial security.

This balanced approach once more shows that at the policy level it does not seem appropriate to make a decision in favour of either of those instruments. It seems more appropriate to taken into account the existence and working of all of these financial and insurance institutions and to give administrative authorities the task to assess whether the financial security offered will be effective to guarantee that money will ultimately be available when it will have to be used, i.e. when environmental damage appears. The latter remains obviously a crucial issue and is according to the report a major weakness with so called self-insurance schemes. These can obviously be used (and often have tax advantages, if the legislator provides so), but ultimately there should be control that the money put in these reserves can be set aside and used exclusively for the goal for which the reservation is made, being the remediation of biodiversity damage or soil pollution.
§ 4. Environmental damage without liability

All of these alternative financial arrangements, which have been examined in the report, assume that these instruments will be used to assure the environmental liability as proposed in the white paper. This obviously proposes that there is a victim (or government) who can bring a liability claim against a liable polluter. However, it is well known, that in many cases of pollution these conditions will not be met:

- if the damage is caused through biodiversity, natural resources or sites on which no individual property rights apply the question will arise who has standing to file a claim in tort.
- in other cases there may be harm to individualized property but there may not be a responsible party, because the damage is not caused by an identifiable polluter.

Moreover, one should remember that notwithstanding all the possibilities of wonderful financial arrangements, there is still always the risk that financial resources will be lacking to cover the damage. It should not be forgotten that this risk is, moreover an important downside of the approach chosen in environmental liability insurance today as far as the coverage in time is concerned, being claims made. It is argued in the report that only a so called claims made policy adequately protects insurers against long tail risks (and even then only to a certain extent). The downside from the victim’s or society’s point of view is obviously that the essence of a claims made policy is that after the period of cover expires there will (with a few limited exceptions) indeed be no coverage any longer. The report indicates that this may lead to cases where insurers terminate an insurance policy fearing that it would amount to claims in the future. If the particular insured cannot find a (claims made) policy with another insurer and e.g. would go out of business because of lack of insurance coverage in the end there would be no cover and the old insolvency problem still remains.

In sum, there may still be a number of cases (probably even many) where there is damage of the type described in the white paper, but no possibility to secure financial compensation from a responsible party. The report argues that particularly for these cases compensations funds, described in the last part of § 9 of the report might be a solution. These specific cases were obviously not the subject of the study, since the study was limited to the question whether the environmental liability in the white paper could be assured. However, the examples show that by merely providing financial security for environmental liability, only a part of the problem is dealt with. Moreover, the report has indicated at many instances that if no financial security regime is worked out for these other cases (where there is no liability or no financial security) there is always the risk that environmental liability would be enlarged to provide coverage also in cases where it could be argued that this runs counter to the economic principles sketched in chapters 2-3. In other words: to avoid such an "abuse" of environmental liability, or more politely, to avoid that judges or legislators would tend to wrongly enlarge the scope of environmental liability, it seems necessary to provide a financial security system also for the cases where environmental liability does not apply. Only then one can have a guarantee that environmental liability will only be used in such a way that it can fulfil its functions of effective prevention and compensation.
§ 5. Influence of competition policy

Finally the report indicated that to increase the insurability and capacity of financial compensation a co-operation between insurance undertakings or industrial operators will be necessary. This is for instance the case for:

- the co-operation between insurers to acquire adequate and reliable statistics on risks;
- the co-operation between insurers to create a larger capacity via e.g. pooling.

Whereas one could argue that these types of co-operation may endanger the competition between insurance and financial institutions the report indicated that most of these practices are exempted in commission regulation 3932/92 of 21 December 1992. A recent commission report of 12 May 1999 on the application of this convention makes clear that an exchange of information between companies is certainly allowed. Also as far as pooling is concerned the commission noticed that pools are allowed when they are necessary to allow their members to provide a type of insurance they could not provide alone. Thus the European competition policy strengthens and encourages the possibilities to increase the insurability of the environmental risk.

However, allowing increased co-operation between insurers always has a downside as well. There will always be the risk that through an effective organization the insurance or financial sector might act as an effective cartel. One downside of this is that it becomes difficult to acquire reliable information e.g. on financial capacities to insure. The report does not argue that this should lead to the conclusion that the policy maker should not co-operate with the financial or insurance world to acquire information on assurability of environmental liability. However, it shows that the policy maker should always be aware of this risk and hence, as far as possible try to acquire adequate and reliable information on a competitive market.
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List of Abbreviations

AVB : Aansprakelijkheidsverzekering voor bedrijven (Liability Insurance for Companies in The Netherlands)
BEF : Belgian Francs
CBA : Costs Benefit Analysis
CEA : Committee Européen des Assurances
D. : Dalloz (France)
IPPC : Integrated Pollution Prevention and Control
M&R : Milieu en Recht (The Netherlands)
MAS : Milieuverzekering samenwerkingsverband (Environmental Liability insurance pool in The Netherlands)
MSV : Milieuschadeverzekering (Environmental Damage Insurance in The Netherlands)
TMA : Tijdschrift voor Milieu-aansprakelijkheid (The Netherlands)
TMR : Tijdschrift voor Milieurecht (Belgium)
TPR : Tijdschrift voor Privaatrecht
Chapter 1  Introduction

§ 1.  Purpose of this study

This study will try to achieve the two main goals, identified in the technical annex, being:

1. first, an analysis will be provided of how a liability and insurance regime (such as sketched out in the white paper on environmental liability) should be structured to provide an optimal assurance of environmental liability;

2. Second, a further analysis will be provided of other financial arrangements that could be advanced, other than traditional liability insurance to cover damage caused to biodiversity and natural resources.

§ 2.  Focus on the white paper

An important limit of this study is that the issue of compensation of environmental damage will be analysed, taking the recent white paper on environmental liability as a starting point. This means that the options taken in the white paper (such as a limited regime of strict liability, combined with the negligence rule) will be taken as given. Obviously, attention will also be paid to the question how this regime will affect the insurability of environmental damage, but on the other hand we will not discuss the insurability of the environmental risk totally in the abstract, as if the white paper were non-existent. If, however, our study would indicate that some of the options taken in the white paper might make the insurability of environmental damage more difficult, whereas alternative solutions would not, this issue will obviously be addressed.

A consequence of the focus on the white paper is – inter alia – that the insurability issue will more specifically be addressed with respect to damage caused to bio-diversity and natural resources. Moreover, also the insurability of damage caused as a result of soil contamination will be examined, since this issue is also explicitly covered in the white paper. In addition, many of the crucial issues concerning the insurability of environmental liability have been elaborated in the Technical Annex to the tender for this study. Hence, we will often refer to this Technical Annex and we have included it in annex to this study as well.

Since the main goal of our study is to examine the financial assurance of an environmental liability regime, such as sketched out in the white paper, we will primarily address the question how liability can be covered and not primarily how environmental damage can be compensated for. A consequence of the focus on environmental liability, as the white paper does, is that we will generally assume that a liable tortfeasor can be found who in principle has tortfeasor compensate the damage. We will only briefly address alternative regimes, such as compensation funds to cover environmental damage, mainly as an alternative for liability and traditional liability insurance.

1  We will use the official version which has been printed by the Commission and refer to it in footnotes as 'white paper'.

1
For some issues we will also address the proposal, made as the predecessor to the white paper, the green paper on remedying environmental damage. The green paper is interesting since at some points the approach taken there differs from the approach chosen in the white paper.

§ 3. Methodology

A. Comparative Law

Various methods will be used to shed some light on the insurability of environmental liability as sketched out in the white paper. First a traditional comparative legal analysis will be used to examine how some countries, such as the Netherlands, Belgium, France, Germany and Sweden have dealt with the insurability of environmental liability. In that respect we will briefly analyse whether the scope of environmental liability in those countries was – inter alia – based on insurability arguments. Issues that will be addressed are:

- The liability regime for environmental harm (negligence, strict, retroactive?);
- The existence of financial caps;
- The question whether compulsory insurance requirements or other financial conditions have to be met.

Moreover, more information will be given with respect to two legal systems, more particularly the Netherlands and the Flemish region. We believe that there have been recent developments in these legal systems which are of particular interest in the context of the environmental liability regime worked out in the White Paper. Indeed, in the Flemish Region an Interuniversity Commission for the reform of environmental law drafted a draft decree on environmental policy, which provides detailed proposals concerning the liability regime, compensation for ecological damage, financial guarantees and deposits. The proposals of that Flemish Commission have been based on an elaborate analysis also of the financial possibilities to compensate environmental harm. These proposals therefore certainly merit attention.

The same is true for a recent change in The Netherlands. The Netherlands were maybe one of the first countries to have an environmental liability insurance regime (through an environmental pool), but they radically changed their insurance scheme in 1998 to a first party insurance for soil clean up costs. First party insurance has always been advanced by economists as a better alternative to liability insurance for a variety of reasons (mainly the better possibilities to cure adverse selection and the better possibilities of risk differentiation). It certainly merits careful attention whether first party insurance for harm to bio-diversity is, obviously in combination with environmental liability, a serious option. In that respect the Dutch solution merits further attention, e.g. with respect to the question who finances this insurance and how it coincides with a liability regime.

We will, however, not provide an exhaustive overview of the legal and insurance situation in each of those countries, but refer specifically to Flanders and the Netherlands to illustrate a few key issues of this study, such as the choice between negligence and strict liability, the retroactivity issue, the
alternative forms of financial security and first party insurance. Hence, Belgian law will be used to illustrate the difference between negligence and strict liability. Dutch law will provide examples of retroactivity in case law, proposals from a Flemish commission will illustrate alternative forms of financial security and the Netherlands will provide an example of an environmental first party insurance.

B. ECONOMIC ANALYSIS

In addition to this traditional comparative legal research, we will also use a legal-economic analysis. This literature has the advantage that it precisely deals with most of the issues addressed in the technical annex, related to the optimal insurability of (environmental) risks. It seems interesting to look at least at this economic literature, since this might provide useful insights in the relevant insurability issues. Moreover, this will allow us to formulate proposals for an environmental liability regime, which would align with economic efficiency (as requested in the technical annex).

Indeed, in the economic analysis of accident law the question has been examined how a (environmental) liability regime can lead to a reduction of accident costs. Insurance economics has, moreover, addressed the conditions for insurability of (environmental) liability. It seems interesting to look at this theoretical research, since it might provide useful insights in the possibilities of insurance of environmental liability.

Another good reason to use the economic analysis of law as tool for the analysis in this study is that the white paper has been based on a variety of previous studies, but none of these has explicitly looked at environmental liability and insurance from a "law and economics" perspective. By doing so this study hopes to have some added value to the previous ones executed for the Commission.

C. INTEGRATION: COMPARATIVE LAW AND ECONOMICS APPROACH

Obviously, the comparative legal research and the law and economics approach will be combined. Indeed, if the economic literature predicts that specific conditions have to be met either in liability or in insurance, a brief look will be taken in the various legal systems to be analyzed to see whether these specific conditions have been met. Moreover, in this integrated approach we will also use the insights of public choice theory, which has pointed at the important influence of pressure groups on policy. This influence may in practice also play an important role when insurability has to be decided. Indeed, one can not escape the impression that sometimes insurers provide information on the insurability of (environmental) liability, which does not always correspond with the theoretical possibilities. This first of all merits the question of whether liability law should be based on insurability arguments, but also shows the importance of acquiring reliable and objective information on insurability, which may obviously not be dependent upon information provided by one insurer. Parallel studies to this one will

2 A summary of these previous studies is provided in the annexes to the white paper, 33-51.
3 Although a study performed by ERM Economics has addressed economic aspects of liability and joint compensation systems for remedying environmental damage.
address a question how actually reliable information on insurability of environmental liability can be obtained.

Finally, it should be stressed that the approach we propose here of combining comparative legal research with the insights of law and economics perfectly aligns with the approach chosen in the white paper. On the one hand the white paper has drawn heavily from comparative legal research and is based on the legal practice in the Member States. On the other hand the white paper equally follows the basic insight of the economic analysis of accident law, being that a liability regime should be shaped in such a way that it gives optimal incentives for prevention to the parties who may cause a certain risk. This idea, that liability provides incentives for optimal precaution, has been mentioned at several instances in the white paper. Thus it does not only seem useful to look at the economic analysis of accident law from an academic point of view; this also corresponds with the approach chosen in the white paper.

§ 4. Policy orientation

This study will on the one hand be largely theoretical since the question of the insurability of environmental liability will largely be examined on the basis of desk research. Within the scope of this study we will not be able to do empirical research into the actual insurance of environmental liability. This is the subject of a separate study. Insurance practice for two countries, Belgium and the Netherlands, will, for the reasons set out above, however be examined more closely.

Nevertheless, this study should certainly not be considered as “academic” in the sense that the results would also be merely theoretical. We will try to formulate conclusions at the policy level. Therefore, for every issue that will be examined we will ask the question whether the policy maker (in this case obviously the European Commission) should take specific action to encourage the availability of insurance. This is a particularly difficult issue, since our conclusion may obviously often be that there is in some cases a limited availability of insurance, but if this were the case, it is often hard to propose policy action to increase the insurability. Therefore at every issue the question will be asked whether policy action seems warranted and in what direction this may go to increase insurability at the lowest possible costs.

§ 5. Subsidiarity?

A question which obviously follows upon the previous one is whether this policy action should be taken at the European level. We will, however, not address this so-called subsidiarity issue within the scope of this study. The reason is that this issue has already been dealt with in the white paper on environmental liability.

The Commission proposes a strict liability for dangerous activities which are regulated by EC environment related law for traditional damage (health and property) contaminated sites and damage to bio diversity. For non-dangerous activities there will be a fault based liability for damage to bio diversity. Here, the Commission apparently does not propose a European-wide similar environmental liability regime, but links the EC liability regime with existing EC environmental legislation. The idea is that by using liability law, the implementation of EC environmental legislation can be promoted. Obviously, the argument that a community regime for environmental liability should be drafted “to create a level playing field” in the internal market is mentioned, but at the same time the Commission states that “the existence of any problem of competition in the internal market caused by differences in Member States’ environmental liability approaches is still unclear”. The Commission specifically focuses its environmental liability regime on damage to bio diversity since most existing Member States environmental liability regimes do not cover this type of damage. The approach seems therefore to be rather balanced in that it focuses merely on those areas where Member States have apparently not enacted legislation and limits itself largely to liability resulting from activities regulated under EC environment related law.

Moreover, the subsidiarity issue is explicitly addressed, stating that the Commission in fact only intervenes to guarantee that the goal of article 174 (1) of the EC treaty (which requires the community policy on the environment to contribute to preserving, protecting and improving the quality of the environment, and to protecting human health) can be achieved. Interestingly enough the Commission also discusses the possibility to install a European regime for transboundary damage only. In the literature it has been suggested that if interstate externalities are a reason for centralisation, the European Directive should not necessarily cover both local and community-wide pollution. This idea of a “transboundary only” regime was rejected, since this could lead to inequalities in treatment of victims in Member States depending on whether they were victim of a transboundary or a local pollution. Nevertheless this white paper on environmental liability shows that the Commission recently (the white paper was issued on 9 February 2000) seems to be aware of the arguments advanced in economic literature in favour of (de)centralisation and at least discusses them.

Strikingly, the white paper – at least implicitly – discusses the criteria advanced by economic analysis for centralisation at the European level (more particularly the transboundary character of environmental pollution and the “harmonisation of conditions of competition”-arguments) and rightly points at the fact that these arguments would theoretically lead to a preference for a “transboundary only” regime. The white paper, however, rejects this approach on the basis of equality arguments.

We will therefore respect this choice and simply neglect the question whether policy action should at all be taken at the European level.

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6 White paper on environmental liability, 12.
7 White paper on environmental liability, 12-13. This is, however, denied by Niezen, G.J., I.c., 174.
8 White paper on environmental liability, 27.
9 Van den Bergh suggested that a distinction should be made between regional and interstate pollution (Van den Bergh (1999) 10).
§ 6. Integration

It is well known that the external integration is now pushed forward as one of the main principles of community action with respect to the environment. External integration relies on the idea that environmental policy should, in brief, be integrated into other policy areas than the environment. Integration is also presented as one of the basis for the white paper. We, however, believe that integration could, in this particular case, also work the other way around. This means that we will try, as far as possible, to take into account relevant evolutions in other (European) policy areas, during our study. Obviously we take the options chosen in the white paper on environmental liability as given, but on the other hand we shall e.g. also address the important recent green paper on liability for defective products. This green paper reports on the experience on – inter alia – the insurance of product liability since 1985. That information might be of relevance for the discussion on environmental liability as well, at least to some extent.

An other important policy area is competition policy and more particularly where this affects the insurance industry. In this respect it would be rather naive if we would e.g. suggest that all insurance companies should join forces to provide optimal coverage for environmental liability, if we would neglect that this may run counter to European competition policy. The boundaries of the application of European competition law to the insurance industry have recently once more been outlined in a report of the European Commission with respect to the functioning of a regulation with respect to the insurance industry. Certain practices with respect to environmental liability insurance are explicitly addressed in this report. This will therefore also be examined in our study.

§ 7. Limits

Within the limited scope of this study there are some obvious limitations to what we can do. We already announced that we do not have the intention to run an empirical investigation into actual insurance practice with respect to environmental liability. This is, moreover, done in a parallel study which was commissioned by the Commission as well. A second limit is that we take the white paper on environmental liability principally as a starting point and will therefore not attempt to design an optimal environmental liability regime which may best suit insurability needs. Third, we are obviously aware of the fact that the European Commission has had other studies performed on environmental liability as well, among others examining the state of environmental liability in all the Member States. We shall obviously try to take into account that previous research as far as possible and shall by no means attempt to ‘reinvent the wheel’. Fourth, the white paper on environmental liability announced that the European Commission wishes to achieve rather quick results with respect to the insurability of environmental harm. This time limit obviously has consequences for the depth of our study as well. One consequence is that we can therefore not provide a great amount of details on specific issues. We

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12 White paper, 14.
13 Moreover, also the white paper recognized the possibility of overlaps between Product Liability and environmental Liability (white paper, 21).
rather prefer to give a broad overview of all the issues which are according to us relevant to judge the insurability of environmental liability.

§ 8. Goal

To reiterate the goal of our study once more: we will try to show, using comparative legal and economic literature what conditions of insurance and liability law should ideally be met to provide optimal compensation for environmental liability and we shall to a small extent also try to back up these conditions sketched out in the literature with some evidence of legal practice in some Member States.

§ 9. Researchers involved and academic framework

This study is examined within the framework of various academic institutions. Contracting institution is the Maastricht European Institute for Transnational Legal Research (METRO) of the faculty of law of Maastricht University. Michael Faure and David Grimeaud who will execute this study both work at METRO. They do their research within the framework of a Ius Commune research school. This research school is a co-operation between the law faculties of the universities of Leuven, Utrecht and Maastricht and it focuses its research on the question how a Ius Commune within Europe can be constructed. Additional financial support for this study is acknowledged from the SaRO\textsuperscript{15} project on liability, insurance and compensation, a programme of the Dutch Research Council NWO to stimulate legal academic research.

Faure is also director of the European Centre for Tort and Insurance Law (ECTIL), situated in Vienna. This centre drafts common principles of liability law and executes academic research projects on liability and insurance and has the help of a large network of academics and practitioners with experience in the insurance branch. The authors are grateful to Prof. Dr. Helmut Koziol of ECTIL for useful comments on a first draft of this report, as well as to Mr. Peter Kamp of Nationale Nederlanden who provided useful information concerning the functioning of the Environmental Damage Insurance in the Netherlands.

Although Faure and Grimeaud will therefore formally draft this study, they can bow on all the academic contacts within the framework of the Vienna Centre and the Ius Commune research school, as sketched out. A draft of the report has been presented to the Commission services, which provided detailed comments. These comments were taken into account in this final report. This final report, however, reflects only the views of the authors, not those of the European Commission.

§ 10. Structure

This study will be structured as follows: after this introduction the principles of liability and safety regulation (chapter 2), as sketched out in the economic literature will be described as a starting point for the analysis. The possible defenses against liability will be separately discussed in chapter 3. Next
a brief insight into the structure of the environmental liability system of a few legal systems will be provided (chapter 4). The main part of the study will deal with general principles of insurability and the general conditions which have to be met to make liability insurable (chapter 5). Further, the policy relevant question will be asked whether under certain circumstances a duty to provide insurance or any other financial guarantee should be introduced (chapter 6). Also the question whether financial limits on liability (so-called caps) should be introduced to make a risk insurable will be examined (chapter 7). Then the interdependencies between liability and insurance will be sketched and the question will be addressed whether insurability should determine the scope of liability (chapter 8) and finally attention will be paid to potential alternatives to liability insurance (chapter 9).

The study will end with the formulation of policy conclusions (chapter 10).

Literature and legislation discussed in this report have, as far as possible, been incorporated until 1.12.2000.
Chapter 2  Principles of liability: a theoretical framework

§ 1. Introduction

The white paper on environmental liability, which is taken as a basis for the study, made clear that the Commission wishes to know some of the economic effects of the proposed liability regime in the white paper. One aspect, which will be the central focus in this paper, is the question whether financial assurance of the liability provided in the white paper can be guaranteed. Another aspect is whether the liability system as sketched out in the white paper can be considered as efficient.

To answer that, probably too ambitious, question an economic framework will be used. Looking at the efficiency of the liability system as proposed in the white paper is useful in itself, since this economic analysis will force us to think about the central goals of environmental liability. Moreover, the insights which we will derive from the economic analysis of liability are obviously important as well to examine the insurability issues, which will be the core of the remainder of this study.

Looking at the economic analysis of law to examine the liability regime as proposed in the white paper is not only useful since it provides a tool to judge the efficiency of this liability regime, as was explicitly suggested by the Commission; it also allows us to focus on two central issues, being how on the one hand environmental damage can be prevented and on the other hand how environmental damage, if prevention failed, can be adequately compensated.\(^\text{16}\)

The white paper on environmental liability itself stresses at various occasions that environmental liability has a specific function, not only in compensating accident victims, but also to provide adequate incentives for prevention to potential polluters.\(^\text{17}\) In this chapter, the question therefore will be asked how, from a theoretical perspective, accident law, and more particularly environmental liability, can be constructed in such a way that it is also able to provide these incentives. We will therefore first focus on the theoretical question how in the abstract an environmental liability regime should be constructed to provide sufficient incentives for prevention and to allow for compensation; these findings will then be confronted with the liability regime as proposed in the white paper.

It should be clarified from the outset that most of the literature on which we will base our analysis deals generally with either accidents or environmental harm. We are well aware of the fact that the white paper merely deals with specific aspects of environmental harm, being on the one hand harm to bio-diversity and on the other hand contaminated soils. However, to a large extent the general principles of liability for environmental harm, which will be discussed below, are also applicable to the types of damage and liability proposed in the white paper.

\(^\text{16}\) The issues of prevention on the one hand and compensation on the other hand are also crucial to this study, according to the Technical Annex, see 5.

\(^\text{17}\) The white paper states: "thus, environmental liability results in prevention of damage and internalisation of environmental costs," p. 14.

\(^\text{18}\) Although the compensation issue will be more central in the next chapters which deal with the assurability.
§ 2. Goals of accident law: the environmental case

A. PREVENTION AND COMPENSATION

The economic analysis of law in general and of accident law more specifically starts from the belief that a legal rule and more particular a finding of liability will give incentives to potential parties in an accident setting for careful behaviour\(^{19}\). Thus, economists tend to stress the deterrent function of tort law. Lawyers on the other hand mention this deterrent function sometimes as well, but tend to attach more value to the compensation goal of accident law. This "victim protection"-argument is discussed in the law and economics literature as well\(^{20}\). In that respect it is, however, often stressed that the best way of victim protection is to avoid victimisation in the first place. Of course no one will argue that prevention of accidents is not a way of victim protection as well. This difference in accents between both approaches is also characterised as an \textit{ex ante} versus an \textit{ex post} vision. Whereas lawyers tend to be more interested in the accident problem \textit{ex post}, where there is a victim that needs to be compensated\(^{21}\), economists look at the accident problem in an \textit{ex ante} perspective by asking the question how an \textit{ex post} finding of liability will influence \textit{ex ante} the incentives of potential parties in an accident setting for care-taking.

Of course the differences in approaches between lawyers and economists are not really that black and white. There are lawyers that stress the deterrent function of tort law as well\(^{22}\) and some economists pay attention to compensation issues by stressing that accident law should also aim at an equitable loss spreading\(^{23}\). Moreover, also lawyers argue that tort law should lead to duties of care, which aim at prevention. One advantage of the economic approach is that the deterrent function and compensation goal are carefully distinguished so that the influence of various legal mechanisms that one would choose can be evaluated both with respect to the prevention and with respect to the compensation issue. The first scholar to analyse these problems from a law and economics perspective was probably the lawyer (!) Guido Calabresi from Yale Law School\(^{24}\). In his well-known book \textit{The Costs of Accidents} Calabresi makes a careful distinction between primary, secondary and tertiary accident costs\(^{25}\). Primary accident costs are the costs of accident avoidance and the damage that finally occurs; secondary costs refer to the equitable loss spreading and tertiary costs are the costs of administering


\(^{20}\) Schwartz showed that rules of tort law may serve both the aims of deterrence and corrective justice (Schwartz, G. "Mixed Theories of Tort Law: Affirming both Deterrence and Corrective Justice", \textit{Texas Law Review}, vol. 75, 1997, 1801-1834).

\(^{21}\) This tendency is partially explainable through the case method used in common law countries for law teaching; it focuses very much on solving one particular case, sometimes neglecting the consequences of the solution in one case for the behavior of other parties and thus of safety in general.


the legal system. Tort law should give incentives to a reduction of total social costs of accidents. Thus the central goal of tort law was given: it should give incentive for a minimisation of accident costs. This notion of Calabresi has been taken up later by economists that have formalised this issue. A more formal analysis of optimal liability rules will be presented below. Note also that an earlier draft of the white paper explicitly referred to the work of Calabresi!

Let us address the first goal of tort law being the minimisation of primary accident costs: the costs of accident avoidance and the expected damage. Indeed, from a social point of view accidents do not only cause costs from the moment an accident occurs and harm is suffered; potential parties in an accident setting, both injurers and victims make investments in care to avoid the occurrence of an accident. Sometimes costs of care taking are very clear and visible. We can refer for instance to the investments made by firms to reduce environmental pollution by investing in water cleaning equipment or the investment to install safety controls to avoid product defects. But also the mere fact that in a traffic accident case both injurers and victims are limited in their freedom of movement for instance because they have to drive or work carefully is considered as a cost by economists. A difference is further made between so-called unilateral accidents in which only the care taken by one of the parties (the injurer) can influence the accident risk on the one hand and bilateral accidents in which the behaviour of both parties can influence the accident risk on the other hand. In a bilateral accident situation the goal of accident law should therefore be to give incentives to minimise the total costs of care taking by the potential injurer and the potential victim and the expected damage that will occur in case of an accident.

B. OPTIMAL LIABILITY RULES: BASIC IDEAS

1. Optimal care levels

Economists use classic cost/benefit analysis to determine what the level of care is that will lead to such a minimisation of the social costs of accidents. Not surprisingly this can be found where the marginal costs of care-taking equal the marginal benefits in accident reduction. Indeed, since care-taking has its price as well a legal rule should not give incentives to avoid every possible accident that could occur, but only accidents that could be avoided by investments in care of which the marginal costs are lower than or equal to the marginal benefits in accident reduction. It might well be that extremely high care could well additionally contribute to a reduction of the accident risk but the marginal costs of care-taking in that case might well be much higher than the additional benefit in accident reduction. Investments in care would in that case be inefficient and scarce resources would be spoiled. These

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27 This distinction has been made by Shavell, S., Economic Analysis of Accident Law, Cambridge, Harvard University Press, 1987, 7.
28 Ibidem.
29 This finding only holds in a risk neutral setting. In case of risk aversion higher investments in care might well be efficient since a reduction of accident risk will in that case also remove the disutility of risk from a risk averse person.
levels of care where marginal costs of care-taking equal marginal benefits in accident reduction are referred to in the literature as optimal or efficient care levels. Before addressing the issue which liability rules may give incentives to parties in an accident setting to follow these optimal care levels we should first make clear that in the literature two accident cases are distinguished. On the one hand there are cases where only party (called the injurer) can influence the accident risk, called unilateral cases; on the other hand there are cases where the victim can also influence the accident risk - these are referred to as bilateral cases. We will now first address optimal liability rules in a unilateral case.

2. **Negligence**

Liability law should therefore give an incentive to potential parties in the accident setting to adopt this optimal care level. Looking at a unilateral accident situation one can state that two legal rules would give the injurer incentives for taking optimal care. If there would be no liability at all clearly the injurer would have no incentive for care taking; therefore in a no-liability situation the externality will not be internalised and an inefficient outcome will follow. If a negligence rule is adopted the injurer will take optimal care, provided the due care required in the legal system is equal to the optimal care as defined in the model. This can be easily understood. If the judicial system sets the due care standard correctly the injurer can avoid liability by taking due care. Thus he will have to spend care to avoid the accident, but if he does so he can avoid to pay the expected damage. Of course the injurer could take more care than the legal system requires him to do under a negligence rule, but he will have no incentive to do so since he can already escape liability by following the due care standard. Of course the injurer could also spend less on care than the legal system requires him to. In that case he will have lower costs of care taking, but he will have to pay damages in case an accident occurs. Since the optimal care standard was defined as exactly that level of care where the marginal costs of care equal the marginal benefits in accident reduction, taking less than the due care standard will not be interesting for the individual injurer since it will increase his total expected costs. Thus a negligence rule will lead to an efficient outcome as long as the legal system defines the due care as equal to the optimal care of the model.

3. **Strict liability**

Also a strict liability rule will lead to the optimum in a case where only one party can influence the accident risk. The reason is quite easy. A strict liability rule basically says that the injurer has to compensate in any case no matter what care he took. It is sometimes argued that this will lead the injurer to take excessive precautions or to take no care at all since he is liable anyway. Neither of these statements seems true. By making the injurer strictly liable in fact the social decision is shifted to the injurer. In a unilateral accident case it simply means that he has to bear all the social costs of accidents, being his own costs of care taking and the expected damage. Therefore, he will take exactly the same decision, being to minimise his total expected accident costs. We discussed in the model that this could

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be reached at the optimal care level. Therefore, the injurer will take optimal care since this is the way
to minimise his total expected costs. Spending more on care would increase his costs of care-taking
inefficiently and spending less on care would increase the expected damage inefficiently.

4. Differences

This leads to the conclusion that in a unilateral accident setting both a negligence and a strict liability
rule will lead to a minimisation of the social costs of accidents. Of course there remain differences
between both rules as far as the secondary and tertiary costs are concerned. Under a negligence rule in
principle no cases of liability could be found since an injurer would always follow the due care
standard required in the legal system and would thus never have to compensate his victim. Under a
strict liability rule on the other hand victims would always receive compensation. If the assumption of
risk neutrality is relaxed and if only one of the two parties were risk averse, for instance the victim, the
choice between negligence and strict liability could result in a preference for one of these rules
depending upon which party is risk averse. Also administrative and information costs of both rules
differ. The strict liability rule seems to have the disadvantage that a legal case will follow with every
accident since the injurer is always bound to compensate. Court costs can therefore be expected to be
high. On the other hand, the negligence rule seems to have high information costs for the judge since
he will have to determine in a particular case what the marginal costs and marginal benefits of care
taking were.

5. Bilateral accidents

The analysis of course can be much more refined for instance if one goes into the bilateral accident
situation. In that case a contributory or comparative negligence defense has to be added to a strict
liability rule to give victims an incentive as well to take optimal care. In other words: since victims
would be fully compensated under strict liability some defense should be added if the victim can
equally influence the accident risk. Otherwise the victim would lack the incentives for prevention.

The advantage of the negligence rule in that case is that the victim will anyway assume to have to bear
the loss, so he will always have an incentive for taking optimal care. The simple reason is that a fully
informed victim (which is obviously a strong assumption) will be aware of the fact that the injurer will
take due care to avoid liability. Hence the victim is left with his loss and will automatically have
incentives for prevention, even if no defenses are added.

A further refinement can be found when attention is given to other factors than care that can influence
the accident risk. In the literature attention has especially been paid in that respect to the influence of
the activity level. We will come back to the importance of this activity level issue in the next section.

34 The question whether the victim's behaviour should totally exclude the injurer from liability (contributory
negligence) or merely reduce the compensation due (comparative negligence) is discussed below in chapter 3
§ 5.
After having sketched how the general model of liability law works, let us now focus once more on
the difference between negligence (also often referred to as fault liability) and strict liability, especially
as it applies to environmental liability.

§ 3. Negligence or strict liability for environmental harm?

So far we have explained the general model of tort law and shown how, if only care would influence
the accident risk, both a negligence and a strict liability rule could give optimal incentives for
prevention, if we assume that only one party influences the accident risk (the so-called unilateral
case)\textsuperscript{36}. In bilateral cases the outcome would be the same, but then a defense would have to be added
to the strict liability rule, to take the victims' behaviour into account. Let us now address the working
of the strict liability respectively the negligent regimes in more detail and see how they are fitted to be
applied to the environmental case. We will now, after the introduction in the previous section, present
the model of accident law in a more formal way, introducing the formulas and models which have
been developed in the literature in the '70 and '80.

A. THE MODEL

As was just mentioned, in the economic analysis of law, tort law is seen as an instrument to deter
activities, worth to be avoided on efficiency grounds through liability rules\textsuperscript{37}. The expectation to be
held liable \textit{ex post} should induce parties \textit{ex ante} to take care (or, as we shall show below, change the
activity level) in view of reducing the accident risk\textsuperscript{38}. Liability rules should, according to this
economic model, thus be used in order to reach efficiency. In order to establish the efficient solution,
economists state that the goal of tort law is to minimise the sum of accident costs and the costs of
accident avoidance\textsuperscript{39}. The sum, called the social costs of accidents, can be presented as follows\textsuperscript{40}:

\[ C = p(x,y)L + A(x) + B(y), \]

where:

- \( C \) = the sum of expected accident costs and the costs of care,
- \( A \) = the victim,
- \( B \) = the injurer,
- \( x \) = level of care of the victim,
- \( y \) = level of care of the injurer,

\textsuperscript{36} The literature on the choice between negligence and strict liability has been effectively summarized by
(eds.), \textit{Encyclopedia of Law and Economics, II Civil Law and Economics}, Cheltenham, Edward Elgar, 2000,
597-624.

\textsuperscript{37} Although I stress the preventive function of tort law in this paper, Calabresi has pointed at the fact that liability rules may
equally aim at loss spreading (Calabresi's secondary costs) and at a reduction of administrative costs (Calabresi's tertiary
costs). See Calabresi, G., \textit{o.c.}

\textsuperscript{38} See on the goals of tort law Schwartz, G., "The Ethics and the Economics of Tort Liability Insurance", \textit{Cornell Law Review},
1990, 313-365 and Schwartz, G., "Mixed Theories of Tort Law: Affirming both Deterrence and Corrective Justice",

\textsuperscript{39} See Calabresi, G., \textit{o.c.} See also Shavell, S., \textit{o.c.}, 5-6.

\textsuperscript{40} This is the basic model presented by Shavell in "Strict Liability versus Negligence", \textit{Journal of Legal Studies}, 1980, 1-25.
p=probability that an accident will occur,
L=magnitude of the loss.

It is assumed that both parties are risk neutral, that the magnitude of the loss (L) is independent of the
level of care, that more care will reduce the probability (p) of an accident and that only the victim (A)
suffers a loss. To minimise the social costs (C), the levels of care must be set at \( x=x^* \) for the victim
and \( y=y^* \) for the injurer. At these efficient levels, the marginal benefits from an increase in care
(reduction of \( p(x,y)L \) equal the marginal cost of greater care \(^{41}\)). From an economic point of view, optimal care is thus not equal to the highest care possible. The highest care might lead to spillage, since the marginal costs would be greater than the marginal benefit in reducing the expected loss. Calabresi formulated this as follows:

"Our society is not committed to preserving life at any cost. In its broadest sense, the rather unpleasant notion that we are willing to destroy lives should be obvious. Wars are fought... Ventures are undertaken that, statistically at least, are certain to cost lives. We take planes and cars rather than safer, slower means of travel. And perhaps most telling, we use relatively safe equipment rather than the safest imaginable, because - and it is not a bad reason - the safest costs too much" \(^{42}\).

The difficulty is therefore to find the efficient levels of care \( x^* \) and \( y^* \). In a tort situation, transaction costs are mostly prohibitive, meaning that the efficient levels \( x^* \) and \( y^* \) cannot be reached through voluntary negotiations \(^{43}\). Therefore, the legal system should intervene to provide liability rules which will lead to the efficient level of care.

B. NEGLIGENCE

1. Optimal incentives

One rule which may give incentives to the injurer to follow the efficient level of care is the negligence
rule. The negligence rule is defined as a rule according to which the injurer will only have to bear the
loss if he uses less than a legally required level of care, referred to as the due care level. The negligence rule as defined here, means that the injurer will be held liable if he spends less than the due
care level required by the legal system, in other words if he acted wrongful. Assuming that the due
care level required by the legal system is equal to the optimal level of care \( (y^*) \), the injurer will always follow the optimal care level. This is indeed the cheapest solution for him. If the injurer would spend less than \( y^* \) on care, his total costs would be equal to

\[
p(o,y^*)L + B(y^*)
\]

\(^{41}\) Brown, J.P., \( i.e., \) 323-349.
\(^{42}\) Calabresi, G., \( o.c., \) 17.
\(^{43}\) Otherwise the Coase theorem would teach us that the efficient outcome would automatically follow through voluntary negotiations (Coase, R.H., "The Problem of Social Cost", Journal of Law and Economics, Vol. 1, 1960, 1-44).
If, on the other hand, he spends the efficient level of care, he will not have to bear the expected loss. Hence, the expected costs of the injurer are in that case only his costs of taking efficient care: \( B(y^*) \). The question whether \( B \) will take efficient care or not will, therefore, depend upon:

\[
p(o,y^*)L + B(y^*) \quad \text{vs.} \quad B(y^*)
\]

If the sum of expected loss and the actual costs of care are higher than the costs of efficient care (\( y^* \)) the injurer will take efficient care. If, on the other hand, these costs would be lower than the costs of taking efficient care, it would be cheaper for the injurer not to take efficient care. However, since we defined \( y^* \) as the point where the social costs are as low as possible, \( p(o,y^*)L + B(y^*) \) will always be higher than the costs of taking \( y^* \). Hence, the simple conclusion is that under a negligence rule, the injurer will always have an incentive to spend \( y^* \) on care and an efficient outcome will be reached. This is true as long as the legal system defines \( y^* \) as due care.

According to this economic model, an injurer will be found liable under a negligence rule if he spends less than the due care the legal system required from him (\( y < y^* \)). The crucial question therefore is, from an economic point of view, how the judge should establish this efficient level of care. Spending more on care will reduce the probability that an accident may occur additionally. Requiring the injurer to spend more on care is efficient as long as the marginal costs of care are lower than the additional benefit in reduction of the expected loss. The efficient level of care \( y^* \) is found where marginal costs of care equal marginal benefit in reduction of expected loss. This is also the point of view of the white paper, where it is stated: "If polluters have to pay for damage caused, they will cut back pollution up to the point where the marginal cost of abatement exceeds the compensation avoided."

Economic analysis does, however, not assume that judges make explicit mathematical calculations of marginal costs and marginal benefits to establish the efficient care level. Often such a marginal cost/marginal benefit weighing takes place in a rather implicit manner. Hence, economic scholars often argue that judges act as if the goal of their actions were to achieve wealth maximisation, even though their decisions are mostly not formulated in economic terms. Sometimes, however, a judge will explicitly argue that the injurer is liable since he could have reduced the likelihood of an accident easily be spending relatively low costs on additional care.

### 2. Learned Hand rule

This - explicit - weighing of costs and benefits took place in a well-known American tort case, United States v Carroll Towing Co. Judge Learned Hand took economic considerations explicitly into account in judging comparative negligence in the following case: a barge was moored in a harbour, while a storm was approaching. The barge broke loose from its moorings and considerable damage to the ship was caused. The question arose whether the barge-owner had taken appropriate precautions in

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44. See Shavell, S., *o.c.*, 14.
46. White paper, 14.
47. This claim has especially been made by Landes, W., and Posner, R., *l.c.*, 1981, 851.
48. 159 F 2d 169 (2d Cir. 1947).
order to protect its own vessel. Judge Learned Hand wondered whether the accident could have been avoided by having a person watching the barge who could have prevented any collision of vessels. The costs of this preventive measure might have been considerably lower than the expected loss. According to Learned Hand, this question had to be judged by weighing the costs of preventive action of the versus the damage caused by the accident. Judge Learned Hand translated this question by asking whether the burden of precaution (B(y)) is lower or higher than the probability times the magnitude of the loss (p.L) the formula therefore reads 49:

\[ B(y)L > p.L \]

Although this case is often quoted in American law and economics textbooks, Learned Hand’s formula does not quite fit into the economic model of tort law 50. The problem is that judge Learned Hand expresses the costs of care and the expected loss in absolute numbers, whereas in the economic model y* is fixed by weighing marginal costs versus marginal benefits. Brown pointed at this shortcoming of the Hand formula and showed that the efficient level of care should be determined in an incremental and not in an absolute manner 51. However, Landes and Posner provided a detailed analysis of American tort case law and argued that in legal practice American courts actually define the required care in incremental terms: "The courts asks: what additional care inputs should the defendant have used to avoid this accident, given his existing level of care?" 52. This obviously invites a marginal analysis. Other criticism has been formulated upon the Hand formula as well, which can, however, not be discussed within the scope of this study 53.

C. **Strict Liability**

From the above it follows that the negligence role is in principle able to give a polluter an incentive to spend on care to reach the optimal standard. However, the negligence rule only works optimally if the legal system defines the due care level as the optimal standard. What about strict liability?

1. **Optimal incentives**

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 54. 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 an unilateral accident setting, in an accident whereby only the injurer can influence the accident risk. Above we already stressed that if victims were also given incentives

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for accident reduction a contributory negligence defense 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.

2. Influence of the activity level

In the joint care (bilateral) case strict liability with contributory negligence and a negligence rule (with or without contributory negligence) will incite parties to adopt efficient levels of care. However, the accident risk cannot totally be minimised by increasing the levels of care. Accident losses depend also on the extent to which parties participate in the activity which might cause the damage (for instance the miles driven). Therefore, reducing the activity level will also reduce the accident risk\textsuperscript{55}. The activity level can be interpreted as any control variable not taken into account in setting the optimal level of care. Under a negligence rule an injurer has no incentive to adopt an optimal level of activity. This cannot be remedied, because judges cannot easily calculate the optimal activity level into the due care standard\textsuperscript{56}. A strict liability rule has the advantage that the injurer will automatically adopt an optimal activity level. This is also a means to minimise his costs. If the victim’s activity has no influence on the accident risk, strict liability might have a slight advantage, because it might also lead to an optimal activity level of the injurer. However, in a joint care case this advantage is cancelled out by the fact that the victim will not adopt an optimal activity level. This is due to the impossibility of calculating the activity level into the due care standard, when considering contributory negligence\textsuperscript{57}.

3. A test for strict liability

What is the importance of the activity level for the choice between negligence and strict liability? In a unilateral accident model, whereby only the behaviour of the injurer influences the accident risk, strict liability seems to be the preferred rule since it is the only liability rule which will lead both to efficient care and to an optimal activity level. In a bilateral case the answer is more balanced.

Since activity level changes are not calculated into the due care standard, strict liability (with a defense of contributory negligence) will encourage activity level changes of the injurer. On the other hand, a negligence rule will encourage activity level changes of the victim. Therefore, several authors suggest that in bilateral cases strict liability will be a superior device if it is more important to give injurers an incentive to change the activity level than that victims be given a similar incentive\textsuperscript{58}. This implies that if the injurer’s activity is very dangerous and creates a high accident risk, even if optimal care is taken, it will be more desirable to control the injurer’s activity than it is to control the victim’s. For instance, if an injurer creates the collapse of an old house with explosives in the middle of a densely populated area, it is more desirable to control his activity than it is to control the victim’s. On the other hand, the advantage of a strict liability rule disappears if the injurer’s activity is not important enough to be

\textsuperscript{56} It is difficult to determine both the optimal and the actual activity level (for examples, see Polinsky, \textit{op. cit.}, 47 and Shavell, \textit{loc. cit.}, 1980, 2).
controlled. For instance, if the injurer runs to catch a train and collides with another pedestrian, a negligence rule would be superior, because it is at least as important to control the victim’s activity than it is to control the injurer’s. If the activity of the injurer is not very dangerous, if exercised with reasonable care, it is desirable to give the victim an incentive to take an optimal activity level as well.

Even though a clear cut test is therefore difficult to give, Landes and Posner describe several factors which may lead to a preference for a strict liability rule. These elements are: 1. high expected accident costs; 2. the impossibility that more care by the injurer would reduce the accident risk; 3. the impracticability to constraining the victim’s activity in favour of the injurer’s and 4. the desirability to reduce the risk by an activity level change of the injurer.

How does this economic argument in favour of strict liability in unilateral accident cases compare to legal justifications for strict liability?

D. Legal justifications for strict liability

1. Improving the situation of the victim?

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 to introduce 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. 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. 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, financial caps and other limitations on the victim's rights were introduced. The alleged compensating benefit of the strict liability in those cases is therefore doubtful.

61. See for Dutch case law e.g. the so called Jumbo II case of 1 October 1993 (Nederlandse Jurisprudentie, 1995, 182).
2. Redistribution?

One obviously should make a careful distinction between on the one hand the efficiency arguments, advanced in the Shavellian economic analysis on the one hand and distributional arguments on the other hand. So far we have focused on these efficiency arguments, which show that in particular cases there might be an argument in favour of strict liability. It should, however, be reminded that from an economic perspective these arguments in favour of strict liability for unilateral hazardous activities are only based on the fact that the injurer would then be in a better position to prevent the harm. Obviously arguments in favour of strict liability could also be based on distributional arguments. It are more particularly distributional arguments which can often be found in the legal literature. Indeed, an important difference between strict liability and negligence is obviously that if the negligence rule works perfectly, the injurer will take the care the legal system requires from him and will therefore not be held liable. A perfectly working negligence rule will therefore give appropriate incentives to the injurer, but not provide compensation to the victim. A strict liability rule is a rule which in principle guarantees compensation to the victim (if one disregards the insolvency issue, which we shall discuss below). It is precisely because of this distributional difference that many lawyers favour the strict liability rule. Remember, however, that in bilateral cases from an economic perspective strict liability is efficient only if a defense is added (contributory or comparative negligence) to give the victim incentives as well for effective prevention. If we discuss strict liability in the remainder of this report we assume that a defense is always added to take account of the victim’s behaviour.

E. Polluter Pays Principle

In the context of environmental harm this argument in favour of strict liability is often based on the polluter pays principle.

Probably one of the most well known principles of environmental law is the polluter pays principle. Also this principle is incorporated both in European and international environmental law. The old article 130R(2) (now article 170 (2)) of the E.C. Treaty states that community policy on the environment shall be based on the principle "that the polluter should pay". Already prior to the 1987 amendment of the E.C. Treaty by the Single European Act this principle could be found in secondary community legislation. Nevertheless legal scholars also point at the fact that as soon as one starts to interpret it as a legal principle, difficulties accumulate, such as to the question of who is a polluter, what is pollution, what should be paid for, etc. In addition it is pointed out that in many cases of community environmental policy it is not the polluter who pays, but a whole community framework

for state aid, community funds and a cohesion fund, showing that public intervention is also necessary to prevent and repair impairment to the environment.\(^{63}\)

The question of course arises what the polluter pays principle in fact means from a legal point of view. Jans argues that the whole standard setting in environmental law forces potential polluters to make various investments to comply with the statutory standards. Thus the standard setting process helps to insure that the polluter bears the costs of pollution. Thus the community must ensure by laying down standards and environmental charges that the persons who are responsible for pollution in fact bear the costs.\(^{64}\)

The polluter pays principle can also be found in international environmental law.\(^{65}\) For instance principle 16 of the Rio declaration provides that:

"National authorities should endeavour to promote the internalisation of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the costs of pollution, with due regard to the public interest and without distorting international trade and investment."

Turning to the economic interpretation one can say that the polluter pays principle is probably the most "economic" of all the principles discussed so far. Even legal scholars argue that the polluter pays principle is originally an economic principle which seems to state that the costs of pollution clean-up should not be born by the taxpayer, but by the person responsible for the pollution.\(^{66}\) It is of course a different question to judge whether this principle can always be used at the normative level. The notion that the polluter should pay, meaning that he has to bear the financial consequences of polluting acts corresponds in principle with the exposé in this chapter, where we have explained that exposing a potential polluter fully to the social costs of his activity will in principle lead to an optimal internalisation of the externality.

One probably most direct manner is obviously to force potential polluters to invest e.g. in cleaner production technology or abatement technology through the standard setting process. Another one is to use charges or taxes. The basic idea of the pigouvian tax is obviously that if the polluter will be forced to pay a marginal tax of which the rate is equal to the pollution costs this will give incentives for pollution reduction.

The question also arises whether with respect to environmental liability the polluter pays principle means that the polluter will always have to bear the financial consequences of environmental damage, in other words that there should always be a strict liability rule. At least environmental liability can generally be considered as a system to implement the polluter pays principle, as the white paper


\(^{64}\) For details see Jans, J.H., European Environmental Law, 23-25.

\(^{65}\) See Sands, Ph., 213-217.

\(^{66}\) See Krämer, L., o.c., 81.
does\(^\text{67}\), but it is not clear that the polluter pays principle would require a strict environmental liability. As we just mentioned some legal scholars interpret the polluter pays principle in that manner. Others have, however, argued that a strict liability regime may not be efficient in all circumstances, especially not when the victim is in a better position to control the risk. Nevertheless, sometimes criticism is also formulated with respect to the polluter pays principle, especially as far as some of the consequences of it are concerned. Some could argue that the polluter pays principle would mean that a potential polluter has to do everything within his power to avoid every possible pollution. In that sense the polluter would indeed always pay. However, we have shown that environmental economics uses cost benefit analysis to determine to what level pollution should be reduced. The consequences of CBA will be that in some cases further measures to reduce environmental harm will be deemed inefficient and thus the polluter will not be required to pay for additional abatement technology of which the costs would outweigh the benefits in further reduction of environmental harm. For that reason Adams has called the polluter pays principle an empty shell. It is indeed sometimes too easy to simply state that the polluter should pay for all the consequences of environmental pollution, since in many cases these costs can be passed on to the consumers via the price mechanism\(^\text{68}\). In all those cases it is not the polluter, but ultimately the consumer who pays the increased price of abatement technology. In those cases the polluter pays principle changes into a consumer pays principle\(^\text{69}\). There is obviously nothing wrong with that since it is an unavoidable consequence of the idea of environmental costs internalisation. By letting "the polluter pay" he will pass on abatement costs to his consumers via the price mechanism, which may ultimately drive polluting products out of the market.

Moreover, there are many cases in which in fact the polluter does not pay at all, but in fact the victims pay. The best example constitute of course the enormous investments made by Western European countries today in reducing environmental harm caused by Eastern European industry. All of these investments e.g. in nuclear safety in Bulgaria may well be efficient, but show that in fact it is not the polluter, but the victim that pays.

In sum, the polluter pays principle is undoubtedly a useful starting point, which of course corresponds with the economic notion that an externality can be internalised by exposing that polluter to the full costs of his activity, but is less useful as a legal rule.

F. STRICT LIABILITY FOR ENVIRONMENTAL HARM?

How do, in sum, the economic arguments in favour of strict liability, apply to the environmental case?

Although the classic victim compensation argument may as such not justify the introduction of strict liability for environmental pollution, there are on the other hand economic reasons based on deterrence efficiency for introducing a strict liability rule. Environmental pollution can in most cases certainly be considered a unilateral accident, i.e. an accident whereby only the injurer can influence the accident

\(^{67}\) White paper, 11-14.

\(^{68}\) This is obviously an application of the Coase theorem.

risk. In this case we noted that the economic model predicts 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 in those cases.\(^{70}\)

There may, however, obviously be cases where other parties than the polluter could influence the risk of environmental degradation. These are not always the victims in the traditional sense. One can imagine cases where e.g. public or private actors would be responsible to manage a natural resource area. It might be desirable in those cases that liability also aims at giving them appropriate incentives to take those preventive measures. In that case environmental pollution would constitute a bilateral risk on the condition that one considers that third actor a victim.\(^{71}\) However, since, in the example given, the influence of the polluter is probably still far more important than the influence of the other actors, the outcome doesn't change: a strict liability rule still is warranted to give the party who has most influence on the accident risk (the polluter) the incentive to take preventive measures. It is, however, important to remember that in bilateral cases a defense should always be added to victims as well. Moreover, if also other parties than the polluter can influence the accident risk as well, they might be held liable as well to the amount in which they contributed to the loss. That is, however, not an argument against the strict liability of the polluter.

So, if we apply the criteria of Shavell determining the choice between negligence and strict liability to the environmental case, there seem to be strong arguments in favour of an introduction of strict liability. In many cases environmental pollution will be truly unilateral in the sense that only the injurer's activity can influence the accident risk, which constitutes a strong case for strict liability.\(^{72}\) In other cases the victim will certainly be able to exercise an influence on the risk as well. One can more specifically think about situations where the victim has the possibility to mitigate damages after the accident occurred. However, in those cases it is not the victim's activity level, but his level of care which influences the accident risk. As was mentioned, this can be controlled by adding a contributory or comparative negligence defense to the strict liability rule. These will be discussed below, when dealing with the defenses in chapter 3.

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\(^{71}\) Although it is then probably more a case where more parties can influence the accident risk (and should therefore be given appropriate incentives) since the actors in the example given can not be considered traditional victims who suffer the loss personally (see also Niezen, G.J., l.c., 171).

\(^{72}\) In some cases it will be the victim's activity that caused the harm, e.g. if the victim knowingly came to the nuisance. This may then lead to a denial of a claim on compensation. See in that respect the discussion on the coming to the nuisance doctrine, by Wittman, D., “First come, first served: an economic analysis of ‘coming to nuisance’”, Journal of Legal Studies, 1980, 557-568.
§ 4. A few refinements

A. INFORMATION DIFFERENCES

Many scholars argued that there is indeed a strong case in favour of strict liability in case of environmental harm: this will give the potential injurer optimal incentives for accident reduction and hence, for optimal internalisation. There is, however, another important aspect of the difference between negligence and strict liability which should be mentioned. This concerns the fact that the application of negligence requires high information costs from the judge, who will have to set the due care standard. The information necessary to weigh costs and benefits and fix the optimal care may not be readily available for the judge. Strict liability shifts all costs to the injurer, who will then have to define the optimal care level. If one therefore assumes that, as may be the case with environmental harm, the information on optimal precaution is better available with industry than with the judges, this constitutes an argument for strict liability. Note that obviously in some cases there may be an information advantage with the regulator. This is, as we will discuss below, an argument on favour of regulation, but not necessarily against strict liability. This information advantage may therefore constitute an additional argument in favour of strict liability for environmental harm.

This argument is also made in the white paper, which states

"liability may also lead to application of more precaution, resulting in avoidance of risk and damage, and may encourage investment in R&D for improving knowledge and technologies."

One should, however, remember that this finding only holds in all the models, such as the one which is e.g. developed by Shavell, which start from an assumption of risk neutrality. If risk aversion is introduced and the potential injurer is risk averse, Endres/Schwarze correctly argue that strict liability is only efficient if in some way risk can be removed from the risk averse injurer, e.g. through insurance. Moreover, we assume that the judge has accurate information on the amount of the damage. If courts err in assessing damages, strict liability will lead to underdeterrence.

B. INSOLVENCY: STRICT LIABILITY VERSUS NEGLIGENCE

There are other reasons why the seemingly advantage of strict liability should be somewhat balanced. Until now, it was assumed until now that the injurer has money at stake to pay compensation to the victim. If, however, the amount of the damage exceeds the injurer’s wealth, a problem of underdeterrence will arise. Under strict liability the injurer will consider the accident as one which is equal to his total wealth and will therefore only take the care necessary to avoid an accident with a

73. See e.g. with respect to environmental liability Endres, A. and Staiger, B., o.c., 79-93 and Monti, A., l.c.
74. White paper, 14.
76. If, in other words, courts can more easily observe the socially desirable level of precaution, than the exact amount of external harm, a negligence rule should be favored. This point has been made by Cooter, R., “Prices and Sanctions”, Columbia Law Review, 1984, Vol. 84, 1343-1523.
magnitude equal to his total wealth. If that wealth is lower than the magnitude of an accident he will
take less than the optimal care and therefore a problem of underdeterrence arises under strict liability.

Insolvency is less of a problem under negligence since under that rule the injurer will still have an
incentive to take the care required by the legal system as long as the costs of taking care are less than
his individual wealth. Taking due care remains indeed a way for the injurer to avoid to have to pay
compensation to the victim. If there would thus be a potential accident setting whereby the magnitude
of the loss may be higher than the injurer’s wealth (which can often be the case in environmental
liability) this constitutes an argument in favour of negligence rather than strict liability.

C. POSITIVE EXTERNALITIES

There is, in addition, another issue which has been mentioned in the literature which may balance the
arguments in favour of strict liability. Gilead rightly pointed out that many activities do not only
externalise harmful effects, but also have positive effects, which may be a reason to be somewhat
cautious with strict liability that is a consequence of the fact that strict liability incorporates activity
level changes, whereas a negligence rule does not. It is not always obvious that increases in activity
levels are socially undesirable. Think about the manufacture of drugs. Most of this activity creates
huge social benefits. One should therefore be careful with the argument that strict liability is needed to
internalise risk and control activity levels if the benefits of an increased activity were neglected.

There is finally, one other nuance which has to be added. So far we assumed a strict liability rule
whereby the injurer is “merely” held to compensate the damage he caused to his victim, not less but
also not more. Problems may arise if strict liability is combined with other features which may expand
the burden of liability on enterprises. One could think of a removal of the burden of proving
causation, joint and several liability and high (punitive) damages for (non-pecuniary) losses. There
are formally different issues than the simple choice between negligence and strict liability. However,
Trebilcock indicated that it was especially because of these other features that the strict liability
regimes in the United States were experienced as “crushing”. Hence, the final judgement on the
efficiency of strict liability may also depend upon these other issues, such as causation and the
magnitude of the damages awarded.

§ 5. White paper on environmental liability

A. BALANCED APPROACH

As we already indicated, in many international conventions, a strict liability regime is introduced for
environmental harm. This is equally the case in many legal systems. Starting point for this study is the

77 See Gilead, I., l.c., 1997, 589.
legal regime proposed in the white paper on environmental liability. In the white paper the Commission took a rather balanced approach towards the choice between negligence and strict liability. The Commission opts for a strict liability rule for all harm which originates from hazardous activities. For all the damage originating from other activities the Commission proposes a negligence rule.

This original approach of the European Commission, which by the way deviates from earlier signals that a general strict liability regime would be introduced, is very much in line with the predictions of the economic model as presented above. Hazardous activities can often be considered unilateral and in those situations it is important to control the injurer’s activity through a strict liability rule. Even if the hazardous activities are bilateral in nature there remains a case for strict liability since the hazardous activity will have a far more important influence on the risk than the victim's activity. However, in a bilateral case a defense should be added to the strict liability rule to take into account the victim's behaviour. The same is, however, not true in case of non-hazardous activities which may cause environmental harm. For those cases the white paper correctly proposes a negligence rule. The dividing line (non-hazardous/hazardous) chosen by the European Commission, seems therefore to follow economic logic.

The white paper indeed seems to follow a balanced approach since it does not introduce a general strict liability rule for all environmental damage, but opts for a differentiated approach with a fault rule for damage resulting from non-dangerous activities and a strict liability rule for damage resulting from dangerous activities. This not only follows the Shavellian test for strict liability; it seems also more balanced than the approach taken in some member countries. Some member countries indeed seem to have adopted some kind of a strict liability regime for environmental harm, without the differentiations made in the white paper. Some examples of these approaches will be given in chapter 4.

B. NUANCES

However, although this general approach chosen in the white paper, of a different regime for dangerous and non-dangerous activities seems at first sight to follow economic logic several questions remain. One point is that it should be remembered that the economic doctrine prescribes the medicine of strict liability particularly for the cases of unilateral accidents. Since the regime of the white paper

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82 White paper, p.9.
84 The (non)dangerous character of the activity as dividing line was also suggested by Bergkamp, L. I.c., 200 and also Niezen, a Dutch company lawyer, recognises that it makes sense to introduce strict liability for dangerous activities (Niezen, G.J., I.c., 170).
85 Such a defense is effectively proposed in the white paper (p.18), which confirms the conclusion that the white paper is essentially in line with what the economic model suggests. See on the contributory negligence defense also chapter 3 § 5.
86 Note, however, that most member states liability laws do not generally cover damage to general resources.
sketches general options, but not the details, it is as yet unclear whether the cases to which the regime of the white paper will apply will indeed all be unilateral cases. It is indeed only for unilateral cases that the theoretical framework described above predicts a strict liability rule. But even in cases which are not unilateral, so where the victim can also influence the risk of environmental harm other perspectives than the economic one may provide arguments in favour of strict liability (combined with a contributory or comparative negligence defense). This might be the case if heavy weight is put on e.g. the polluter pays principle and from that perspective a generalised strict liability rule for environmental damage would be preferred, also in bilateral cases. It should be, however, remembered that in that case it would be more for distributional reasons that a strict liability rule is preferred and less for deterrence or efficiency. This obviously is a political choice. Moreover, even if a strict liability rule for environmental harm would generally be preferred for political reasons the policy maker should be aware of the fact that there may be disadvantages as far as deterrence is concerned, e.g. if one considers the fact that the victim’s activity level may have an important influence on the accident risk.

Another aspect which has to be regarded as well concerns the fact that the white paper merely deals with damage to bio-diversity and damage caused as a result of soil pollution. It is not immediately clear how the option for these types of damage (and not generally for all environmental harm) relates to the economic criteria for strict liability. A problem is that, as has been mentioned before, the white paper sketches several rough ideas, but not yet the details of a particular liability regime. If one would assume that damage to bio-diversity would be an example of unilateral accident situations, this would obviously enforce the argument in favour of strict liability. But, as we have argued above, even if damage to biodiversity were to be considered bilateral, there would still be an argument in case of strict liability (with a defense) since the ultra-hazardous activity can certainly be supposed to have a more important influence on the accident risk than the victims.

C. Remedy for Insolvency?

Another important issue which should be considered when finally judging the efficiency of the liability regime proposed in the white paper is the fact that the economic literature has stressed, as we just mentioned, that strict liability only will give incentives for efficient prevention if the insolvency risk can be cured. If, in other words, the liability regime of the white paper were to be applied in a situation where the potential magnitude of the harm would always largely outweigh the financial possibilities of the injurer (and no remedies would be available) strict liability would lead to underdeterrence and negligence would even be preferred. It is therefore important to stress that if one assumes that insolvency may arise a remedy has to be found which can provided the injurer with adequate incentives. One such remedy may be insurance, which is the central focus of the study and which will therefore be examined in detail in chapter 5. It is, moreover, reasonable to assume that an insolvency risk may arise since damage may often be caused by relatively small entities with limited financial means. History has unfortunately shown that even companies with limited financial means may cause huge environmental damage and may thereafter be judgement proof. Moreover, the insolvency risk may even arise with larger companies since almost all (larger) companies are

87 Although it is doubtful who should then be considered the victim who influences the accident risk.
organised as legal entities and therefore enjoy the benefits of the limited liability of the corporation. It is precisely because companies enjoy limited liability that some authors have argued that serious underdeterrence may arise.\(^{88}\)

In sum, since insolvency problems are realistic in environmental cases, the strict liability regime proposed in the white paper can only provide efficient incentives if the insolvency problem can be cured. Before addressing the issue whether insurance can be considered an appropriate remedy for the insolvency problem, we will first address how a few legal systems have dealt with environmental liability (chapter 4) and how safety regulation could be considered an alternative for the deterrent effect of liability rules (§ 6). In addition attention will have to be paid to some defenses which often play a role in environmental liability. The question arises how these defenses should be judged from an economic perspective (chapter 3).

\section*{§ 6. Environmental regulation}

A critique which could be formulated on the theory as developed above, which assumes that environmental liability is necessary to provide adequate incentives to prevent environmental harm, could be that the activities which may cause environmental damage are subjected to a large extent to safety regulation. This safety regulation also has the aim of preventing environmental harm. One could therefore ask the question whether the polluter “pays double”\(^{89}\); in addition one could ask the question whether it is at all useful to have liability rules as an additional deterrent now that safety regulation apparently guarantees that activities subjected to regulation would not cause harm to the soil or to biodiversity. It is, to point at the precise role of environmental liability, taking into account the existence of safety regulation, therefore important to pay some attention at the role of environmental regulation in the prevention of environmental harm.\(^{90}\)

\subsection*{A. Criteria for safety regulation}

Let us know examine under what kind of circumstances liability rules may not suffice to deter environmental harm and a regulatory intervention may be necessary. The choice between regulation and liability rules has been thoroughly examined by Steven Shavell in 1984, in a paper in which he advances several criteria that influence the choice between safety regulation and liability rules.\(^{91}\)


\(^{89}\) As has been argued in the recent inauguration address of Bergkamp, L., *De vervuer l betaalt dubbel*, Intersentia, Antwerpen, 1999.


1. Information asymmetry as a criterion for regulatory intervention

Information deficiencies have often been advanced as a cause of market failure and as the justification for government intervention through regulation\(^{92}\). Also, for the proper operation of a liability system, information on e.g. the existing legal rules, the accident risk, and efficient measures to prevent accidents, is a precondition for an efficient deterrence. According to Shavell, the parties in an accident setting generally have much better information on the accident risk than that possessed by the regulatory body\(^{93}\). The parties themselves have, in principle, the best information on the costs and benefits of the activity that they undertake and of the optimal way to prevent accidents. This "assumption of information" will, however, be reversed if it becomes clear that some risks are not readily appreciated by the parties in an accident setting. This may more particularly be a problem if costs are external. These cannot always be easily assessed by the parties involved. Therefore, for every activity the question that will have to be asked is whether either the government or the parties involved can acquire the information at the least cost.

2. Insolvency risk

If the potential damages can be so high that they will exceed the wealth of the individual injurer, liability rules will not provide optimal incentives. The reason is that the costs of care are directly related to the magnitude of the expected damages. If the expected damages are much greater than the individual wealth of the injurer, the injurer will only consider the accident as having a magnitude equal to his wealth. He will take, therefore, only the care necessary to avoid an accident equal to his wealth, which can be lower than the care required to avoid the total accident risk\(^{94}\). This is a simple application of the principle that the deterrent effect of tort liability only works if the injurer has assets to pay for the damages he causes. If an injurer is protected against such liability, a problem of underdeterrence arises\(^{95}\).

Safety regulation can overcome this problem of underdeterrence caused by insolvency\(^{96}\). In that case the efficient care will be determined ex ante by regulation and will be affected by enforcement instruments which induce the potential injurer to comply with the regulatory standard, irrespective of his wealth.

In that case a problem might still arise if the regulation were also enforced by means of monetary sanctions. Again, if these were to exceed the injurer's wealth, the insolvency problem would remain.

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\(^{95}\) Shavell, S., "The judgement proof problem", *International Review of Law and Economics*, 1986, 43-58. Above we mentioned that insolvency causes especially a problem under a strict liability rule, but less so under negligence.

\(^{96}\) If insurance would come into the picture it could overcome the problems of underdeterrence, provided that the moral hazard problem, caused by insurance, can be cured.
Hence, if a safety regulation is introduced because of a potential insolvency problem, the regulation itself should be enforced by non-monetary sanctions\textsuperscript{97}.

3. The threat of a liability suit

Some activities can cause considerable damage, but even so a law suit to recover these damages may be never brought. If this were the case, there would of course be no deterrent effect of liability rules. Therefore, the absence of a liability suit would again be an argument to enforce the duty of efficient care by means of safety regulations rather than through liability rules\textsuperscript{98}. There can be a number of reasons why a law suit is not brought, even though considerable damages have been caused.

Sometimes an injurer can escape liability because the harm is thinly spread among a number of victims. As a consequence, the damage incurred by every individual victim is so small that he has no incentive to bring a suit. In particular, this problem will arise if the damage is not caused to an individual but to a common property, such as e.g. the surface waters in which each member of the population has a minor interest. In addition, a long time might have elapsed before the damage becomes apparent; in this case much of the necessary evidence may be either lost or not obtained. Another problem is that if the damage only manifests itself years after the activity, the injurer might have gone out of business.

A related problem is that it is often hard to prove that a causal link exists between an activity and a type of damage\textsuperscript{99}. The burden of proof of a causal relationship becomes more difficult with the increasing passage of time since the damaging incident took place. Often a victim will not recognise that the harm had been caused by a tort, but might think that his particular ailment, e.g. cancer, had a "natural cause", associated with a general ill health. For all these reasons a liability suit might not be brought and hence safety regulation is necessary to ensure that the potential polluter takes efficient care\textsuperscript{100}.

4. Administrative costs

When examining the pro and contra's of liability versus regulation, the administrative costs of both systems should also be compared. Liability rules are clearly costly in terms of time for both parties and in court fees. A part of these costs is borne by the whole community, such as e.g. the cost of the legal system, fees for the judges etc. Regulation produces costs for the community, including the costs of making the regulation, setting the standards, passing the statutes etc. and of subsequent enforcement\textsuperscript{101}.


\textsuperscript{100} For alternatives to liability suits see: Bocken, H., "Alternatives to Liability and Liability Insurance for the Compensation of Pollution Damages", \textit{Tijdschrift voor Milieuansprakelijkheid},1987, 83-87 and \textit{Tijdschrift voor Milieuansprakelijkheid}, 1988, 3-10.

In this respect the liability system seems to have an advantage: the administrative costs of the court system are only incurred if an accident has actually happened. The main advantage of the tort system is that a lot of accidents will be prevented by the deterrent effect of being held liable and having to pay damages to the victim. In case of safety regulation the costs of passing the regulation and of enforcing it are always there, whether there are accidents or not.

B. THE NEED TO REGULATE ENVIRONMENTAL POLLUTION

After having discussed these criteria for regulation we can now discuss the question of how these criteria relate to environmental pollution. If one takes the criteria for safety regulation discussed above and applies them to the potential risk caused by environmental pollution, there is no doubt that liability rules alone are not sufficient.

If one looks at the first criterion, that of information costs, it must be stressed that an assessment of the risks of a certain activity often requires expert knowledge and judgement. Small organisations might lack the incentive or resources to invest in research to find out what the optimal care level would be. Also, there would be little incentive to carry out intensive research if the results were automatically available to competitors in the market: this is the well-known "free rider" problem. This problem can partially be countered by legal instruments granting an intellectual property to the results of the research. However, the problem remains that it may not be possible for small companies to undertake studies on the optimal technology for preventing environmental damage. Therefore, it is often more efficient to allow the government itself to do the research on the optimal technology (e.g. in a governmental environmental research institute). The results of this research can then be passed on to the parties in the market through the regulation. Hence, the setting of environmental standards in regulation can be seen as a means of passing on information on the minimal environmental technology required. Obviously, it is more efficient for the government to acquire information on the optimal emission standard than it would be for e.g. an individual firm to find out what additional reduction in pollution would produce an optimal reduction of the expected damages from the emission. There are undeniable “economies of scale” advantages in regulation.

Also, the insolvency argument points in the direction of regulation. Pollution can be caused by individuals or firms with assets which are generally lower than the damages they can cause by the pollution. In this respect it should not be forgotten that even a small firm could cause harm to a large number of individuals or to entire ecosystems. The amount of damages caused by this emission can of course largely exceed his individual assets. Moreover, most firms have been incorporated as a legal entity and therefore benefit from limited liability. Hence, the individual shareholders are not liable to the extend of their personal assets, but a creditor of the firm can only lay claim to part on all of the total assets purchased in the firm by the shareholders.

Also the chances of a liability suit being brought for damage caused by wrongful pollution is naturally very low. The damage is often spread over a large number of people, who will have difficulties to

102 These are often referred to as "public interest" criteria for regulation to contrast them with "private interest" explanations for regulation, as advanced by public choice scholars.
organise themselves to bring a law suit. In addition, the damage could only become apparent some years after the emission took place. This will bring proof of causation and latency problems, which will only make it difficult for a lawsuit to be brought against the polluter.

For these reasons it is clear that some form of government regulation of environmental pollution is necessary. To reformulate: this shows that liability rules alone can not suffice to prevent environmental harm, but there might be other, publicly imposed, instruments than the command and control type regulation which can be used to reach this goal. Taxes are obviously such an alternative. But also these are publicly imposed and can hence be considered as 'regulation' Another question, which will be discussed below in D, is whether this necessarily implies that environmental law should necessarily solely depend upon regulation or whether liability can still fulfil a supplementary role.

C. SAFETY REGULATION IN PRACTICE

When Shavell’s criteria for safety regulation are applied to the environmental risk, one can easily note that a strong argument can be made that the efficient care to be taken to avoid environmental damage should also be fixed ex ante by regulation.

In many cases this regulation consists of licences or permits in which an administrative authority fixes an emission standard which must be followed by the potential polluter. These licences play a crucial role in environmental policy in most countries. An improvement of environmental quality will mostly be effected by imposing more stringent emission standards in administrative licences. Hence, the general requirement that emissions are controlled through licences and that the quality and quantity of the emissions are regulated by the conditions in this licence, is a cornerstone of environmental law. Since these licences are administrative acts, in most legal systems environmental law is considered to be a part of administrative law. Criminal law usually only comes into the picture to sanction a violation of administrative regulations or emission standards in the licences.

Although environmental pollution is in the first place controlled through these administrative licences, in individual cases there can still be damage to the environment. Then again liability under tort law comes into the picture and the question is raised of the influence of regulation on the liability system and vice versa\textsuperscript{103}. These complementarities between tort law and regulation shall be discussed below.

Although it is difficult to examine whether the environmental regulation is generally also effective in reducing environmental harm, some studies have attempted to examine the effectiveness of safety regulation in controlling environmental harm. These studies do not address the specific quality of every environmental law, but examine whether regulation has generally been more important in reducing environmental harm than liability rules. Dewees demonstrated that in North America the

quality of the environment has improved substantially as a result of regulatory efforts, not so much in response to legal action in tort.\footnote{Dewees, D., “The Comparative Efficacy of Tort Law and Regulation for Environmental Protection”, The Geneva Papers on Risk and Insurance, 1992, 446-467 and Dewees, D., "Tort Law and the Deterrence of Environmental Pollution” in Tietenberg, T.H., (ed.), Innovation in Environmental Policy, Economic and Legal Aspects of Recent Developments in Environmental Enforcement of Liability, Brookfield, Elgar, 1992, 139-164.}

This empirical evidence of the success of regulation, compared to tort law, has been stressed in the recent book of Dewees/Duff/Trebilcock\footnote{Dewees, D., Duff, D. and Trebilcock, M., Exploring the Domain of Accident Law: Taking the Facts Seriously, New York, Oxford, Oxford University Press, 1996.}. They hold that the large regulatory effort to improve the environment has met with considerable success when measured by the reduction of emissions, but that it is more difficult to argue that the environmental regulations of the 1970's in U.S. equally had a considerable influence on the ambient environmental quality. Moreover, they also stress that while environmental regulation is a determining factor in pollutant emissions and ambient concentrations, other non-regulatory factors such as economic growth and even the weather also influence environmental quality.\footnote{Dewees, D, Duff, D. and Trebilcock, M., a.c., 1996, 307-323.}

D. NECESSITY TO COMBINE LIABILITY AND REGULATION

We just stressed that according to Shavell’s criteria there is a strong argument to control the environmental risk through \textit{ex ante} regulation (or taxes). However, in individual cases there can still be damage to the environment. Then again liability under tort comes into the picture and the question has been addressed in the literature how regulation influences the liability system and vice versa. These complementarities between tort law and regulation have more particularly been addressed by Rose-Ackerman\footnote{Rose-Ackerman, S., “Public Law versus Private Law in Environmental Regulation: European Union Proposals in the Light of United States and German Experiences”, in Eide, E. and Van den Bergh, R. (eds.), Law and Economics of the Environment, 1996, Oslo, Juridisk Forlag, 13-39.}, Faure/Ruegg\footnote{Faure, M. and Ruegg, M., “Standard Setting through General Principles of Environmental Law”, in Faure, M., Vervaele, J. and Weale, A. (eds.), Environmental Standards in the European Union in an Interdisciplinary Framework, Antwerp, Maklu, 1994, 39-60.}, Kolstad/Ulen/Johnson\footnote{Kolstad, Ch.D., Ulen, Th.S. and Johnson, G.V., “Ex Post Liability for Harm vs. Ex Ante Safety Regulation: Substitutes or Complements?”, American Economic Review, 1990, vol. 80, 888-901.} and recently by Burrows.\footnote{Burrows, P., "Combining regulation and liability for the control of external costs", International Review of law and economics, vol. 19, 1999, 227-242.}

Rose-Ackerman also compared US and European experiences in using regulation versus tort law in environmental policy.\footnote{Rose-Ackerman, S., “Public Law versus Private Law in Environmental Regulation: European Union Proposals in the Light of United States Experience”, Review of European Community and International Environmental Law, RECIEL, Vol. 4, 312-32 and Rose-Ackerman, S., Controlling Environmental Policy: the Limits of Public Law in Germany and the United States, 1995, Yale University Press, New Haven and London.} The first point which is often stressed, is that the fact that there are many arguments in favour of \textit{ex ante} regulation of the environment, does not mean that the tort system should not be used any longer for its deterring and compensating functions. One reason to still rely on the tort system is that the effectiveness of (environmental) regulation is dependent upon enforcement, which may be weak. In addition the influence of lobby groups on regulation, to which public choice theory has rightly pointed, can to some extent be overcome by combining safety regulation and
liability rules. Moreover, safety regulation, e.g. emission standards in licences, can be outdated fast and often lacks flexibility, which equally merits a combination with tort rules.

Hence, from the above it follows that although there is a strong case for safety regulation to control the environmental risk, tort rules will still play an important role as well. This obviously raises the question whether compliance with regulation will affect the liability issue. We will address this point in the next chapter.

§ 7. Retroactivity?

A. INTRODUCTION

We now would like to focus on a problem which causes a lot of turmoil in the liability and insurance world of late. It has to do with the fact that with the increasingly technological character of risks time increasingly becomes a problem. Very often one can note that a long time lapse expires between the moment that a tort (e.g. an emission) occurs and the moment that the damage manifests itself. This problem of a long time lapse between the harmful event and the damage occurrence is known in the Anglo-American literature as "latency"; in Europe this problem is sometimes referred to as the "long tail risk". This long time lapse can, by the way, not only be caused by the technical feature that it takes a very long time before some risks manifest themselves. In some cases victims simply wait a long time with the filing of their lawsuit or, when they do, legal procedures may take a long time as well.

We believe that this notion of time sheds a different light on a number of liability and insurance issues and causes a number of policy problems as well related to the financing of risks which had their origin in a distant past. Several problems may arise both for the liability issue itself as well as for insurance and for the general question how ancient risks should be financed. We will try to highlight some of these issues and also show that they are very much related.

B. STATUTES OF LIMITATION

As far as the liability issue is concerned a first point that always comes to mind when time issues are at stake is the statute of limitations. Without going into this issue in detail here one can easily argue that it nicely illustrates the balance of interest that has to be taken into account. On the one hand the argument could be made that an unlimited liability in time might provide better incentives for the tortfeasor if he knows that he can never get off the hook, simply through a time lapse.

On the other hand the problems of proving negligence and causation might become so large over time that the wrongfulness of the tortfeasor can not be established any more in a reasonable way. This, together with an argument of legal certainty, is often advanced to justify statutes of limitation. For the

See e.g. with respect to the Netherlands Dommering-van Rongen, L., “Risico’s met een lange staart”, in Miscellanea Huriconsulto Vera Dedicata, Essays offered to Prof. Mr. J.M. van Dunne, Deventer, Kluwer, 1997, 27-39.
insurer the argument can also easily be made that a liability which would be unlimited in time would be uninsurable\textsuperscript{113}. There are, however, instruments through which the insurer can protect himself. An obvious one is to limit the period of coverage in time e.g. through a claims made policy. Even if one therefore can argue that there are solid reasons for a statute of limitations one shall nevertheless find that serious problems will arise as far as the financing is concerned. Indeed, the effect of a statute of limitation which has passed is obviously that the tortfeasor does no longer have to bear the financial consequences of his wrongdoing and victims remain uncompensated. This of course brings them to various attempts to delay the period of limitation as far as possible, e.g. by arguing that the statute of limitations only starts to run once the damages manifest themselves and not when the harmful event occurred. In the end the uncompensated victim will turn to the government to claim compensation for e.g. the clean-up of a polluted soil so that in the end society at large will pay for the consequences of wrongful acts which occurred in the past. The financial consequences are thus spread over the large community of taxpayers which is, by the way, often the consequence when no solvent debtor can be found.

We will, however, not focus on problems related to statutes of limitation in this study\textsuperscript{114}. We just use the example to show the relationship between liability, insurance and financing of risk. A problem that we do want to discuss in further detail is that a time lapse can cause serious problems when the contents of the liability rule or the standard of care has changed since the moment that the wrongful event took place. This problem, which is often referred to as retro-activity, raises the question of whether new standards of care (either legislative or jurisprudentially) should be applied to old situations.

C. PRINCIPLES OF EFFICIENT AND FAIR COMPENSATION

A starting point for our analysis is that in our view a finding of liability should have a positive effect on the incentives to prevent accidents of the potential tortfeasor. Therefore: no matter how a compensation mechanism of accidents is organised, it is essential that as much as possible those who cause a certain risk should also bear the financial consequences of it. In addition they should also pay to the degree to which they caused the damage.

This demand that risks should be differentiated is obviously well known in insurance economics\textsuperscript{115}, but can also prove to be helpful in addressing the problem of liability for retro-active risks. These requirements of risk differentiation are not only important to get an optimal prevention of accidents, but also from a justice or distributional perspective. The compensation system should indeed try as much as possible to allocate financial consequences of risks to those who actually contributed to those risks.

\textsuperscript{113} We will come back to the relevance of statutes of limitation for insurance below.
\textsuperscript{115} The importance of risk differentiation will be stressed in chapter 5.
D. EXAMPLES

Before applying these general principles to the retro-activity problem we first would like to present a number of examples of cases which illustrate this retro-activity problem. In some cases there is an explicit introduction of retro-active liability by the legislator. One can for instance refer to the United Kingdom's Environment Act 1995, which instituted a strict retrospective liability for the remediation of contaminated sites. Another well known example is the heavily criticised American Superfund regime, instituted through CERCLA, which equally instituted a retro-active liability regime.

The problem of a retro-active application of norms also arises in every case where case law is developing new and more stringent standards of care for certain activities and applies these new norms to the existing situation. The problem is that in those cases the harmful event was not considered wrongful at the time when it took place, so that this case law in fact amounts to retro-activity. Spier also showed that very often judges will apply a new standard of care to old situations. This was for instance the case in the Netherlands with respect to the new case law with respect to traffic liability which was also applied to cases which had their origin before the new case law and which therefore, in fact, were applied retro-activity.

A last, interesting, example concerns the Dutch case law with respect to employers liability for exposure to asbestos. In the well known case of Cysouw/De Schelde it was clear that the employee Cysouw at some point during his services for the employer De Schelde had been exposed to a fatal asbestos crystal which years later caused the fatal disease asbestosis. However, during a first period it was considered that the harmful consequences of exposure to asbestos were not known yet and that

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116 For further details see Faure, M., "Is aansprakelijkheid met 'terugwerkende kracht' efficiënt en verzekerbaar?", Aansprakelijkheid en Verzekering, 1998, 1-11.
therefore it was not wrongful of the employer not to have taken precautionary measures to protect the employee. In a second period, when Cysouw still was employed, the effects of asbestos were known and the employer had not taken precautionary measures. Hence, it was crucial to find out whether Cysouw had inhaled the fatal crystal during the first period (in which case the employer would not have acted wrongfully) or in the second period (when there would be liability of the employer). The Dutch Supreme Court decided to shift this risk of uncertainty to the employer, who was imposed the burden to prove that Cysouw did not receive the fatal crystal during the first period\textsuperscript{122}. It will obviously be hard if not impossible to deliver this proof\textsuperscript{123}.

E. TIME LAPSE AND INCENTIVES TO PREVENT ACCIDENTS

Let us now address the problem of how the law should, at first sight, deal with these issues of retroactivity, taking into account the above mentioned principles of efficiency and fairness. Looking at the efficiency aspect first one can relatively easily state that a retro-active application of a new standard of care seems contrary to my principle that liability should give incentives for correct behaviour in the future. If suddenly a certain behaviour is considered to lead to liability ex post, whereas this was not the case \textit{ex ante} and finding of liability can then obviously never affect the incentives of that particular tortfeasor for the future. Retro-active liability therefore does not seem to serve any purpose as far as the prevention of accidents is concerned. It has been shown both in the European\textsuperscript{124} and in the American context that a retroactive liability seems inefficient. Boyd and Kunreuther held that retroactive liability may even weaken the incentive to take precautions against future environmental costs\textsuperscript{125}.

F. JUSTICE AND COMPENSATION CONSIDERATIONS

When we now turn from the efficiency to the justice aspect one could of course argue that the compensation perspective of tort law is probably the main reason why retrospective liability is nevertheless often introduced. This can well be understood. Judges are often not interested in the long term preventive effects of their rulings but have to deal with solving one particular case where the demand to "do justice" to the particular victim is high. This demand for "Einzelfallgerechtigkeit" explains why the redistributive desire to compensate victims is often stronger than the attention for the preventive function of tort law\textsuperscript{126}.

\textsuperscript{122} Dutch Supreme Court, 25 June 1993, and Nederlandse Jurisprudentie, 1993, 686; see with respect to this case and the problem of causal uncertainty also Faure, M., \textit{(Geen schijn van kans. Beschouwingen over het statistisch causaliteitbewijs bij milieugezondheidschade}, Antwerpen, Maklu, 1993.
\textsuperscript{123} Below we will show by using Dutch case law that this retroactivity problem also plays a role in the environmental liability practice.
In addition, one should remind that retrospective liability often is an issue in environmental cases where the first victim is usually the government. This obviously explains the tendency of legislators and judges to hold operators today to a high standard of care even for behaviour that was committed e.g. 20 years ago and was not considered to give rise to liability at the time.

Moreover, when a choice has to be made between the poor plaintiff victim and the supposedly wealthy defendant a deep pocket argument will obviously play its role as well.

However, from a distributive point of view, retro-active liability could be criticised. Indeed, in many cases, the operators who caused e.g. soil pollution in the past, may be out of business now. It is, therefore, questionable whether it is fair to shift the costs of soil clean up operations merely to the unlucky operators who can still be found in business today and whose behaviour at the time was not considered to give cause to liability127.

In sum, we can hardly see why the consequences of a collective failure in the past should be put on the shoulders of one particular tortfeasor who could not be held liable at the time when he committed the act. This seems hardly fair.

G. WHITE PAPER: NO RETROACTIVITY

The retrospective application of liability seems thus, at first sight, to collide with the main economic principles of tort law, discussed above, being the idea that foreseeing a liability ex post should gives incentives ex ante for the prevention of accidents. Since the behaviour was not considered wrongful at the time, a retrospective application of new standards either through case law or through regulation could not affect the incentives for future behaviour of any specific operator. The economics of tort law indeed assumes that future incentives for prevention will be affected, given the legal regime in force. It is hard to argue that ex post liability will positively affect the incentives for behaviour which was not considered giving rise to liability at all at the time when the act was committed. Retrospective liability hence seems problematic from an efficiency point of view. In addition we have argued that also from a distributive point of view retrospective liability can be criticised128.

Nevertheless in practice problems may often arise because environmental harm may occur which had its cause in a distant past. A question which obviously arises is how this may affect the insurance situation. Here we have argued that retrospective liability is generally to be considered inefficient, if it is defined as a regime whereby the behaviour was not considered wrongful at the time when the act was committed and nevertheless liability is accepted. Below we shall address the question whether the same negative conclusion with respect to retrospective liability should be reached from an insurance perspective and how insurance should at all be able to deal with these so-called long-tail risks.

For now it is interesting to point at the fact that once more the white paper on environmental liability seems to follow economic logic since it clearly states that the liability regime proposed in the white

127 Some have, therefore, argued that the actions in recovery of clean-up costs in fact have the character of a lottery.
paper should be non-retrospective\textsuperscript{129}. This follows suggestions from studies preceding the white paper, such as the study on liability for contaminated sites, which equally clearly argues against liability for past pollution\textsuperscript{130}.

\textsuperscript{129} White paper, 16.
\textsuperscript{130} Deloddere, S. and Ryckbost, D., "Liability for contaminated sites, study for the commission". (A summary is included in the white paper, 49-51).
Chapter 3   Possible defenses

§ 1. Introduction

So far we have provided some insights in the theoretical literature which explains how liability rules could give appropriate incentives for prevention, we have explained the relationship between regulation and liability rules and we have pointed at the fact that a liability regime should in principle be non-retrospective if one believes that liability is to affect future incentives, as apparently the white paper does. So far, we also pointed at the fact that the regime sketched out in the white paper seems to correspond to a large extent with these theoretical notions.

However, within the discussion concerning liability regimes in general, but more particularly in the discussion concerning environmental liability a number of defenses is often discussed. It seems interesting to briefly address some of these potential defenses, on the basis of the theoretical framework sketched out in this chapter. This is important since the white paper has not explicitly dealt with the issue of defenses yet, but at some stage decisions in that respect might have to be taken131. Moreover, a discussion of potential defenses seems interesting in the light of the argument which is sometimes heard that a strict environmental liability, as proposed in the white paper, might be considered as “crushing”. Finally, we will have to come back to the potential importance of defenses, when discussing the insurability of the liability regime proposed in the white paper132.

We will already give a few examples of how some legal systems, mostly Belgium and The Netherlands, deal with a few defenses. Other examples will be discussed in the next chapter.

§ 2. Force majeure

A. Economic justification

A traditional defense which is accepted in almost every liability regime is force majeure (although it may know different conditions). Also the white paper briefly refers to force majeure as a possible defense133. From an economic point of view one can easily argue that in case of force majeure there should be no liability. Force majeure is generally a condition, not only for fault or strict liability, but for every liability in tort. It is related to the blameworthiness requirement, which requires that the injurer should have capacity for tortious liability. A tort will indeed, accordingly to most legal systems, only make an injurer liable if the wrongful act is imputable to him.

131  The issue of defenses is briefly addressed at 18 of the white paper, but the options still seem to be left pretty much open.
132  Obviously we cannot discuss all possible defenses; see also Bergkamp, L., *I.c.*, 202.
133  White paper on environmental liability, 18 …
This condition of blameworthiness relates to the free will and the capacity of discretion of the tortfeasor. This blameworthiness requirement also has a clear economic rationale. When the injurer did not act out of free will, liability cannot influence his incentives to take care and has, therefore, no economic meaning. A finding of liability which does not influence the incentives of the tortfeasor will only create administrative costs (caused by the transfer of the loss) without any compensating benefits in providing additional incentives to take care.

We refer here to the blameworthiness requirement simply as meaning that the injurer should have contributed to the loss. The requirement of 'blame' traditionally fits into a fault or negligence concept. In fact in the context of strict liability mere causation suffices. But if the injurer did not 'cause' the accident, he should not be held (strictly) liable. Force majeure therefore should remain on defense, even under strict liability, since a finding of liability makes no sense if the injurer could not have influenced the risk.

B. EXAMPLES: BELGIAN CASE LAW

This idea can be found in Belgian tort law in the notion of blameworthiness. The principle is that an injurer cannot be held liable if a fault is not imputable to him. As a consequence e.g. children who did not reach the age of discretion yet, the so-called infantes cannot incur any personal liability. There is a clear economic rational for this rule: since liability cannot have any influence on the incentives to take care, it would only cause the administrative costs of shifting the loss without any compensating benefit for the incentives. Blameworthiness (or imputability) can hence be considered as an additional condition in establishing fault, from an economic point of view.

If the accident is caused through force majeure, most legal systems hold that the damage is not imputable to the injurer. Belgian case law with respect to traffic accidents has many examples of this rule. When an accident is caused through a sudden and unexpected physical or mental incapacity, the injurer will not be held liable. Thus, many cases hold that if a traffic accident is caused by a hart attack or by an epileptic faint, the injurer will not be held liable. On the other hand, the injurer cannot call on the exception of force majeure if he knew or should have known of such a possibility. It has been decided that a patient who suffers from a hart condition and despite the advice of his doctor not to drive his car any more, nevertheless does so, will be fully liable for the damage caused by an accident due to his unconsciousness.

C. EFFICIENT CASE LAW

These decisions are straightforward from an economic point of view. To hold an injurer who unexpectedly suffers a hart attack liable could not influence his level of care or his activity level and would

136. There is no clear rule as to what is the "age of discretion". It is usually considered the age at which children are not yet able to make an adequate judgment of the consequences of their behaviour and therefore certainly below the age of 10.
thus not make sense from an economic point of view. If, on the other hand, the accident was not unforeseeable for the injurer, e.g. because he was aware of his physical or mental condition, liability does make sense. In such a case, liability could again lead to an activity level change. Once more, such a patient, who is e.g. aware of his heart condition, is an individual at the left of the frequency distribution curve, who will not be able to spend \( y_{-\ast} \) on care. If he is aware of his specific condition, he might try to exercise higher care. However, given the specific condition, he might never be able to reach \( y_{-\ast} \) and thus he might prefer the activity level change: taking the bus instead of driving the car.

Belgian case law with respect to these cases of "faints on the wheel" seem to fit well in the economic model, since the case law takes into account the foreseeability of the condition. The same criterion is also used in case law to answer the question under what kind of circumstances weather conditions can be considered as force majeure. Again, Belgian case law accepts that e.g. a totally unexpected cloud of fog can be considered as force majeure but not a slowly upcoming fog which is foreseeable for the driver\(^ {138} \). The same applies as well with respect to case law dealing with punctures. If a driver is confronted with a tire which is slowly emptying itself, usually it is still possible to take preventive measures to avoid an accident\(^ {139} \), but an exploding tire is usually qualified as an unexpected event which constitutes a case of force majeure for the driver\(^ {140} \). Furthermore, case law equally holds that this force majeure situation may not be imputable to the injurer. If a puncture is the result of bad maintenance of the car, the driver will nevertheless be held liable. This obviously makes sense from an economic point of view as well: it will give the driver an incentive to maintain his car in a proper way.

In sum, the defense of force majeure seems to fit well into the theoretical framework which we have developed in this chapter. Holding an injurer liable for environmental harm if the accident was caused by force majeure does not seem to make sense if one believe, as the white paper does, that liability should affect the incentives for prevention.

§ 3. Justificatory effect of following regulation

A. Importance of licenses

Above we have explained that to a large extent the prevention of environmental harm is also achieved as a result of regulation\(^ {141} \). A lot of attention is paid in the literature to the relationship between regulation and liability. In this respect for instance the question arises whether following a regulatory standard excludes from liability.

In environmental law this is particularly important, since the conditions under which an emission of pollutants is allowed are mostly laid down in a permit. Obviously these permits and their effects on liability can take various forms. In some cases permits and regulations are fairly general, but in other

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\(^{138}\) See the cases discussed by Van den Berghe, H., Van Quickenborne, M. and Hamelink, P., *I.c.*, 1205.
\(^{141}\) See § 6 of the previous chapter.
cases they specify emission limits. It is especially in the latter case, that is when specifically allowed
releases in a permit have been respected, that industry often argues that as long as they follow the
conditions of that licence, no finding of negligence in tort law is possible. This is often referred to as
the 'justificative effect of a licence' on the 'regulatory compliance defense'. Therefore it merits
discussion at this point.

B. POSITION OF DUTCH LEGAL DOCTRINE AND CASE LAW

The regulatory compliance defense is, however, rejected in some legal systems, like in Belgium and in
the Netherlands. It is argued that the basic idea is that the administrative authority, when granting a
licence and setting permit conditions, cannot take into account the possible harm that the licensed
activity might cause to all possible third parties. Their rights on compensation for damages may not
be impaired simply because the operator of a plant followed the conditions of a licence. Legal doctrine
and case law clearly state that keeping the permit conditions is just a minimum; in addition, the plant
owner has to take all possible precautions as deemed necessary under tort law to avoid his licensed
activity causing harm to third parties.

For instance in Dutch case law it is indeed generally accepted that following the conditions of a
licence does not release a plant owner from potential liability. An exception would only exist if the
interests of the potential victims were clearly taken into account when the conditions of the permit
were set. This point is made very clear in a famous case in the Dutch Supreme Court that dealt with
pollution caused by the French salt mines in the Alsace region. The Salt Mines argued that the
emissions were within the limits set by their permit and, therefore, not illegal. The court, however,
judged that the licence had not taken into account the potential harmful effects of the emissions for
third parties and could, therefore, not release the salt mines from liability.

C. ECONOMIC RATIONALE

One can find an economic rationale for this rule. If compliance with a regulatory standard or licence
would automatically result in a release from liability, the potential injurer would have no incentive to
invest more in care than the regulation asks from him, even if additional care could still reduce the

142. For a comparative analysis of the question whether following a permit excludes criminal liability see, Faure, M. and
Oudijk, J.C., "Die strafgerichtliche Überprüfung von Verwaltungsakten im Umweltrecht. Ein rechtsvergleichender
143 The position in a few other legal systems, e.g. in Germany and Sweden, is discussed below in chapter 4 § 4.
144. See Supreme Court (Hoge Raad) 30 January 1914, Nederlandse Jurisprudentie, 1914, 497; Supreme Court 10 March 1972,
Nederlandse Jurisprudentie, 1972, 278.
145. Rus-van der Veld, M., "Onrechtmatige daad en vergunning", in Koeman, N.S.J., Ouwkerk, W.J., and Van Dunné, J.M.
(Eds.), Civielrechtelijke aansprakelijkheid voor milieuschade, Vereniging voor Milieurecht, 1987-4, Tjeenk Willink,
Zwolle, 111 and Nieuwenhuis, J.H., "Blinddoek en balans in het milieurecht. Drie manieren om belangen af te wegen" in
146. Supreme Court 23 September 1988, Rechtspraak van de Week, 1988, 150 and see Faure, M., "De gevolgen van de
'administratieve afhankelijkheid' van het milieustrafrecht: een inventarisatie van knelpunten" in Faure, M., Oudijk, J. and
expected accident costs beneficially\textsuperscript{147}. A first reason to hold an injurer liable (if the other conditions for liability are met), although he has followed the regulatory standard, is that this standard is often merely a minimum. The complete ‘compliance defense’ prevents any incentive to take precaution in excess of the regulated standard\textsuperscript{148}. Exposure to liability will give the potential injurer incentives to take all efficient precautions, even if this requires more than just following the licence. This, by the way, holds both under negligence and strict liability. Since the regulatory standard can not always take into account all efficient precautionary measures an injurer can take, testing the measures taken by the injurer even though the regulatory standard was followed, will provide additional incentives. Allowing a regulatory compliance defense would also largely remove the beneficial incentive effects of strict liability. As we argued above, strict liability has the advantage that it provides the injurer with incentives to take all efficient measures to reduce the risk (prevention and activity level), even if regulatory conditions were followed. This outcome has been shown formally by Kolstad/Ulen/Johnson\textsuperscript{149} and more recently by Burrows\textsuperscript{150}. They argue that the complete compliance defense prevents any precaution in excess of the regulated standard. If there is serious under-enforcement of standards, the role of liability as an incentive to take precautions remains important.

A second reason is that exposure to liability might be a good remedy for the unavoidable capturing and public choice effects that play a role when permits are granted. If a permit would always release from liability, all a plant operator would have to do, is get a good permit with easy conditions from a friendly civil servant. That would then exclude any law suit for damages from a potential victim. Obviously the capturing and public choice effects should be addressed also via direct tools. In this respect one can think about the liability, even under criminal law, of the licensor\textsuperscript{151}. Liability on the licensor (and appropriate sanctions within administrative law) can provide incentives to civil servants to act efficiently when granting licences\textsuperscript{152}. This, however, still requires tort law to take into account of the fact that regulatory standards are not always set efficiently. If the optimal level of care is higher than the regulatory standard liability will efficiently provide additional incentives.

Moreover, tort law can also be seen as a ‘stopgap’ for situations not dealt with by the statute\textsuperscript{153}. This makes clear that the exposure to liability notwithstanding the permit is an important guarantee that the plant operator will take efficient care. Finally, in a recent paper Schmitz provided an additional


\textsuperscript{149} Kolstad, C.D., Ulen, T.S. and Johnson, G.V., \textit{I.c.}, 1990, Vol. 80, 888-901.

\textsuperscript{150} Burrows, P., \textit{I.c.}, 1999, Vol. 19, 227-244.


\textsuperscript{152} Note, however, that industry argues against such a liability of the licensor, claiming that this may entail the risk that licensors would be too reluctant in allowing emission, if this could give rise to their liability (Niezen, G.J., \textit{I.c.}, 171).

\textsuperscript{153} Rose-Ackerman, S., \textit{O.c.}, \textit{Rethinking the Progressive Agenda}, 123.
justification for combining liability and safety regulation, being that this combination is welfare-improving if wealth varies among injurers.\textsuperscript{154}

D. NO “SECOND GUESSING”

Therefore, following the conditions of a license or – more generally – regulatory standards, should not have a justificative effect in tort. The opposite may only be true if it were clear that the administrative agency took into account all potential harm of all interested third parties when setting permit conditions. Indeed, theoretically regulators and licensors are supposed to set standards in regulations and permits in a way that reflects political choices about the level of risks that maximise welfare. Hence, ideally, when setting objective pollution standards, regulators are supposed to weigh costs and benefits of different norms and choose the standard that delivers the highest social net benefit. In such a case a judge in an civil liability suit should not be “second guessing” efficient agency decisions. It is, however, rare that agencies will be able to take \textit{ex ante} all these interests and possible damages into account when setting permit conditions. Hence, as a general rule, following licenses or regulatory standards should not free from liability; the opposite would be the exception. This is the case both under a negligence as well as under a strict liability rule. Indeed, holding an injurer liable, notwithstanding he followed regulatory standards will play an important role under a strict liability rule, since this will lead the injurer to take efficient care and adopt an efficient activity level, i.e. to take all efficient measures to reduce the potential accident costs, although this might require more to be done than the regulation requires. Under a negligence rule this case law is also significant if the efficient care standard (which is assumed to be equal to the due care standard required by the legal system) is higher than the regulatory standard. The basic reason remains that efficient preventive measures can be taken above what is often prescribed in the norm. Requiring a potential polluter to take these efficient preventive measures thus increases social welfare.

E. JUSTIFICATIVE EFFECT IN THE WHITE PAPER?

The question whether regulation (or following licences) should have a justificative effect in the area of environmental liability is obviously also of great importance in the context of the environmental liability regime as proposed in the white paper. It is obviously not possible to elaborate on this important point (which merits much more and more detailed attention) within the framework of this study, which merely focuses on the insurability of environmental harm. However, a few general remarks can be made on how the principles sketched out above apply to the regime proposed in the white paper. On the one hand the economic rationale for not granting a justificative effect to following regulation remains applicable, also when the damage concerns soil pollution or damage to biodiversity (as is the case in the regime proposed in the white paper). One can indeed argue that e.g. damage to bio-diversity may have a large variety of causes and regulation can only to a small extent deal with the potential damage to bio-diversity. Following the conditions in regulation and licences is

\textsuperscript{154} He argues that this is a more satisfactory assumption than the traditional one, being that there are persistent enforcement errors in regulation (Schmitz, P., “On the joint use of liability and safety regulations”, \textit{International Review of Law and Economics}, Vol. 20, 2000, 371-382.
therefore merely a minimum. If an injurer could take cost efficient measures to further reduce damage to bio-diversity it would be efficient to hold him liable, even if regulatory conditions had been met.

However, the case of bio-diversity damage is a typical one since decisions on the allowed degree of damage to bio-diversity will obviously to a large extent depend upon prior zoning and planning decisions within the framework of regulations on environmental planning. One could imagine the situation where a government authority has balanced all the interests involved appropriately and has, on the basis of available information taken an efficient decision, after having heard all parties involved, concerning the amount of bio-diversity damage which would be allowed. In that case one could imagine that it would not be efficient that e.g. one of the parties who has been involved in the licensing process (and has hence been heard previously) would afterwards be allowed a liability suit for damages to bio-diversity although the damage consists precisely of the harm which had been foreseen as a result of the licence. It is particularly in these situations that e.g. Rose-Ackerman argues that a judge in a civil liability suit should not be second guessing efficient agency decisions and that Bergkamp argues that the polluter should not "pay double", once because he has to follow regulatory conditions and once because he has to compensate the victim. Although one should, once more, in principle not accept a justificative effect of prior regulatory decisions, there may be exceptional situations where the regulatory decision can be such that all the interests involved have been weighed appropriately and that an efficient standard resulted of this balancing process. In that case it seems logic that when this efficient standard has been followed by the regulated, liability in tort is excluded. This seems, however, more to be an exceptional situation than the general rule.

§ 4. Development risk

A. LIABILITY TO PROVIDE INCENTIVES FOR INNOVATION?

When we discussed the issue of retrospective liability above we argued that a retrospective application of new standards seems, at first sight to collide with the main principles of tort law, as sketched out in the previous chapter.

This outcome should, however, be modified, taking into account the fact that there may be many situations where new risks emerge or where the standard of care increases through changes in technology. It would be too easy simply to state that the tortfeasor will only be held to comply with the "old" standard of care and shall never be liable for risks which he could not foresee. Indeed, it has equally been stated in the literature that the foresight that there may be liability give incentives to obtain information about risk to industrial operators.

155 Compare Niezen, G.J., I.c., 170-171.
156 Ibidem
157 Bergkamp, L., o.c.
The fact that there may be *ex post* liability even if technology changes is one of the powerful arguments made in law and economics in favour of liability for the so called development risk. This should give an operator appropriate incentives for investments in research to acquire information about risk and about optimal technologies to prevent the risk.

The question, however, arises whether this reasoning can also be used to justify a retrospective change of a liability rule or changes in the standard of care itself. The argument is hence a totally different one if not only the nature of the risk changes but the liability rule itself. The economics of tort law assumes that future incentives for prevention will be affected, given the legal regime in force. Hence, it is hard to defend that an *ex post* change in the liability rule will positively affect the incentives for proper behaviour which was not considered wrongful at all at the time when the act was committed by the industrial operator. One can expect an operator to assume that new risks may emerge, but hardly that the contents of the law will change. Requiring this would lead to an inefficiently high demand for preventive measures and thus to over-deterrence. Hence, retrospective liability indeed seems problematic taken into account the deterrent function of tort law.

**B. PROSPECTIVE OVERRULING AS A SOLUTION TO THE DILEMMA**

From this it follows that there apparently is a dilemma: on the one hand it is obviously useful that the standard setting process in civil law is seen as a process of learning whereby the standard of care is not static, but dynamically changes in time\(^{159}\). It would obviously be wrong to state that due care standards should never change. There may be many reasons, for instance new technological insights, leading judges to the efficient decision that a more stringent standard of care can be applied. This new case law can, moreover, have an important signalling function for other parties in the market who can again, adept their future behaviour. But the question obviously arises what should be done with the individual defendant in the particular case in which a new standard of care is set. Should we sacrifice him for the benefit of a more efficient standard in the future and make him retro-actively liable although his behaviour was not considered wrongful at the time when it was committed?

There is a possible way out of this dilemma presented by the German Supreme Court\(^{160}\). It concerned a case of a ski accident that had occurred on the well known Zugspitzeplatte where the victim had hit an unprotected pillar of a ski lift. The Bundesgerichtshof first of all states that the party responsible for the ski lift violated a general duty of care. It grounded this judgement on a motivation which is highly interesting from an economic point of view:

"Die mit einer solchen Abpolsterung verbundenen Kosten stehen nicht außer Verhältnis zu ihren aus den Schleppliften zu erzielenden Einnahmen. Zudem ist der Unternehmer in der Lage, die Aufwendungen über den Fahrpreis weiterzugeben."

\(^{159}\) This argument has been powerfully stressed by Ott, C. and Schäfer, H.B., "Negligence as Untaken Precaution, Limited Information and Efficient Standard Formation in the Civil Liability System", *International Review of Law and Economics*, 1997, 15-29.

Next, the Bundesgerichtshof also asks the question whether the responsible party who had apparently violated a duty of care was also to blame for the accident. This is denied by the Bundesgerichtshof for the following reasons:


Hence the Bundesgerichtshof holds that the operator of the ski-lift is not to blame for the violation of the duty of care.

This approach is known in the American literature as the "prospective overruling", meaning that a court follows an old duty of care in this particular case (with the result that there is no finding of liability), but announces that it will follow a different decision in the future\textsuperscript{161}.

C. DEVELOPMENT RISK DEFENSE: INCENTIVES TO INNOVATE\textsuperscript{162}

This seems to me both an efficient and a just solution: on the one hand a preventive effect is achieved for the future since future potential tortfeasor know that a new and more stringent due care standard shall apply. On the other hand it seems fair not to apply this new standard with respect to the particular defendant in that particular case, who could indeed not have known that new rules would apply.

In sum, the discussion above makes clear that in fact a distinction has to be made (although the issues seem to be confounded sometimes) between on the one hand a retrospective application of a new liability regime and on the other hand the liability for development risks. A liability regime for risks which are not known yet today is not necessarily inefficient, precisely since, if this is known in advance, will give incentives to require information on these new risks and on the optimal techniques to prevent the risk. Thus a strict liability, also for development risks, might provide appropriate incentives for a dynamic investment in optimal preventive techniques. This however does not justify a retrospective application of new standards or new legislation, which could never have positively affected future incentives for prevention. In other words: a liability for development risks is not


\textsuperscript{162} The insurability of retro-active liability is further extensively discussed in chapter 5 § 9.
inefficient as long as it may positively influence incentives for prevention and as long as the development risk liability is not a disguised retroactive liability.\footnote{A simular \textendash balanced \textendash conclusion concerning the efficiency of a development risk defense is reached by Wagner, G., \textit{I.c.}, 1999, 1450.}

The \textendash justified \textendash fear for retroactivity probably explains why legal systems are often reluctant to introduce liability for development risks. For instance in the context of the product liability directive we can point at article 7 (b) which explicitly excludes liability if the producer can prove that, having regard to the circumstances, it is probable that the defect did not exist at the time when the product was put into circulation. Moreover, the real 'state-of-the-art-defense' is included in article 7 (e) which states that the producer shall not be liable if he can prove that the state of scientific and technical knowledge at the time when he put the product into circulation, was not such as to enable the existence of the defect to be discovered.\footnote{The state of the art defense has also been addressed in the American context by Boyd, J. and Ingberman, D., "Should 'relative safety' be test of product liability?", \textit{Journal of Legal Studies}, 1997, 433-473. They show that the 'customary practice test' tends to induce inadequate safety, whereas the 'technological advancement test' tends to induce excessive safety.} However, article 15.1.b provided for an option for member states to nevertheless introduce liability for development risks. This option was only used by Luxembourg and Finland.\footnote{And by Spain for food on medical products as well as by France for products derived from the human body. See the overview of the transposition in domestic law, provided in the green paper on the liability for defective products, 35-36.}

§ 5. Contributory negligence

We indicated above that both a strict liability rule and a negligence rule will lead to the optimum in cases where the victim’s care does not influence the probability of an accident and where only care (and not the activity level) can influence the risk. Most accident situations are “joint care” cases. In this situation \( p(x,y)L \) is also influenced by the behaviour of the victim. A simple strict liability rule would not lead to the efficient result, since the victim has no incentive to spend on care. To remedy this problem, the victim might be considered “contributory negligent” if he does not take due care. A contributory negligence rule, as known in the Common Law, excludes a right to compensation for the victim who did not take due care.

Assuming that \( x^\dagger=x^* \) is the legally required level of care for the victim, the victim will have the incentive to take optimal care. If he would not take due care he would be found negligent as well and would receive no compensation. An efficient result will also follow both under negligence rule and under a negligence rule with a contributory negligence defense. In both cases the injurer will spend \( y^* \) on care and the victim will, in order to avoid to bear the loss himself, spend \( x^* \) on care.

Discussing the economic model of tort law we indicated that both a strict liability rule in combination with a defense of contributory negligence and a negligence rule (with or without contributory negligence) will give appropriate incentives to the victim to spend \( x^* \) on care.\footnote{Brown, \textit{I.c.}, 1973, 340-342; Calabresi, \textit{I.c.}, 1975, 663; Landes, W. and Posner, R., \textit{I.c.}, 1981, 880-882.}
A comparative negligence rule has the effect of proportionally dividing the loss between the injurer and the victim, if both committed a fault. Under this rule the right to compensation will be proportionally reduced if the victim was negligent. The injurer will still take efficient care to avoid liability, while the victim still takes care to minimise his own loss\(^{167}\). The efficiency of this rule is debated in the literature. Haddock and Curran point at difficulties in analysing the comparative benefits of comparative negligence versus a contributory negligence defense\(^{168}\). It is well-known that Posner is an opponent of this rule\(^{169}\). According to him the rule causes considerable administrative costs, without any compensating benefits for the incentives to take care. Not only is an intervention of the legal system necessary to shift a part of the loss from the victim to the injurer, but judges will also have to examine the faults of both parties and the proportion in which they contributed to the loss. Posner argues that comparative negligence makes economic sense only when society wants to use the tort system to provide insurance to accident victims.

In sum, if a strict liability rule is proposed for environmental damage some defense should be added to take account of the behaviour of the victim, but this can either be a contributory or a comparative negligence rule. To be clear: a strict contributory negligence rule, meaning that the victim loses the claim on compensation entirely in case of his negligence, is almost not applied any longer. Most legal systems have turned to a proportionate reduction of the compensation due to the victim. Note that the White Paper seems to allow (at least discusses) the ‘contribution to the damage or consent by the plaintiff’ as a defense\(^{170}\). This corresponds with the conclusion of the economic model that in bilateral cases strict liability is efficient only in a defense is added to take account of the victims behaviour\(^{171}\).

§ 6. “First use”-defense

The first use doctrine (also referred to as the coming to nuisance defense) relates to discussions that arise when e.g. a factory was located in a relatively empty area and is afterwards confronted with neighbours who "came to the nuisance" and then claim compensation or even the relocation of the factory. This problem is widely discussed in law and economics literature\(^{172}\) and more specifically by Wittman\(^{173}\).

Starting point for this literature is that usually first will be investigated whether the harm to the "newcomers" can be prevented or reduced by preventive measures to be taken by the existing factory. If this is the case and transaction costs are zero then Coase teaches us that the efficient preventive device will be installed irrespective of the legal rule. If transaction costs are prohibitive a liability rule can force the existing firm to implement the preventive measures. If the conditions for liability are met, the existing firm will usually not be successful in claiming the coming to nuisance defense. This

\(^{167}\) Haddock and Curran, 1985, 59-63.
\(^{168}\) Haddock and Curran, 1985.
\(^{169}\) Posner, 1977, 123-124
\(^{170}\) White Paper, p.18.
\(^{171}\) See above, chapter 2 §3 F.
\(^{172}\) See e.g. Cooter, R. and Ulen, T., o.c., 170-185.
has to do with the fact that in case law these issues are usually dealt with in an ex post perspective, when people have already moved to the neighbourhood of the factory and the question is simply asked in an ex post perspective whether additional investments in preventive measures could have reduced the harm beneficially. Liability law then gives an incentive to invest in the efficient safety equipment’s, even though the victims "came to the nuisance". The problem with this solution, however, is that, looking at it in an ex ante perspective, it removes incentives with potential victims not to locate in the neighbourhood of polluting activities 174. However, it will generally, especially in highly populated areas, be difficult for citizens to choose their location in such a way that they could never live in the neighbourhood of a factory. The factory on the other hand has the possibility to invest in preventive mechanisms to reduce harm for third parties.

Obviously a lot these conflicting uses of property rights, of which we find another example in many of these cases, can be prevented if it would be established ex ante which area is, given its specific properties, best suited for a certain activity. Wittman argues that the goal of zoning is precisely to determine that e.g. in a beautiful hilly landscape with trees a residential area can better be situated than heavy industry, taking into account e.g. limited transport possibilities, the potential of heavy environmental degradation in this ecologically sensitive area, etc. Ideally zoning could lead to an ex ante fixing of a destination for certain areas.

Problems specifically arise usually ex post, when there are no ex ante decisions concerning the destination of a certain area available and in addition a further reduction of harm to the citizens is not possible through cost effective measures. In this respect one can think of e.g. airports that have taken all efficient noise abatement measures and nevertheless still cause hinder for surrounding neighbours. The question then arises how this conflicting use of the property rights has to be resolved in this ex post perspective. In some cases one should examine whether the costs of nuisance have already been taken into account in the price of e.g. a certain property, in which case there would already have been a compensation for the externality. Assume that a new railway station is built and that surrounding land is sold for a relatively low price. In that case the relatively low price a prospective owner pays for the land he purchases can be considered as a compensation for future nuisance to be caused by the railway station. This will then exclude a subsequent claim by the property owner against the railway station. This is not only true for the owner who purchased at a low price, but also if e.g. a subsequent purchaser would become owner of the piece of land. Again he should have been informed on the presence close to a railway station (which is obviously easily visible) and realise that future nuisance to be caused by the railway station is compensated for in the relatively low price he pays.

Wittman therefore rightly claims that the foreseeability of the nuisance is an important criterion in most of these cases. A neighbouring owner will have far more possibilities to claim compensation if e.g. the harmful activity (which was first relatively innocent) expands in a totally unforeseeable way (e.g. because the destination of the area is changed). Once more: if the "surprised owner" is compensated for the additional harm caused by the unexpected and unforeseeable expansion by the firm this compensation is final. This means that he is compensated also for the fact that the price for

174 So Wittman, D., l.c., 567-568.
his land will have decreased as a consequence of the expansion of the particular factory. A potential new purchaser can then again purchase the land at a relatively low price but can not claim compensation again from the factory which already paid once compensation to the previous owner.

More difficult are the situations where the conflicting use of property rights cannot be dealt with by paying compensation for the unreasonable nuisance caused. In some cases the conflict may be that important that it can only be solved by the relocation of one of the two parties involved. This solution will typically be reached if the magnitude of the damage caused is much larger than the lowest relocation costs. If relocation is therefore the efficient solution Wittman claims that it will have to be established whose relocation costs are the highest in relation to the importance of the externality caused. If it can e.g. be established that the relocation costs of the existing factory would be much lower than the relocation costs of many neighbours even if they came to the nuisance, the relocation of the factory would still be the efficient solution since his relocation costs are the lowest.

Obviously, the question who came first will not play a role in answering the question who will have to relocate, but possibly when answering the question who will have to pay for the relocation costs. If the new neighbours came to the nuisance in a case of foreseeable harm one could claim that even though the factory will have to relocate (because of the lower relocation costs) the citizens who wrongfully came to the nuisance may be liable to pay (part of) the relocation costs of the factory. The latter is obviously important to give citizens in an ex ante perspective correct incentives to choose wisely concerning their location decision. If they foreseeably locate next to a factory they can afterwards hardly claim that the factory should relocate and should moreover do so at its own costs.

§ 7. Small and medium sized enterprises

An important (political) concern which one may often come across in policy documents is the fear that environmental liability may unreasonably affect the financial position of small and medium sized enterprises (SMEs). Is there a theoretical argument to favour small and medium sized enterprises and e.g. to exclude them from the liability regime proposed in the white paper?

A. Small firms, small pollution?

It seems very hard to find any argument for exempting SMEs from the liability regime, as proposed in the white paper. One could (however, wrongly) argue that the dangerous activities as prescribed in the white paper are probably mainly exercised by larger companies, so that the SMEs would still enjoy a negligence regime, since their activities should be considered “not dangerous”. This reasoning seems rather weak. There is hardly any empirical evidence in environmental engineering to argue that the risk of major environmental threats to the soil or to bio-diversity would only be caused by larger companies. Quite to the contrary, history has shown that unfortunately also SMEs are capable of

175 An issue which is equally addressed in the white paper (p. 18 and 29): although the white paper does not propose to exclude SMEs from the liability regime, it asks the question whether a disproportionate liability burden on them could be avoided through a ‘targeted use of national or EC support mechanisms’.
causing substantial environmental harm\textsuperscript{176}. Moreover, some may even make the opposite argument that larger companies are more likely to be the subject of public scrutiny as far as the environmental performance and awareness is concerned and therefore less likely to cause environmental harm than SME if a difference as to the ecological reliability should at all be made between large companies and SMEs. It is precisely for that reason that Wagner argues that if a duty to insure where at all to be imposed\textsuperscript{177} it should specifically apply to SMEs since their chances of insolvency in case of major environmental incidents may be more serious than for larger companies\textsuperscript{178}.

Since there is hardly any argument that SMEs would be less likely to be engaged in the dangerous activities which may endanger bio-diversity and cause soil pollution, there does not seem to be a decent theoretical argument to subject them to a different environmental liability regime. Moreover, a policy introducing a more flexible regime for SMEs might well have adverse effects. One can indeed predict that this would unavoidably lead some larger companies to split up into smaller companies to enjoy the SME regime as well. This risk that in case of a more favourable regime for SMEs, companies could react by outsourcing their risky activities to smaller firms is also recognised by the Technical Annex\textsuperscript{179}.

B. PASSING ON OF ENVIRONMENTAL COSTS

Finally the policy maker should also realise that an exemption (or specific regime) for SMEs would constitute an unjustified discrimination between SMEs and larger companies. This could ultimately result in lower prices for SMEs than for larger companies, which should not necessarily have a better ecological performance. Hence, granting exceptional preferences to SMEs as far as environmental liability is concerned would precisely run counter to the goals of the white paper on environmental liability.

In addition, the policy argument that environmental liability should not endanger the position of SMEs apparently (again wrongly) assumes that a liability regime (and more particularly a shift from negligence to strict liability) has negative financial impacts for industry. As we have shown above, many existing liability regimes based on negligence are, in combination with regulation, as important for industry as the liability regime proposed in the white paper. Moreover, as we will show below, some member states have environmental liability regimes which impose heavier financial burdens on industry than the regime proposed in the white paper does\textsuperscript{180}. In that respect it should not be forgotten that the white paper makes a difference between harm caused by dangerous and by non-dangerous

\textsuperscript{176} The white paper states correctly (p.29) that SMEs often cause more environmental damage than their size would indicate.
\textsuperscript{177} An issue which we will address in chapter 6.
\textsuperscript{178} Wagner, G., \textit{o.c.}, 1996, 103.
\textsuperscript{179} Technical Annex, 7.
\textsuperscript{180} As will be illustrated in the next chapter already today some member states have strict liability regimes for specific installations causing environmental harm (Germany, Sweden), whereby these strict liability regimes are not restricted to dangerous activities (as is the case in the white paper). Other member states (e.g. France) have introduced liabilities via case law (based on art. 1384 CC) which equally go further than the white paper regime. Moreover, whereas some member states have retroactive environmental liability regimes (see below chapter 4 § 3), which puts a heavy burden on industry, the white paper regime is explicitly not retroactive.
activities, whereas many environmental liability regimes in the member states do not. Moreover, it is also not common in the legal regimes of the member states, as we will show below, to make exceptions from the liability regimes for SMEs.

It should also not be forgotten that many industrial activities involve the production of products of services. If a change in the liability regime, e.g. an expanding environmental liability, results in a heavier financial burden for industry, often these extra costs can be passed on to the consumers of those products or services via the price mechanism. It is therefore not necessarily an SME which will definitely pay the burden of increased environmental liability, but the consumer of the particular service or product. The fact that increased liability regimes can be passed on to consumers via the price mechanism is an application of the well known Coase theorem\(^\text{181}\). The fact that increased liabilities will lead to increased prices is also a desirable effect from a social point of view, since consumers may become aware of the fact that some higher priced products or services reflect an higher environmental cost and may hence change their purchasing habits. Thus the liability regime does precisely what the white paper wants it to do, being to give appropriate incentives for the prevention of environmental harm.

Our conclusion is therefore that a regime on environmental liability should apply irrespective of the size of a particular company.

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Chapter 4    Main principles in a few legal systems

§ 1.  Introduction

We shall now briefly examine how the theoretical framework discussed in chapters 2 and 3 relates to the environmental liability regimes in some member states. We already indicated that to a large extent the white paper on environmental liability, which constitutes the basis for this study, follows the theoretical notions discussed in chapters 2 and 3. However, it seems important to examine also whether some of these theoretical notions correspond with the main features of the environmental liability regimes in some member states. This is interesting, not only to test the economic framework presented in chapters 2 and 3, but also to analyse whether the regime proposed in the white paper constitutes a “common core”. Moreover, for many features and aspects of environmental liability, the white paper has not taken final decisions yet and in some cases (e.g. concerning defenses) decisions will still have to be taken. In that respect it is obviously interesting to have a brief look at the regimes in some member states.

This will, as has been explained in the introduction, however, indeed only be a brief look. There are several reasons why an in-depth comparative analysis will not be provided within the scope of this study. One is that the main goal of this study is to analyse the insurability of the environmental liability regime as proposed in the white paper. This is possible without an in-depth analysis of the existing environmental liability regimes in all member states. Moreover, the commission issued before other studies which already provided these comparative overviews; it is therefore not useful to repeat work which has already been done and is readily available. Finally, in addition to this study, the financial insurance of environmental liability in specific member states will be addressed in parallel studies to this one. For the reasons mentioned above it seems nevertheless interesting to have a brief look at the main features of the environmental liability regimes in some member states. In this respect we shall specifically look at the situation in Belgium (and more particularly Flanders) and the Netherlands. But some attention will also be paid to the main features of the regimes in the United Kingdom, France, Germany and Sweden. A detailed description of the environmental liability regimes is obviously not necessary within the scope of the study. We will therefore focus on some issues which seem of particular importance within the scope of the study, being the general question whether a negligence or a strict liability regime for environmental harm applies, the question whether the environmental liability regime is retrospective and the possible defenses (more particularly the question whether following regulatory standards constitutes a defense).

182  The legal basis for environmental liability in the Netherlands is closely related to the retroactivity issue and will therefore be discussed below in § 3 B.
§ 2. Legal basis for liability in a few legal systems

A. BELGIUM AND FLANDERS

1. Civil law with modern features

In recent years particularly an increasing stream of literature on environmental liability has emerged in Belgium, starting with the doctoral dissertation of Hubert Bocken in 1978. Many other scholars deliberated on how the traditional rules of Belgian tort and nuisance law could be applied to environmental pollution. Indeed, during the 1970s and 1980s a growing number of cases could be seen where the traditional principles of private law were being applied to environmental pollution.

As in many other legal systems, Belgian case law shows the limitations of traditional concepts when they are applied to environmental problems. These limitations became clear in all of the traditional notions of liability based on fault. The question of under what kind of circumstances environmental pollution could be considered wrongful obviously came up. In addition, problems arose with respect to the concept of (ecological) damage and with respect to causation. Causation was more particularly a problem when the government had acted on the basis of a legal duty, as in cleaning up polluted sites, and then tried to recover the costs from the tortfeasor using the law of tort. Given the difficulties that arose when the traditional principles of fault liability were applied to environmental pollution, the literature has increasingly been pleading in favour of a separate regime for environmental liability. Such a specific regime became possible when the same Hubert Bocken was ordered by the former Flemish minister for the environment, Kelchtermans, to chair the Interuniversity Commission for the reform of environmental law in the Flemish region, which was given the task of reforming the whole body of environmental law in Flanders. Several years after the commission had been set up, a draft decree on environmental policy was presented, which also contained several chapters dealing with environmental liability. One of these chapters, related to liability for the soil clean up, has meanwhile already been implemented into legislation through the decree of 22 February 1995. At the time of writing, the other proposals of the commission with respect to environmental liability have not been implemented yet.

This sketch of environmental liability in Belgium presents a mixture of the application of the traditional principles of tort and nuisance law on environmental pollution and the proposals of the Interuniversity Commission (and including the decree on soil clean up). In the near future the situation might, obviously, change in the sense that the proposals of the Interuniversity Commission on environmental liability might be implemented (if they can survive strong lobbying by industrial pressure groups against such implementation). But even if that were the case, providing an overview of the traditional private law remedies remains useful, since these will not be abrogated, even if the proposals of the Interuniversity Commission were to be implemented. In that case, the victim could chose either the traditional private law remedies or environmental liability as proposed by the Interuniversity Commission. The other reason why it is still worthwhile looking at traditional private law remedies is that they are Belgian, whereas the commission proposals are Flemish. Indeed, the private law remedies find their legal basis in the Belgian Civil Code of 21 March 1804, whereas the
Interuniversity Commission proposals only relate to the Flemish region. This is a consequence of the process of federalisation that the Belgian State has gone through since the 1980s.

It has already been mentioned that environmental liability in Belgium is an area on which abundant legal literature exists. There is no point in providing an in-depth overview of all that literature, since the goal of this presentation is just to give a brief overview of Belgian environmental law for the purposes of this study.

2. Liability for negligence

Article 1382 of the Belgian Civil Code provides that anyone who negligently causes damage to someone else, must pay compensation. This is traditional liability based on fault or negligence. The literature therefore claims that there are three basic requirements that the victim has to meet in order to receive compensation: he must prove that he suffered damage, that the injurer was at fault and that there is a causal relationship between the fault and the damage. Each of these requirement will now be addressed in more detail, specifically with respect to their applicability to environmental harm.

a. Fault

It is accepted that the injurer was at fault, as soon as it is established that he either violated a general duty of care or a specific regulatory provision that prescribed or prohibited certain behaviour. As far as the question is concerned of whether the injurer violated a general duty of care, the legal doctrine and case law generally hold that whether the injurer behaved as could be required from a reasonable man or not. With respect to the more precise contents of this vague norm, detailed case law has been developed. The question of course arises of whether behaviour causing environmental pollution can be considered wrongful. Legal doctrine and case law in that respect usually hold that the various interests at stake have to be weighed up, so that on the one hand the interests of the for example polluting enterprise which is exercising a socially beneficial activity are weighed against the interests of victims (such as the


184 “Any act by which a person causes damage to another makes the person through whose fault the damage occurred liable to make reparation for such damage”.


surrounding neighbours) to enjoy a pollution-free environment. A criterion that sometimes plays a role in that respect is the question of whether the polluting firm could have reduced the environmental harm by, for instance, investing in abatement technology. In that respect the costs of such preventive measures will also be compared with their capacity to reduce environmental harm.

It is, however, equally important to stress that Belgian case law regularly stresses the importance of the fault requirement. Hence, even recently there have been cases where it has been decided that the mere fact that victims claim that they suffer from environmental pollution does not fulfil the fault requirement since this fact alone does not make, for example, the operation of an industrial plant as such wrongful. The wrongfulness (fault or negligence) of the act or omission of the injurer must therefore still be proven by the victim. Nevertheless, Bocken equally states that the application of the fault concept in pollution cases has become increasingly stringent, so that the distinction from strict liability would often be quite theoretical.

b. Damage

A second requirement for negligence liability is that the victim should have suffered damage. Therefore the Court of Appeals of Antwerp decided that the fact that an enterprise does not possess the required licence is irrelevant, as far as the negligence issue is concerned, when no one claims to have suffered any harm. The negligence liability according to art. 1382 of the Civil Code essentially requires that there is damage. Generally it is required that the damage should hurt the plaintive. This will obviously often pose serious limitations as far as the possibility of using tort law in a case of environmental pollution is concerned, since environmental pollution often causes collective ecological damage, where no one is harmed individually. In those cases it remains difficult to apply fault liability.

When a victim has suffered personal damage, the tort liability requires full compensation of the victim, even in cases where this damage might be minor. A practical problem that will often arise in cases of environmental pollution is how to measure the amount of the damage. This has often led judges to underestimate the damage. An illustration is provided by a Hasselt case of 1972 in which it was established that someone had violated the emission standards of a licence. As a result of this, a fishermen's association claimed 250,000 Belgian Francs compensation, but was only awarded a token of one franc. The low amount was motivated by the fact that it was impossible to estimate the amount of the damage accurately. As early as 1972, Suetens criticised this judgement and rightly argued that even when the amount of the damage cannot be established precisely, the judge still has the possibility of making an estimation ex aequo et bono, which could lead to more serious amounts.

187 See Carette, A., o.a.
189 Court of Appeals of Antwerp, 16 May 1984, RW, 1984-85, 885.
190 Bocken, H., o.c., 1997, 152-153; Deketelaere, M., o.c., 683.
191 This was argued by Bocken, H., Lc., 1973-74, 1130, and Bocken, H., o.c., 81.
193 See Suetens, note to Criminal Court of Hasselt, 18 April 1972, RW, 1972-73, 778. He quotes case law with respect to water pollution where it was equally difficult to establish the amount of the damage precisely, but where nevertheless higher compensation was awarded.
Legal practice has shown that these cases, where victims of environmental pollution are awarded only a token of one franc, are no exception. This often happens in cases of harm caused by noise. In other cases, civil claims for damages are simply denied because the victims are not able to prove that they actually suffered harm. Recently, a sum of 500 Belgian Francs was awarded for the damage resulting from the smell of a pig farm operating for just one day without a licence.

In legal practice, one can equally see that indeed problems arise as soon as ecological damage occurs, because every time the question arises of whether such ecological damage to collective environmental components can be considered as "personal" damage. These problems arise especially when local communities wish to act as victims in the case of environmental crimes that took place on their territory. In a case in which a defendant had illegally operated a waste deposit site, it was argued by the Court of Appeals of Antwerp that this had only caused damage to the property of the defendant himself, who owned the site, and not to the local community, who could not prove personal damage.

It is different, however, when for instance waste water is emitted illegally into the sewerage system of a community. In such a case, the local community suffers personal damage and can, hence, present itself as the victim and claim compensation.

Cases where courts have less difficulty in estimating the damage caused to environmental components are those concerning the illegal removal of trees. In those cases the courts usually use expert information to establish the value of a particular tree by, for instance, examining the price of a tree if it were to be purchased, replanted and had to grow for several years to reach the same height as the tree that was illegally removed. An interesting case in that respect concerns a decision of the court of Marche-en-Famenne, where the court also took into consideration the fact that the removal of a beautiful old oak in the community caused aesthetic damage which went beyond the material damage connected with the need to replant a similar oak. The decision was remarkable in that it not only accepted that the illegal removal of the tree had caused aesthetic damage, but also because the court accepted the local community not only as owner of the oak (which makes it automatically a victim suffering personal damage), but also as "protector of the general interest", which was certainly not generally accepted at that time. Some recent developments concerning the notion of environmental

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194 See, for instance, Criminal Court of Antwerp, 32th Chamber, 30 June 1987, Case of Public Ministry, Hermans and others/Govaert, unpublished.
197 For details, see the discussion in the dissertation by Bocken, H., o.c., 1997, 151.
198 See Court of Appeals of Antwerp, 6th Chamber, 27 April 1983 in case of Public Ministry and local community/Brecht, Schrijvers and NV Terra Cotta, unpublished. In the court ruling it was also held that the protection of the interest of society at large should not take place through the local community presenting itself as victim of an environmental crime, but through the Public Ministry.
199 See Criminal Court of Leuven, 6th Chamber, 24 April 1978, in case of Public Ministry, City of Landen and Community of Zoutleeuw/Keyaerts, unpublished. This judgement was confirmed by the Court of Appeals of Brussels, 9th Chamber, judgement of 16 May 1979, unpublished. A request to revise that judgement was turned down by the Cour de Cassation in a decision of 29 January 1980, PAS., 1980, I, 606, Arr.cass., 1979-80, 618.
200 See the examples given by Bocken, H., o.c., 1997, 151.
damage in Belgium will be discussed below when the insurability of the regime proposed in the white paper will be assessed203.

c. Causation

Belgian legal doctrine holds that all possible causes that might have contributed to an accident are considered as equal. The result of this so-called equivalence doctrine is that as soon as a certain behaviour was the *conditio sine qua non* of the harm, meaning that the harm would not have occurred without the wrongful behaviour, there is liability, even if other factors have contributed to the environmental pollution as well204. This theory provides far-reaching possibilities to apply fault liability for environmental pollution. Nevertheless, problems do often arise in practice when it comes to the requirement that the victim must prove specifically that the behaviour of the defendant has caused his personal damage. Nevertheless, it is increasingly noticeable that courts are willing to benefit victims by lowering the burden of proof of causation in cases of environmental liability205. An example as old as 1973 from the Court of Appeals of Ghent206 can illustrate this point. A company had emitted waste water into a creek without a licence, which had caused considerable pollution of a particular creek. Three bulls which had drunk water from the creek died. The owner of the animals filed a civil law suit against the company concerned to claim compensation for the animals lost. The company, however, denied that there was a causal relationship between emission and the death of the bulls, since it could not have been proven that the death of the animals was effectively caused through the pollution of the creek, nor was it excluded that third parties could have contributed to the pollution of the creek as well. This defense was, however, not accepted by the Court of Appeals of Ghent. The Court accepted that there was causation by eliminating all other causes for the death of the bulls. A veterinary surgeon had examined the bulls and discovered that they did not die from a disease, but from poisoning as a result of drinking the polluted water. In addition, there were no other polluting sources than the defendant's company. Hence, having eliminated other possible causes of the death of the bulls, the Court accepted that the bulls died as a consequence of the defendant's wrongful emissions.

This case provides an early example of the opinion defended in legal doctrine207 that courts should not put too heavy a burden on the plaintiff as far as the requirements of proving a causing relationship is concerned and should also accept plausible presumptions as sufficient evidence208. It should also be mentioned that when more tortfeasors (emitting polluting substances) are responsible for a case of environmental pollution, a rule of joint and several liability applies. This means that the victim can claim full compensation from any of the defendants whose actions contributed to the loss. It will therefore not help a sole defendant to call on an *exceptio plurium* defense and to argue that his emission alone only contributed to a minor part of the pollution. As long as, with the help of the

203 Chapter 5 § 2 C 2.
204 This point is extensively discussed by Bocken, H., o.c., 112; Van Oevelen, A., i.c., 1991, 144-145.
205 For examples in case law see Van Oevelen, A., i.c., 1991, 145-147.
207 For instance by Bocken, H., o.c., 117 and by Bocken, H., i.c., 1981, 53.
208 Another example can be found in Court of Appeals of Brussels, 14th Chamber, 15 January 1988, in case Ministry of State/Joyce, unpublished.
equivalence theory, it can be shown that the pollution would not have occurred in the same manner without this emission, every defendant will be liable jointly and severally with all the others for the full amount of the damage\textsuperscript{209}.

3. \textit{Strict liability}

There have been a number of strict liability cases which have developed into legislation, often as a result of international agreements to which Belgium was a party. It is noticeable that a lot of these strict liability cases in statutes relate to environmental damage. Each of these statutory cases of strict liability relates to one particular type of damage or activity, for example, damage caused by toxic waste or as a result of nuclear accidents\textsuperscript{210}.

a. Civil code

In addition to all these specific cases of strict liability which will be discussed below, there is also a strict liability rule which has a more general bearing and which is incorporated in the Belgian Civil Code. Article 1384, al. 1 of the Civil Code provides that the guardian of a defective property is liable for the damage caused by the particular defect of that property. Originally, this was not a strict liability rule, but this article 1384, al. 1 CC, has been interpreted so widely by case law that it amounts to strict liability. There is assumed to be a defect as soon as there is an abnormal feature that is deemed to cause damage\textsuperscript{211}. As a result of this, legal doctrine holds that the broad interpretation in case law in fact amounts to a strict liability rule\textsuperscript{212}. The strict liability rule of art. 1384, al. 1 CC, is particularly important in cases of soil pollution. As early as 1958 the commercial court of Sint Niklaas decided that a real estate where the soil had been polluted with oil should be considered a defective property\textsuperscript{213}. The strict liability of article 1384, al. 1 CC rests on the guardian of the defective property. It is therefore applicable equally to the owner and to the leaseholder of polluted soil. The provision was therefore often used to recover costs incurred for the treatment of a particular polluted site\textsuperscript{214}. It is clear that this strict liability under art. 1384, al. 1 CC, potentially leads to very broad liability both for the innocent owner and the leaseholder of polluted soil.

b. Strict liability in treaties

Many cases of strict liability have been introduced into Belgian law as a consequence of international conventions. As far as environmental liability is concerned, this specifically relates to oil pollution and nuclear liability. As far as oil pollution is concerned, there was the convention on civil liability for oil


\textsuperscript{210} An overview of all these cases of strict liability in Belgian environmental law is provided by Bocken, H., "Van fout naar risico. Een overzicht van de objectieve aansprakelijkheidsregelingen naar Belgisch recht", \textit{TPR}, 1984, 329-415 and by Van Oevelen, A., \textit{I.c.}, 1991, 156-184.


\textsuperscript{212} So for instance Bocken, H., \textit{I.c.}, \textit{TPR}, 1984, 382-384.

\textsuperscript{213} Commercial Court of Sint Niklaas, 2 December 1958, \textit{RIV}, 1959-60, 1904.

\textsuperscript{214} See, on the use of this provision, Bocken, H., \textit{I.c.}, 1992, 37-39.
pollution held in Brussels (the so-called CLC Convention) on the 29 November 1969\textsuperscript{215}. This convention has been implemented in Belgian law through the act of 20 July 1976\textsuperscript{216}. According to this act there is strict liability for marine oil pollution, and liability is attached to the tanker owner. The same applies with respect to nuclear liability. The nuclear liability conventions (in Paris and Brussels) have been implemented in Belgian law through various statutes, the most recent one being that of 22 July 1985\textsuperscript{217}. According to this specific statute the licensee of a nuclear power plant is strictly liable for any damage caused through a nuclear accident. The strict liability in that particular case amounts almost to absolute liability, since the licensee is even liable when the nuclear accident is caused by an exceptional natural disaster. This therefore seriously limits the opportunity for the licensee of a nuclear power plant to call on the exception of force majeure in his defense.

The introduction of strict liability in specific statutes in Belgium did not occur only as a consequence of international conventions. As early as 1963 strict liability for atomic ships was introduced\textsuperscript{218}. The same applied to underground transport and the storage of natural gas\textsuperscript{219} and to the underground storage of gas\textsuperscript{220}. One of the early examples of strict environmental liability concerns the strict liability of the producer of toxic waste for all damage caused by the waste, either during transport or on discharge of the waste, even when this transport was not carried out by the producer himself. As a consequence of this strict liability regime instituted through article 7 of the Toxic Waste Act of 1974, the producer of toxic waste remains liable for damage caused by the waste, until the waste is finally eliminated\textsuperscript{221}. This also constitutes a case of attachment of liability, since only the producer of the toxic waste is liable for the damage caused by the waste and he can only be freed from liability if he can prove that there is no causal relationship between the toxic waste and the damage suffered by the victim.

When the most important legislative competencies for environmental policy-making were awarded to the regions as a consequence of the federalisation of Belgium\textsuperscript{222}, strict liability regimes in environmental law were also introduced in regional decrees. One can for instance mention the fact that strict liability for the removal of ground water already existed in the federal act of 10 January 1977\textsuperscript{223} and that this was taken over in article 14, § 1 of the Flemish Ground Water Decree of 24 January


\textsuperscript{217} BS, 31 August 1985. See, with respect to the nuclear liability under these conventions, OECD, Liability and Compensation for Nuclear Damage, an International Overview, OECD, 1994.

\textsuperscript{218} Act of 9 August 1963, BS, 8 October 1963. In fact this was a specific act which was only promulgated as a consequence of the arrival of an American atomic submarine, the NS Savannah, in the Antwerp harbour.

\textsuperscript{219} Act of 12 April 1965, BS, 7 May 1965. This strict liability regime is described by Bocken, H., \textit{i.e.}, 1984, 366.

\textsuperscript{220} Act of 18 July 1975, BS, 14 August 1975. See the discussion of this regime by Bocken, H., \textit{i.e.}, 1984, 368 and by De Decker, H. and Schautteet, M., \textit{o.c.}, 96 and 105.

\textsuperscript{221} Article 7 of the Act of 22 July 1974, BS, 1 March 1975. See, with respect to this regime, Bocken, H., \textit{o.c.}, 318; Bocken, H., \textit{i.e.}, 1984, 384; Bocken, H., \textit{o.c.}, 1997, 146 and De Decker, H. and Schautteet, M., \textit{o.c.}, 106.

\textsuperscript{222} See, on the competencies for law-making as far as environmental policy is concerned in Belgium, Deketelaere, K., \textit{o.c.}, 1996, 36-43.

\textsuperscript{223} BS, 8 February 1977; see Van Oevelen, A., \textit{o.c.}, 1991, 165-167.
1984. This strict liability regime relates to damage that would be caused to plants or buildings on the surface as a consequence of the removal of ground water.

4. Proposals of the Interuniversity Commission

a. The Interuniversity Commission

In the introduction we have already mentioned that the current system of environmental liability in Belgium may dramatically change (and has already dramatically changed as far as soil clean-up liability is considered) as the result of the working of an Interuniversity Commission for the reform of environmental law in the Flemish region. In 1989, the former Flemish minister for environmental policy installed a commission of academics under the presidency of Hubert Bocken, with the task to draft a comprehensive code on environmental law and policy. A first report was presented in December 1991 and a final draft was presented in February 1995.

This draft decree on environmental policy contains both a title on environmental liability and a title on protection of the soil and soil clean-up. Even before the Interuniversity Commission presented its final draft, the Flemish authorities had already implemented the proposals of the commission in a soil clean-up decree of 22 February 1995. This new decree, which largely follows the proposals of the commission, is discussed below. We now concentrate on the proposals of the commission with respect to environmental liability.

Before doing so, it might be appropriate to briefly summarise why the situation with respect to environmental liability in Belgian law was not ideal before 1995. We showed that liability for negligence provided for a great deal of environmental liability, given the fact that every violation of a regulatory duty automatically constitutes a fault. Moreover, the causation requirement could easily be met as a result of the equivalence theory and case law was "victim friendly", as far as the burden of proof was concerned. In addition, in many cases proving a fault was not even required, since there were an increasing number of strict liability cases.

Nevertheless, there remained several weaknesses in that system.

224 BS, 5 June 1984. See on this regime Bocken, H., o.c., 308 and Bocken, H., Lc., TPR, 1984, 368.
228 For a critical comment and an update of these proposals see Schutyser, F., Deketelaere, M. and Deketelaere K., "Onderzoek naar de opportuniteit en de haalbaarheid van een vernieuwd vergoedingssysteem voor Milieuschade", Milieu- en Energierecht, 1999, 146-174.
229 For a summary of these weaknesses see Bocken, H., o.c., 1997, 147.
b. Problems with the existing environmental liability system

First of all, it must be noted that the fault requirement might indeed easily be met in those cases where a regulatory standard had been violated, but that there were still a number of cases where the victim would not be able to prove such a breach of a regulatory duty. In those cases, the judge still has to engage in a balancing of interests between economy and ecology, of which the outcome is highly uncertain. The problem is indeed that the legal system of case law does not always set clear principles as to how these interests should be balanced. The interpretation of the fault notion therefore generates uncertainty.

Second, the theory that the execution of a statutory duty breaks the chain of causation has as the consequence that in any case in which the government had a duty to clean up, for example, polluted sites, tort law could not be used to recover the court costs.

Third, there are indeed an increasing number of strict liability cases, but the introduction of strict liability is in no way justified by any economic or ecological logic. It seems more as if the authorities had simply introduced strict liability in specific statutes when there was public pressure to do so because, for example, of accidents or polluted sites. That was the reason why liability for damage caused by nuclear-powered ships was introduced and why strict liability for the producer of toxic waste came into being. There is no reason why there is strict liability in those cases but not when an accident happens as the result of the operation of a chemical plant.

Fourth, we indicated that the remedies are relatively broad in the case of tort liability but rather limited in the case of nuisance and when criminal liability is at stake. All of these weaknesses in liability are seen in dealing with environmental pollution.

However, in some cases expanding liability seems to reach far beyond what would be reasonable if liability were to serve the aims of prevention and justice. This is particularly true if one regards the liability of the guardian of polluted soil under art. 1384, al.1 CC. This amounts de facto to a strict retrospective liability for the innocent owner or leaseholder. That seems to be an example where the application of private law rules on environmental liability amounts to over-extended liability. Obviously the Interuniversity Commission took all of these shortcomings into account when it formulated its proposals.

c. Parts 7 and 9 of the Draft Decree on environmental policy

Environmental liability is dealt with in various places in the draft decree on environmental policy. Title 4 of part 7, which deals with enforcement, relates to the private law injunction. Title 5 of part 7 deals with the so-called "treatment project". The core of environmental liability is, however, dealt with in part 9 (compensation of damage caused by pollution). Title 1 deals with liability and financial guarantees; title 2 deals with compensation of damage by the Flemish region at the expense of the prevention and treatment fund for the environment and nature. Title 3 of this part 9 deals with deposits and title 4 with the so-called environmental guarantee account.
d. The proposed liability regime

Turning to liability and financial guarantees, the explanatory memorandum by the Interuniversity Commission first of all states, as we just have mentioned, that the then current Belgian environmental liability law had various shortcomings, one of them being that a fault may be difficult to establish; another that strict liability statutes remain limited and that ecological damage as such cannot be compensated. In addition, the victim had no guarantee against the insolvency of the injurer.

The key concept of the liability regime proposed by the commission, is that anyone who causes damage to or impairment of the environment as a result of an emission shall be held liable in accordance with the provision of title 1 of part 9 (article 9.1.3). The explanatory memorandum makes clear that this is a strict liability. Fault or wrongfulness do not need to be proven. The arguments given are that modern technology creates an increased risk, so that the person who creates this risk and benefits from it, should also bear the negative consequences of damage. In addition, the commission refers to the polluter pays principle, arguing that the damage caused by environmental pollution should be allocated to the polluter.

Liability for environmental damage is attached according to article 9.1.4 § 1 to the operator of a classified installation, when the emission emanates from a classified installation or is the result of a classified activity. If no classified installation or activity is involved, the liability remains, according to article 9.1.3, with the person who actually caused the emission.

5. Liability of soil clean-up in Flanders

a. Waste Decree of 2 July 1981

On the particular topic of liability for soil clean-up in the Flemish region, the Flemish Waste Decree of 2 July 1981 is to be noted. This Decree instituted an administrative agency, OVAM, and gave it - inter alia - the task of organising the clean-up of polluted soils. Originally the Waste Decree provided only that OVAM could ex officio treat polluted soils, but omitted to provide a specific regulation concerning recovery of the costs. That has been provided in the Decree of 12 December 1990, which stipulated that OVAM could treat the polluted soil at the expense of the one who had received an order to clean up and had omitted to react. This provision gave far reaching competencies to OVAM which could clean up at the expense of almost anyone (innocent or not) and under all circumstances (irrespective of whether the provisions of the Waste Decree had been violated or not). This provision gave far reaching competencies to OVAM which could clean up at the expense of almost anyone (innocent or not) and under all circumstances (irrespective of whether the provisions of the Waste Decree had been violated or not). This provision,

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231 The proposals of the Interuniversity Commission with respect to environmental liability have also been summarized by Deketelaere, K., "De voorstellen van de Interuniversitaire Commissie tot Herziening van het Milieurecht in het Vlaams Gewest inzake aansprakelijkheid voor milieuschade", in Deketelaere, M. (ed.), *Recente ontwikkelingen inzake de aansprakelijkheid voor milieuschade*, Bruges, Die Keure, 1993, 55-98; by Deketelaere, M., o.c., 689-690 and by Carette, A., "De aansprakelijkheidsregeling voor milieuverstoring uit het voorontwerp decreet Milieubeleid", *TMR*, 1998, 140-155.
232 Bocken, H., Ryckbost, D. and Deloddere, S., o.c., 216-217.
233 Openbare Vlaamse Afvalstoffenmaatschappij.
234 Art. 21, § 2, c of the Waste Decree.
which amounted to strict liability, was heavily criticised in the literature. Since this provision was too broad and unspecified a new regulatory framework was necessary to provide for the possibility of recovering clean-up costs.

b. Soil Clean-up Decree of 22 February 1995

This new regulatory framework was provided through the working of the already mentioned Interuniversity Commission for the reform of environmental law in the Flemish region.

Part 11 of the Draft Decree on Environmental Policy contains a title on protection of the soil and soil clean-up. Even before the Interuniversity Commission presented its final draft, the Flemish authorities had already implemented the proposals of the commission in a Soil Clean-Up Decree of 22 February 1995. This new Decree contains detailed provisions both concerning the duty to clean up and concerning liability.

c. Liability for new soil pollution

As far as liability is concerned, a distinction is made between "old" and "new" pollution. The liability for new soil pollution is laid down in art. 25-29 of the Decree. The principle laid down in art. 25 § 1 is that anyone who has caused soil contamination as a result of an emission shall be liable for all expenses which have been incurred arising from the soil clean-up as well as for the further damage caused by the latter. This is a new rule of no fault liability in respect of the costs of soil clean-up.

However, when the emission which caused the soil contamination emanated from a classified installation or was the result of a classified activity, art. 25 § 2 of the Decree provides that it will be the operator who will be liable, i.e. the licensee of the classified installation. This is the so-called attachment of liability to the licensee.

It should also be noted that specific rules are laid down in the Decree, which favour the position of the "innocent possessor" who did not cause the contamination, but, without being aware of it, acquired contaminated land and who is actually the victim of contamination caused by others. In fact the

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238 New and historic pollution are defined in art. 2, 40 and 50 of the decree as pollution that came into being before or after the entering into force of the Soil Clean-Up Decree. See Ryckbost, D., l.c., 1995, 181.

239 See Bocken, H., Ryckbost, D. and Deloddere, S., o.c., 237; Deketelaere, M., l.c., 1995, 129; Ryckbost, D., l.c., 1995, 199.

240 See Bocken, H., Ryckbost, D. and Deloddere, S., o.c., 888-895 and 1160-1161; Ryckbost, D., l.c., 1995, 199.

241 See Bocken, H., Ryckbost, D. and Deloddere, S., o.c., 238-240; Ryckbost, D., l.c., 1995, 199-200.
Decree stipulates that the innocent possessor is not bound to carry out the cleansing treatment or to finance this himself. This in turn deals with the liability of the innocent possessor. The innocent possessor is not liable if he (1.) did not cause the contamination and (2.) was unaware of the contamination and was not deemed to be aware of it at the time when he became the operator.

d. Liability for past pollution

Liability for past pollution is regulated in a totally different way. Art. 32 § 1 of the Soil Clean-Up Decree provides that the new strict liability laid down in the Decree does not apply retrospectively. Liability for the cost of soil clean-up as well as any further damage shall be determined in accordance with the rules of tort liability which applied before the Decree entered into effect and which have been discussed above. Note that although the new Soil Clean-Up Decree does not apply to past pollution, innocent possessors of land polluted in the past can enjoy exemption from liability if they meet the criteria set out above. But this limitation only applies to the costs of soil clean-up. Liability based on fault continues to apply in full, even in relation to the innocent possessor.

Finally, we should also note that the new soil clean-up decree provides for a regulation of the public law liability.

6. Summary

To a large extent environmental liability in Belgium today still relies very much on an application of the traditional principles of private law to environmental pollution. It is, however, noticeable that case law is helping victims in their battle for compensation for environmental damage by relaxing the formal requirements for compensation. This tendency is certainly seen in the requirement under the negligence rule that the victim has to prove that the injurer was at fault. This proof will seldom pose problems in those cases where a regulatory duty or standard has been violated. In those cases, Belgian case law automatically holds that the fault requirement is met. Moreover, in other cases where there has been no violation of a regulatory provision, legal doctrine holds that judges tend to accept easily that an operator acted wrongfully from the moment that serious environmental pollution occurred from his establishment. Also, as far as causation is concerned, the traditional "equivalence of causes" rule makes the scope for compensation potentially very large. In addition, proof of this causal link can even be based on presumptions.

There are, however, also limitations. One problem is that tort liability based on negligence very much assumes that there is one individual victim who suffers personal damage. This leads to problems if the victim cannot be identified and the pollution has a more collective nature. For those cases, legislative

242 The application of the exemption for cases of innocent possession is more wide-ranging in cases of past pollution. It is beyond the scope of this contribution to discuss this matter in detail.
244 See Bocken, H., Ryckbost, D. and Deloddere, S., a.c., 240; Deketelaere, M., l.c., 1995, 135-138.
intervention has been necessary. This has now mostly been dealt with through the introduction of a legal right of action for environmental groups and other actors who can seek an injunction if environmental statutes are violated.

Although the application of the traditional principles of private law to environmental pollution could potentially deal with many cases of environmental damage, there remain various problems. One can for instance point to the fact that when there has been no violation of a regulatory provision, the judge would get involved in balancing the interests at stake to determine whether the defendant had acted in a negligent way. The outcome of this balancing process is still often highly uncertain in practice. In addition, traditional tort law could not deal with problems of collective damage and the introduction of strict liability did not take place in a very systematic way. There is no good theoretical explanation why strict liability has existed in some cases, but not in others. These shortcomings were not only to the detriment of the victim. We showed that some interpretations of case law of, for example, the liability of the custodian of a defective good under art. 1384 al. 1 of the civil code, lead to strict retrospective liability for damage caused by polluted sites, for the innocent possessor as well as for others whose guilt is more apparent.

For all of these and other reasons, the Interuniversity Commission for the Reform of Environmental Law in the Flemish region has proposed a new environmental liability regime which seems to be rather pragmatic and well balanced. Liability is in principle strict and attached to the licensee of a classified installation. There is, however, an exception for "normal pollution" which does not violate regulatory standards or any other tolerance limit. In addition, the new strict liability regime does not apply retrospectively. The Interuniversity Commission has also proposed a different regime for collective damage and provides for balanced solutions as far as the insolvency risk is concerned. Some of the proposals of the Interuniversity Commission have meanwhile already been implemented - among others the regime concerning liability for soil pollution, which has been implemented in a Flemish soil pollution decree.

It is generally held that these proposals of the Interuniversity Commission, which are based on comparative analysis and on the latest international developments, provides for a balanced and pragmatic environmental liability regime. When these proposals are implemented, a new and different regime will be added to the existing private law rules. The proposals of the Commission indeed provide that their regime will not replace the existing legal framework for compensation for environmental pollution. Hence, the regime proposed by the Commission only provides victims with an additional legal framework they can use to get compensation for environmental damage. The only question that remains to be answered in practice is whether these academic proposals can resist the pressure of industrial lobbying when it comes to actual implementation at the political level.
B. UNITED KINGDOM

1. Negligence, nuisance and strict liability

The UK is an interesting illustrative example as it shows how difficult it can be to embrace the principle according to which a polluter can be held liable for his pollution no matter whether he has committed a fault or a negligence. Yet, one has to note that judicial actions in terms of environmental damage are based in UK customary law both upon the principle of strict liability that resulted from the 1868 Rylands v. Fletcher case and upon the concepts of nuisance and/or negligence.246

Firstly, with regard to negligence in particular, British case law has focused on the exercise or the lack of exercise of reasonable care. It means that an operator will be considered at fault and liable when it is proven that the damage that has resulted from his action could have been avoided if a reasonable care would have been exercised.

Secondly, as far as the tort of nuisance is concerned, an operator will be considered at fault and liable if it is proven that he knew that his action would result in a damage, that he took preventive measures that failed and that he chose to carry on his activity despite this prevention failure. Consequently, an intent to cause damage is then showed, which proves the operator’s fault. This is based upon the idea of a protection of the property right.

However, British courts have had the temptation to assimilate the tort of negligence and of nuisance into one single tort: fault-based liability. This seems to be based on one common criterion: the predictability of harm. This implies that the operator whose act or activity would have resulted in a damage would be held liable (his fault would be acknowledged) once the damage was predictable. (1948 Longhurst v. Metropolitan Water Board, 1951 Bolton v. Stone).247 For example, in case of a chemical company polluting the environment, the question would be to know whether the damage was predictable and whether in turn a reasonable preventive care took place. If not, the company will be held liable on the basis of its fault.

Thirdly, along with the torts of negligence and nuisance, the principle of strict liability has also emerged in UK customary law on the basis of the 1868 Rylands v. Fletcher case. In that particular case, Rylands suffered from property damage resulting from flooding caused by the explosion of a container situated on Fletcher’s neighbouring property. Fletcher was held liable by the Court that ruled that “the person who, for his own purposes, brings on his lands and collects and keeps there anything likely to do mischief if it escapes must keep it in at his peril”. Therefore, it seems that the Court embraced a strict liability regime meaning that an operator or a property-owner will be held liable for damages even if no fault, negligence or nuisance can be established or proven and no matter whether the damage was predictable or not.

246 Rylands v Fletcher, (1868) 1 Exch 265; (1868) 3 App cas 330 (H.L.).
2. Limits of Rylands v. Fletcher

Yet, British courts and judges have tended to limit the scope of application of such a strict liability rule on the base of the requirement of a “non-natural use” of land. Consequently, this concept of “non-natural use” has progressively been interpreted as to mean that only damage caused by an unusual or extraordinary use of land could amount to the defendant’s strict liability. As an example, one may mention the 1947 Read v. Lyons case where a company that manufactured munitions during war time resulting in a high level of noise was not held liable on the ground that, there was a “natural use” of land, given the public benefit involved248.

As a result of these developments, there was much vagueness and uncertainty within the common law with regard to the application of civil liability rules to environmental harm. Until recently, victims could rely on a fault-based liability regime that implied that damages were predictable and on the Rylands v. Fletcher rule / strict liability regime as far as damage resulting from “non-natural uses” of lands was concerned. Yet, there was a great need for judicial clarification, which came up in the 1994 Cambridge Water Co. Ltd. (CWC) v. Eastern Counties Leather plc (ECL) case.

3. Cambridge Water Co.

In the case in point, ECL operated a leather factory in Swanston whereby the manufacturing process had involved, from 1950 onwards, the use of a specific chemical substance (PCE) dumped onto the machines. On the other hand, CWC that provides drinkable water in the Cambridge area bought in 1976 a site located at Swanston to extract groundwater. Then, following the adoption of the 1980 EC Directive on Water imposing quality standards, it was found that the amount of PCE into the extracted water was too high vis-à-vis the EC directive permitted levels. As a consequence, an inquiry concluded that ECL was responsible for the presence of PCE into the water. In effect, PCE had accumulated in the underground and progressively reached underground water polluting CWC underground water reserves249.

Firstly, CWC based its liability suit against ECL on the tort of negligence on the basis that ECL had not exercised a reasonable care. Yet, the judge rejected such a claim arguing that the defendant could not have predicted the damage and more particularly the fact that ECL could not foresee that PCE would contaminate underground water and subsequently CWC’s water reserves located 6 kms. further away. In addition, the very same judge added that even if the defendant had known that PCE would eventually reach underground water, he would not have been able to predict in any case that such a PCE release could cause a damage as until 1980 there was neither regulation nor reports on such an issue. No one knew that PCE could ever damage the environment and public health.

Secondly, as far as CWC’s liability suit based on nuisance, the judge concluded in the same vein ruling that the damage could not have been predictable and that consequently ECL could not be held liable for fault.

The question was then to know whether ECL could be held liable on the basis of the Rylands v. Fletcher strict liability rule. Within this context, the judge firstly held that the first element of such a rule was met in the sense that ECL had brought onto his land something which could cause a damage if it escaped. However, the judge then concluded that ECL could not be held liable, as its activity could not be seen as a “non-natural use” of its land. Indeed, Swanston was an industrial place where leather production was the most important source of employment and profit, thus benefiting the whole community of inhabitants. Such a social benefit was deemed to be taken into account when one rules on the risks and damages that may be caused.

This ruling was then eventually put into question before the Court of Appeal and finally before the House of Lords. Regarding the later, Lord Goff ruled that ECL could not be held liable on the basis of negligence or nuisance on the ground that ECL could not have predicted that damage would have resulted from its activity so that ECL could not be blamed for not having taken measures of reasonable care to prevent damage. Regarding the application of the Rylands v. Fletcher rule (where the concept of reasonable care plays no role), Lord Goff concluded that the same criterion of predictability applied. Therefore, ECL could not be held strictly liable, as it could not have predicted the damages that had resulted from its activity.

This case shows how difficult it may be in some jurisdictions and in particular in common UK law to embrace a strict liability regime for environmental damage. Whereas a positive aspect resulting from that case is the fact the terms “non-natural use” is not used anymore as it is considered as being a vague and uncertain concept, on the other hand the Rylands v. Fletcher strict liability rule seems to be restricted as damage needs to be predictable to make the operator liable.

C. THE 1986 SWEDISH ENVIRONMENTAL DAMAGE ACT

Sweden is an interesting example as it is known as being one of the “greenest” countries in the World where a great environmental awareness emerged already a long time ago among the general public, politicians and decision-makers. One has to note of course that Sweden is also one of the wealthiest countries as far as the Gross national product per inhabitant is concerned, which may help having environmental protection among the top priorities along with employment and social welfare.

Whereas Sweden has adopted more than 100 laws and regulations aiming at protecting the environment (among which the 1969 Environmental protection Act, the 1982 Health Protection Act, the 1985 Act on Chemical Products, the 1987 National Resources Act), it was clear to many that such a legislative and regulatory body was far from being sufficient to control and prevent pollution in all cases. Indeed, pollution may arise from accidents or from unpredictable events or may be accepted on the ground of the social benefits resulting the polluting activity. Therefore, provided that it is crucial to create incentives on the operators for them to implement the best preventive measures and to ensure
that victims are indemnified, the Environmental Damage Act was adopted in 1986 and entered in force on the 1st of July 1986\(^{250}\).

As far as the scope of application of such legislation is concerned, it imposes a strict liability (sections 1 and 3) for damage caused by any activities performed on real property (section 1, al. 1). The term “damage” is itself not defined precisely but instead a list of different types of environmental offences, including pollution of watercourses, of ground water, air or soil pollution etc., is to be found in Section 3. Therefore, such a scope of application is very broad as any operations conducted on real property may result, in case of environmental damage, in the liability of the operator. Moreover, regarding activities that are not covered by the 1986 civil liability legislation, they can nonetheless fall under the 1972 Tort Liability Act, which is based on the tort of negligence and which then applies as a complement to the 1986 Act (it may concern for instance damage caused to trees or cases of capture of wild animals: fauna and flora)\(^{251}\).

With regard to the burden of proof of causation imposed on the victim, Section 3 provides that such a burden may be alleviated. It means that the victim only has to prove that he suffers from one of the types of listed damage. He then can benefit from an alleviation of the burden of proving the causal link between his damage and a specific activity in the sense that he would only have to demonstrate a strong probability or propensity of the causal link as opposed to full proof. As a matter of fact, such an alleviation of the burden of proving the causal link is rooted in the Swedish case law.

For example, one may mention a 1981 case opposing an owner of a fish farm to his municipality. In the case in point, the owner sued the municipality and asked for compensation arguing that his fish had been poisoned by emissions and releases of toxic substances into the sewage system. Whereas the defendant asserted that fish had died because of a lack of oxygen, it was in any case acknowledged that such toxic substances had been released into the sewage system. It was concluded that none of the parties had brought formal proof of the liability of their opponents. Yet, the court applied the principle of the alleviation of the burden of proof of the causal link and ruled that the plaintiff had sufficiently established the probability of the causal link between the death of the fish and the emissions of the toxic substances.

Thus, the Swedish civil liability system has a very large scope of application and has facilitated the task of the victims as far as establishing the causal link is concerned. This is a feature which is common to many national liability regimes where it has been considered not only that victims do not have to prove a fault or negligence on the part of the polluter, but also that the obligation of establishing a causal link between the damage and the source of the damage is to be made easier to fulfil.


D. THE 1990 GERMAN ENVIRONMENTAL LIABILITY ACT 252

With a view to carry on an comparative examination of civil liability regimes and in particular of the issues of the scope of application, the burden of proof and its alleviation, the defenses available for polluters, one may have a look at the German 1990 Environmental Liability Act, which entered into force on the 1st of January 1991 253.

According to Art. 1 (par. 1-3) of this Act, a strict liability regime is imposed on the operators of Annex I establishments as far as environmental damage (air, soil, water) resulting in personal and property injuries are concerned. Therefore, inversely to the 1986 Swedish legislation, the scope of application of the German Act is restricted to certain types of activities as listed in an Annex I. As a consequence, questions may arise as to how to deal with technological developments or new industries not listed in the Annex but that may cause significant environmental damages. Indeed, technical progress develops everyday, which requires thus that such an Annex should be updated on a regular basis, which may be difficult and slow.

Another interesting point refers to the way the different interests at stake have been dealt with as far the question of the burden of proof and the causal link are concerned. Indeed, we saw above that establishing causation between the damage and the source of the damage may be extremely difficult for the victims given the complexity of the environmental and industrial processes concerned. Information or knowledge on the impacts of toxic substances may be lacking. A long period of time may elapse between the act and the damage. Therefore, whereas the general principle within German procedural law imposes on the victim the obligation to prove in full the causal link between a specific act and a damage suffered, the 1990 German civil liability regime for environmental damage provides that the burden of proof is alleviated (Art. 6.1). However, such an alleviation is to be distinguished from the Swedish principle of probability of the causal link, which does not suffer from any derogation.

More precisely, Art. 6.1 stipulates that the causal link between the activity concerned and the damage will be presumed in the sense that the victim will only have to prove the propensity of the industrial establishment concerned to cause that particular type of damage.

To do so, the victim will have to show that:

- the establishment can emit the type of substances concerned with regard to the nature of its activity, its operational processes, its equipment etc.
- He or she was or has been exposed to those types of substances.
- There is an acknowledged causal link between those types of substances and the type of damage suffered (medical, epidemiological studies etc.)

Therefore, the victim will not have to demonstrate with certainty the causal link at stake but only that the establishment concerned is very likely to have caused the damage.

Therefore, similarly to the Swedish legislation, the German Act provides also for a strict liability regime which is nonetheless restricted to listed establishments considered as “hazardous”. Too, whereas an alleviation of the burden of proof of the causal link is also provided, it is limited in the sense that operators may reject the application of the principle of the presumption of causation and liability by demonstrating that they have acted in accordance with laws and regulations or permits or that “other circumstances” may have contributed to the damage. On the other hand, victims enjoy access to information that is crucial to establish a causal link or a presumption of causation.

To many, such a civil liability regime for environmental damage may be seen as a model for other jurisdictions. Yet, it is limited to certain types of establishments and damages.

E. FRANCE

In France, there are various different civil liability regimes which may apply:

- a fault-based liability regime whereby the plaintiff will have to prove the damage, the fault of the operator and the causal link between his damage and the fault concerned.
- A strict liability regime base upon the concept of “les choses que l’on a sous garde”.
- A strict liability regime based on the concept of “neighbouring nuisance” or “troubles de voisinage”.

The plaintiff will of course enjoy the choice to prosecute the operator under one of the respective liability regimes. The French system therefore looks similar like the Belgian, discussed above.

As far as the fault-based liability regime is concerned, it relies on both articles 1382 and 1383 of the French Civil Code.

- Whereas article 1382 stipulates that “Tout fait quelconque de l’homme, qui cause à autrui un dommage, oblige celui par la faute duquel il est arrivé, à le réparer”, article 1383 provides that “Chacun est responsable du dommage qu’il a causé non seulement par son fait, mais encore par sa négligence ou son imprudence”. Such a fault-based liability may be easily invoked and used when it is simply a matter of proving that the operator has violated a legislative, regulatory or a permit provision. Indeed, the proof of such a non-compliance leads to the establishment of liability provided that the damage and the causal link are demonstrated.
- In addition, even in case of compliance, the operator may still be held liable under this fault-based regime if it is proved that he is liable of negligence. It refers in particular to cases where rights have been exercised in an abusive or excessive way.

Regarding strict liability, it is based upon art. 1384.1 of the French Civil Code which states that “On est responsable non seulement du dommage que l’on cause par son propre fait, mais aussi de celui qui
est causé par le fait des personnes dont on doit répondre ou des choses que l’on a sous sa garde”. In such cases, the plaintiff has simply to prove that he or she suffers from a damage and to establish the causal link. As an example, one may cite a 1969 case where the French Cour de Cassation held liable a company because of gases that had escaped from its premises or a 1978 case where a building company was held liable on the ground that its machines were causing too much noise. Whereas strict liability appears to be an appropriate liability regime in terms of environmental damage as it does not require any fault or excessive disturbances, French judges seem however to have difficulties in applying it.

Concerning the liability regime based on the concept of “troubles de voisinage”, the plaintiff does not have to prove a fault on the part of the defendant but only the existence of his damage and the relevant causal link. Such a strict liability regime relies upon art.1382 and art.544 taken together. The latter stipulates that “la propriété est le droit de jouir et de disposer des choses de la manière la plus absolue, pourvu que l’on n’en fasse pas un usage prohibé par les lois ou les règlements”.

The implementation of such a legal theory resulted from a 1844 Cour de Cassation ruling on industrial pollution where the court held that “si on peut reconnaître que le bruit causé par une usine lorsqu’il est porté à un degré insupportable pour les propriétés voisines sont une cause légitime d’indemnité, on ne peut considérer d’un autre côté, que toute espèce de bruit causé par l’exercice d’une industrie comme constituant le dommage peut donner lieu à une indemnité”.

Therefore, there has been a need to define what is an abnormal damage by considering the duration of the damage, its seriousness (it is left to the judge’s own discretion), its location (whether it occurs in an urban environment or in the countryside) and the position of the victim. Along with the notion of abnormal damage, there is also the concept of a given damage that is abnormally caused. In such cases, it is a matter of examining more the nature itself of the activity that caused the damage than the degree of the damage.

However, from a general point of view, the French case law on this concept of “troubles de voisinage” has been heavily criticized because of the great discretion provided to judges in assessing what is abnormal and what is not. Some authors such as M. Prieur argue that there are today admissible pollution levels depending on the place where they take place. Thus, whether a pollution results in the polluter’s liability and compensation and can be considered as abnormal will depend upon whether they take place in a working class or in a residential neighbourhood. As a consequence, this leads to discriminatory outcomes as polluters situated within industrial areas will not be condemned whereas neighbouring residents are often lower wages inhabitants than people living in residential areas. In conclusion, M. Prieur argues that the difficulties encountered by courts and judges in assessing whether a damage is to be considered as abnormal and that tend to favour polluters call for a reforming of the doctrine of the “troubles de voisinage” when one deals with environmental damage.

256 Cass. civ., 27 November 1844, S., 1844.1.211.
Along with those different liability regimes, there are also statutorily strict liability regimes which implement international conventions on nuclear and oil pollution.

More particularly, there is the 1968 Law on the liability of the operators of nuclear reactors in case of nuclear accident (amended by the 16th of June 1990 Law). Such a French legislation implements the 1960 and 1963 Paris and Vienna Conventions on nuclear energy and liability\textsuperscript{258}. There is also the 26th of May 1977 Law of civil liability of operators of oil-tankers implementing the 1969 Brussels Convention\textsuperscript{259}.

Regarding in particular the issue of the compensation for environmental damage, including damage caused to air, water, landscape, soil,... French case law has focused on the geographical extension of the notion of “troubles de voisinage”. This means that for such a concept to be relied upon by a victim to obtain compensation, the polluter does not necessarily have to be located next to the damaged real property. Along with such an extension, the notion of the preservation of the environment as a common or collective heritage has also developed. However, the damage has to be considered as unbearable for the society taken as a whole by exceeding a certain level of pollution or disturbance. This results in difficulties in assessing what is an abnormal or excessive pollution level.

In French case law, the principle of alleviation of the burden of proof of the causal link has been developed so as to facilitate the task of the victims\textsuperscript{260}. Moreover, French judges have adopted the principle of joint and several liability according to which the victim may ask to any of the liable polluters to bear all the costs of reparation. The operator concerned will then be able to claim refund from other polluters. Therefore, in cases of multiple parties, each of them is fully responsible for the entire clean-up and compensation costs.

§ 3. Retrospectivity?

Examples of retrospective applications of environmental liability rules have already been given above when the issue of retrospectivity was discussed from a theoretical angle in chapter 2. We will not examine how the retroactivity issue has been dealt with in all of the countries under discussion, but focus more particularly on the two member states which are the particular focus of this study, being Belgium and the Netherlands. In some legal systems, such as e.g. in the French, the retrospectivity issue is not explicitly discussed in legal doctrine.

\textsuperscript{259} Loi n° 77-530 du 26 mai 1977 relative à la responsabilité civile et à l'obligation d'assurance des propriétaires de navires pour les dommages résultant de la pollution par les hydrocarbures (J.O. 27 mai 1977).
\textsuperscript{260} Cass. civ. II., 4 janvier 1979.
A. Belgium and Flanders

An important issue within the field of environmental liability is no doubt whether the legal rules still are in balance and reasonable. A method of answering this vague question is to analyse whether the liability rules are put into effect in such a way that they adhere to basic principles of efficiency and fairness. From an efficiency point of view, one could argue that liability rules should have a preventive effect and should therefore only be directed to those whose incentives for proper behaviour can be affected. The same rule can be formulated as a principle of fairness: only those who actually contributed to the risk should be held liable and in principle only to the measure in which they actually contributed to the risk.

Environmental liability in some legal systems may collide with these principles on various occasions. This is especially the case as far as soil pollution is concerned. The policy makers often look for all kind of reasons to have the industry still in business pay for "the sins of the past", even when this may not serve preventive goals. Particularly since the government tends to be the victim of soil pollution, it will actively seek all kinds of methods to recover costs, even if this collides with the traditional principles.

An area in environmental liability where expanding liability might collide with principles of efficiency and fairness concerns retrospection. This can take different forms. The problem of retrospection always arises in cases of historic soil pollution. When new legislation is implemented, often the question will arise of whether the new statute also applies to old situations. Retrospection can also be hidden in the fact that judges sometimes apply an existing liability rule, but apply a new standard of care to an "old" situation. This obviously happens in almost every case where new standards of care are applied to old situations.261

Finally, in environmental liability the question also arises of whether good faith constitutes a ground of excuse. Again, this issue will often arise in the area of soil pollution. A so-called innocent owner, being someone who was not aware of the fact that the specific soil was polluted when purchased, will often claim that he cannot be held liable.

For many years, these issues were not dealt with explicitly in Belgian law. The retrospective aspect that is hidden in every change in case law in which new standards are applied to old situations is as such not discussed in Belgian law.262 A possible solution to providing, on the one hand, an adaptation of the new care standard to new technological developments and, on the other hand, avoiding the harsh effect of applying the new standard to old situations could be found in the so-called "prospective overruling", whereby the court would announce that a new standard would apply in the future, but that the new standard would not yet apply to the existing situations, because those injurers could not foresee that their behaviour would be considered wrongful. There are no signs that such a prospective overruling theory is being followed in Belgian tort law.

The issue of retrospection and the protection of innocent owners has received a lot of attention in Belgian law. One of the criticisms on the strict liability regime of article 1384, al. 1 CC, was related to the fact that this provision leads to a strict liability of every possessor of an interest (referred to as a "guardian") in a polluted site, whereby the liability also applied to the one who had not caused the pollution himself even if the pollution had a source in a distant past. For this reason, this provision was heavily criticized in Belgian legal doctrine 263.

Note that although the issue of retroactivity is as such not explicitly discussed in French legal doctrine, the far reaching strict liability provision of article 1384, al. 1 of the French civil code obviously causes the same problems as the Belgian provision since the liability of the guardian of a defected property in France goes even further than in Belgium and allows not for exemptions for innocent owners. Hence, also in France the retrospectivity is implicitly built into the traditional article 1384, al. 1 CC.

Note that the far reaching liability (with retroactive effect) has not been accepted in the work of the Interuniversity Commission for the reform of environmental law in Flanders 264. This commission provides for grounds of excuse for the owner of polluted soil who is in good faith, i.e. who was not aware of the fact that specific area of soil was polluted. This grant of excuse has been taken over in the subsequent Soil Clean-up Decree, which resulted from the work of the Interuniversity Commission and which has been discussed above 265. As we explained above, the new strict liability regime of the Flemish Soil Clean up Decree does hence not apply to past pollution and innocent possessive of land polluted in the past can enjoy exemption from liability if they meet specific criteria.

B. THE NETHERLANDS

Historic or retroactive pollution implies that an operator will be held liable for environmental damages and restoration costs or compensation even for acts that would have taken place before the relevant legislative or regulatory piece upon which liability would be imposed would have been adopted.

Such a provision is undoubtedly subject to much criticism as it does not favour legal certainty and its implementation depends very much on each national legislation and judges. For example, whereas it has been applied in the USA under the 1980 Comprehensive Environmental Response and Liability Act (CERCLA) 266 and in The Netherlands in terms of contaminated soils, it has been rejected by British courts (see the 1994 Cambridge Water case) and in Germany where par.23 of the 1990 Environmental Liability Act stipulates that damages caused by acts committed before the entry into force of this Act are not covered by it.

264 See Interuniversitaire Commissie tot Herziening van het Milieurecht in het Vlaamse Gewest, Voorontwerp Decreet Milieubeleid (Brugge: die Keure, 1995); the Commission’s proposals concerning civil liability have been discussed by Deketelaere, K., “De voorstellen van de Interuniversitaire Commissie tot Herziening van het Milieurecht in het Vlaamse Gewest inzake aansprakelijkheid voor milieuschade” in Deketelaere, M., (ed.), Recente ontwikkelingen inzake de aansprakelijkheid voor milieuschade, Brugge: Die Keure, 1993, 75-97.
265 According to Art. 31, s.3 of the Soil Clean up Decree of 22 February 1995, there is no duty to clean up pollution which occurred in the distant past if the use of the soil was in good faith; see Deketelaere, M., “Aansprakelijkheid voor historische, nieuwe en gemengde bodemverontreiniging” in Deketelaere, K. (ed.), Het decreet betreffende de bodemsanering, Brugge, Die Keure, 1995, 135-42.
266 Comprehensive Environmental Response, Compensation and Liability Act [1980], 42 U.S.C., ss. 9601-75
From a general point of view, there are those who argue that retroactive liability has the advantage of putting environmental protection at the heart of civil liability regimes, of making sure that the polluter will pay for his pollution and of ensuring that victims will be indemnified. On the other hand, there are those who contend that retroactive liability does not create any incentive on polluters to act in an environmentally friendly way as damages have already occurred. Furthermore, while it does establish legal uncertainty, it does not bring forward any solutions where the polluter cannot be identified.

To provide an overview of the issue of retroactive liability, one may have a look at some of the contemporary liability developments that have occurred in The Netherlands\(^\text{267}\). As matter of fact, the regime that seems to prevail today in Holland has been qualified by authors as a “pseudo-strict liability” regime. Indeed, whereas a fault-based liability system had been applied for a long time, new concepts such as the duty of care and to warn have developed particularly in cases of contaminated soils to determine whether an operator was liable for clean-up costs. This has mainly resulted from the adoption in 1983 of the Interim Soil Clean-up Act that has allowed the Dutch government to ask for refund from polluters of clean-up actions, including in cases of historic pollution\(^\text{268}\). As a consequence, such a liability regime as developed by Dutch civil courts has been considered as a pseudo-strict liability system in the sense that the element of “fault” that has remained the basis of liability has been used in such a way (via the imposition of the duty of care and to warn) that strict liability elements have appeared.

For instance, one may mention the 1982 Kammerick Community Centre case where the defendant was held liable to have left a bucket of toxic liquid with the trash\(^\text{269}\). The court ruled that to leave a bucket of unknown liquid is wrongful unless the person knows or has legitimate reasons to think that such a liquid does cause no danger to human contact. The terms “legitimate reasons” indicate therefore that an obligation to investigate on the potential dangers is imposed. Such a danger doctrine lies at the heart of the Dutch liability developments in the sense that the one who cause a danger must conduct investigations and take precautionary measures. Thus, there is no liability whether the person monitors and indicates to the one who collects the bucket concerned what is its content.

We may also point out at the 1987 The Hague Gasworks case where the city of Den Haag was held liable to have sold a contaminated municipal site without having warned the buyer of the contamination and taken any measures to prevent it\(^\text{270}\). In addition to this duty to investigate and to warn, the court added that, in the particular case in point, the defendant must also have exercised a special attentiveness provided that particular risks were involved as the site was allocated according to the buyer for the construction of housings. Thus, even if the city of Den Haag did not know of the past contamination, it was liable as it had the obligation to investigate and to warn the buyer.

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267 Some examples of retroactive liability in the Netherlands have been provided above in chapter 2 § 7 D.
268 Interimwet Bodensanering, IBS, 1983.
There has also been the 1989 Benckiser case where a German firm sent in Holland toxic wastes using Bos a transport company who had committed itself to treat those wastes in appropriate fashion. But instead of handling safely those dangerous products, Bos dumped them in different locations in The Netherlands in breach of the law. Benckiser was held liable for clean-up costs on the ground that it had the obligation to investigate on Bos and on the treatment of those wastes.

In addition, Dutch courts have alleviated the burden of proof and the causal link to the benefits of the plaintiffs. For instance, in the 1970 Water Extraction case and in the 1982 Kammerick Community Centre case, the Dutch Supreme Court ruled that there was no importance to know exactly how the damage had occurred and whether it was predictable. Instead, the court stated that it was sufficient for the victim to show that it was plausible that the damage be caused by the defendant. In such a case, the burden of proof is then shifted back onto the defendant who has to prove that he has not caused the damage. Furthermore, another interesting point relates to the fact that the obligation to cooperate and to provide information to the victim has been imposed onto polluters. Such an obligation has resulted from art.177 of the Dutch Code of Civil Procedure who entered into force in 1988 and which provides for a “reasonable allocation of the burden of proof” in the sense that it imposes an obligation for the defendant to cooperate in furnishing proofs and information on the causal link. This has for instance been acknowledged in the 1990 Asbestos cases where the Dutch Supreme Court ruled that the plaintiffs had only to show the truthfulness of the damages whereas the defendant had to cooperate to provide the proofs of the causal link in terms of figures, statistics etc.

At last, it is interesting to recall what has been the position of the Dutch courts vis-à-vis the argument of the defendant according to which the damage was not predictable at the time where the act that caused it occurred so that he escapes from liability. Such an issue was raised for instance in the 1990 Asbestos cases, which concerned employers who had exposed their employees to asbestos dust from 1948 until 1972. Defendants argued that they could not be held liable for their employees’ illness as far as damages caused in that period of time are concerned as there were no legal rules on asbestos and that they had acted in the same way as all the other industries. However, the High Court ruled that employers had an obligation to undertake inquiries on the potential risks of their activities “When legislation are missing or insufficient, there is in principle an obligation to do conduct researches on the potential dangers posed by the products they manufacture or by the production processes they use. Therefore, they will have to prove that they did everything in order to keep themselves informed in a timely fashion of the potential dangers, including information that could have been found abroad and that they consequently took precautionary and prevention measures”.

With a view to examine in particular the issue of retroactive liability, one may look at the 1983 Dutch Interim Soil Clean-up Act (IBS) which aims at providing financial resources for Dutch public authorities to take clean-up actions to remedy to environmental hazards caused by contaminated sites. Within that context, Art.21 IBS that allows the government to engage legal actions for refund against polluters has resulted in numerous court actions. Firstly, one may refer to the 1990 State v. Van Amersfoort case where the High Court ruled that a polluter could be held liable for clean-up costs even

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in when the act that had caused the damage occurred before 1983 (date at which IBS entered into
force)\(^{273}\). As a matter of fact, the court developed what has been called the “relativity requirement”
under Art. 21 IBS. It means that the defendants must have realised that, at the time where the damage
occurred, the general public opinion was much concerned with the issue of environmental protection
and that the State would eventually take legislative action in that field, including soil contamination.
Therefore, the argument of the defendant according to which his duty of care was limited to
compliance with existing laws and regulations was overruled.

Then, there were two 1992 cases, namely State v. Azko Resins and Van Wijngaarden v. State where
the High Court had to specify the scope of application of the previous ruling and in particular what
was meant by the terms “general public opinion”. Consequently, the court ruled that there was a need
to rely upon relevant parliamentary documents concerning discussion on the future IBS which were
existing at the time where the damage occurred. In doing so, it then would be possible to determine at
what precise moment a company should have known that the government will commit itself to
legislate in the field of soil contamination. In order to be more specific, the court decided upon the 1\(^{st}\)
of January 1975 as being the key date. In addition, in case of serious soil pollution, the court
concluded that an earlier date can even be considered provided that the State proves that the relevant
contamination consciousness should have started at this early date.

In the 1994 cases State v. Solvay Duphar, State v. Fasson/ van den Brink, State / Municipality of
Oudekerk v. Shell\(^{274}\), the High Court confirmed the date of 1\(^{st}\) of January 1975 as the key date to apply
the art.21 IBS “relativity” rule. However, such courts decisions have been heavily criticised for
various reasons. Firstly, to rely upon parliamentary documents as a basis to determine the date of
reference is considered by many as being insufficient and inappropriate since it does take account of
the fact that legislative processes are in practice the outcomes of a variety of factors, including the
general opinion of the society. Too, it has been said to conflict with the implementation of the polluter-
must-pay principle vis-à-vis cases of historic pollution since it will be the tax-payer who will at the
end of the day be paying\(^{275}\). Moreover, the date of the 1\(^{st}\) of January 1975 does not seem to consider
the fact that a long period of time often elapses between the polluting act and the occurrence of the
damage. At last, the ruling of the High Court has also been debated on the ground that it did reject the
interesting arguments of the Advocate General Koopmans. Indeed, the latter made a distinction
between the contamination of soils that belong to the polluting company and soils that are owned by
third parties. Regarding the later case, Koopmans argued that the polluter is liable to loose control of
its own waste and hazardous products resulting in the creation of a special danger or risk caused to
third parties and therefore not entailing any limitation in time as far as the application art.21 IBS is
concerned.

\(^{273}\) State of The Netherlands versus van Amersfoot, Hoge Raad, February 9, 1990, Nederlandse Jurisprudentie,

\(^{274}\) State of The Netherlands v Solvay Suphar, Hoge Raad, April 24, 1992 RvdW, 1994, no 186, State of The
Municipality of Ouderkerk v Shell, Hoge Raad 30 September 1994, RvdW 1994, no 185 G.

\(^{275}\) Although we have argued above that this may be the “just” solution. See chapter 2 § 7 F.
The illustrative examples provided by the Dutch case law show how difficult it may be to impose liability on polluters for historic environmental contamination and more particularly for polluting acts that have occurred before the entry into force of a law or regulation. Whereas courts and potential polluters call for legal certainty, it seems, however, to go against the polluter-pays principle. Above we indicated that from an economic perspective there is much to say for this Dutch solution. A consequence of excluding liability for past pollution is, however, that in the Netherlands, much of the soil contamination clean-up costs are to be borne by the society as a whole which contrasts with the 1990 Asbestos cases where companies concerned supported their own liability.

The result is that the Dutch Supreme Court limited the polluter’s liability to the period starting 1 January 1975. Moreover, a subsequent Soil Protection Act limits the retrospective effects of this liability in the Netherlands. Retrospective soil clean-up liability is only possible if the conditions of Art. 75, s.5 of the Soil Protection Act are met (the tortfeasor must have known the serious dangers of the substances brought on or into the soil and must have acted in a grossly negligent way). However, also in the Netherlands there may still be problems of retroactivity. These have to do with the fact that compensation orders may be given under administrative law, which can in practice have retrospective force.

C. UNITED KINGDOM

As far as the UK is concerned we can be brief. Above we discussed the House of Lords' decision, Cambridge Water Cov. Eastern Counties Letter PLC, where liability was denied because the foreseeability requirement was not met in this case of pollution which occurred in the distant past.

Note, however, that a different approach was taken in the UK’s Environment Act 1995, where strict retrospective liability was laid down for the restoration of contaminated sites.

§ 4. Defenses

Let us now briefly dress the question how some of the legal systems have potentially limited environmental liability by introducing defenses. Again, some issues have already been dealt with above, when discussing the theoretical foundations of some defenses in chapter 3. One defense, notably the fact that pollution had a cause in a distant past, has already been discussed above, when dealing with the issue of retroactivity.


277 Journal of Environmental Law, 1994, 137, with case note by Ogus.


Tijdschrift voor Milieuansprakelijkheid, 1995, 159-63.
A. BELGIUM AND FLANDERS

1. Regulatory compliance defense?

A defense which has been discussed in Belgian legal doctrine concerns the potential justificatory effect of a licence. Does following a regulatory standard exclude a fining of liability? This question is obviously of particular importance in environmental law, since industrialists will often argue that as long as they follow the conditions of the licence, no finding of negligence in tort is possible. This point of view is, however, firmly rejected in Belgium. The basic idea is that the administrative authority, when granting a licence and setting permit conditions, cannot take into account the possible harm that the licensed activity might cause to all possible third parties. Their rights to compensation for damages may therefore not be impaired simply because the operator of a plant followed the conditions of a licence. Legal doctrine and case law therefore clearly state that keeping the conditions of the permit is just a minimum. In addition, the plant owner has to take all possible precautions as necessary under tort law to avoid his licensed activity causing harm to third parties.

2. Interuniversity Commission

Also within the framework of the liability regime which has been proposed by the Interuniversity Commission in the draft decree on environmental policy the possible exceptions to liability have been discussed.

Article 9.1.6 provides that there shall be no liability where:

a. the activity which lies at the root of the emission does not infringe any statutory provisions, and
b. the emission corresponds to normal practice, taking into account local circumstances, and
c. the pollution which results from it:
   - corresponds to normal practice in the light of local conditions, or
   - where quality standards apply, does not exceed the applicable guidelines.

The reason for this exception is that when no regulatory standards are violated, the strict liability should not apply to "normal" pollution, which is inevitable in any industrial society. This refers to the tolerance standard, which could be found in Belgian nuisance law and which can also be found in article 8.d of the Convention of Lugano.

This Proposal of the Flemish Interuniversity Commission shows, once more, that whereas Belgian legal doctrine generally holds that following regulatory conditions has no justificative effect, compliance with statutory provisions can nevertheless have some influence. Note, however, that this proposal (which is not implemented yet) is by no means a general defense of regulatory compliance. This is only one of the criteria which, if other strict criteria are met (pollution follows normal practice

and does not exceed applicable guidelines where quality standards apply), may exclude liability. It
does, however, not play a role outside this 'normal customary practice' case.

The Interuniversity Commission also takes a specific point of view on the above mentioned
retrospection issue by stating in article 9.1.12 that the provisions of the new title on environmental
liability shall only apply to damage and impairment of the environment which are the result of
emissions which took place after the entry into force of the new decree. Hence, retrospective
application of the new regime is explicitly rejected.

It is also important to stress that article 9.1.13 mentions that the proposed provisions shall apply
without prejudice to the rights which the victim of the damage may exercise against the person liable
or against a third party on a different legal basis. This means that the environmental liability regime
proposed by the Interuniversity Commission is not exclusive. This is, hence, an important difference
with from, for example, the nuclear liability conventions. This means that the victim still holds the
right to use the traditional Belgian tort law regime as well.

3. First use defense

Also the “first use”-defense, discussed above, played a role at some occasion in Belgian case law. If a
famous Belgian fries shop is choosing its location next to a pig farm, the fries baker should not afterwards
complain about the smell emitted from the pig farm\textsuperscript{282}. On the other hand Belgian law apparently also
accepts that first use is not a defense against a duty to take additional preventive measures if they can
reduce the harm. This duty to reduce the nuisance also exists if the victims came to the nuisance. The
Court of Appeals of Ghent held in that respect that the newcomers may expect that the licensee of a
factory will take the necessary measures to prevent the harm as far as possible\textsuperscript{283}. If additional measures
can therefore reduce the problem (of e.g. noise) the first use is no defense a duty of taking these pre-
ventive measures\textsuperscript{284}. If, however, additional reduction of harm through further preventive measures is not
possible, newcomers cannot claim the closure of the factory\textsuperscript{285}. From the facts it appeared that the harm
caused in that particular case was relatively limited, compared to the probably much higher relocation
costs of the firm, which may have been a decisive factor in the decision.

B. THE NETHERLANDS

1. Justificative effect of licences

In the Netherlands not only the question whether retrospectivity constitutes a defense has been
extensively debated, but equally the question whether following the conditions of a licence would
have a justificative effect in tort. That point of view is firmly rejected in the Netherlands. In Dutch
case law it is indeed generally accepted that following the conditions of a licence does not release a

\textsuperscript{282} Vredegerecht (Justice of the Peace) Beveren, 10 April 1990, Tijdschrift voor Vrederechers, 1990, 347.
\textsuperscript{283} Hof van Beroep (Court of Appeals) Ghent, 25 November 1968, Rechtskundig Weekblad, 1969-70, 429.
\textsuperscript{284} Rechtbank van Eerste Aanleg (Tribunal of First Instance) Antwerp, 25 June 1981, Pasificrie Belge, 1982, III, 66;
\textsuperscript{285} Antwer, 17 February 1988, Rechtskundig Weekblad, 1989-90, 50.
plant owner from potential liability\(^{286}\). An exception would only exist if the interests of the potential victims were clearly taken into account when the conditions of the permit were set\(^ {287}\). This point is made very clear in a famous case in the Dutch Supreme Court that dealt with pollution caused by the French salt mines in the Alsace region\(^ {288}\). The Salt Mines argued that the emissions were within the limits set by their permit and, therefore, not illegal. The court, however, judged that the licence had not taken into account the potential harmful effects of the emissions for third parties and could, therefore, not release the salt mines from liability.

2. First use defense

Also the issue of “first use” has arisen in the Netherlands, all be it rarely. In countries which are traditionally highly populated such as e.g. Belgium and The Netherlands there is relatively little discussion on first use. This has a lot to do with the fact that alternative location possibilities are often lacking and it has been decided *ex ante* through zoning and planning laws which kind of activities should take place in a certain area. One can find some cases in which temporal priority seems to play a role. The Dutch Supreme Court had to deal with a case where Van Tol had first use and De Jong knowingly located himself close to the property of Van Tol. When De Jong sued Van Tol because he claimed to be harmed by overblowing seeds this claim was denied taking into account the fact that Van Tol had first use and that the activities took place in an agricultural area\(^ {289}\). Other examples where a "anteriority principle" is accepted in Dutch law are discussed in the literature\(^ {290}\).

C. Sweden

The Swedish Environmental Damage Act 1986 contains several limitations.

Section 1 provides indeed that any damage resulting from a disturbance which is “reasonably to be tolerated, taking into account local conditions or its general occurrence in comparable conditions” will not give rise to compensation except if the damage was caused wilfully or through negligence. The question thus remains to know exactly what is the scope of application of such provision. Firstly, it is to be noted that this limitation to strict liability applies only to the causative factors of the damages as opposed to the degree of the damages (which then may not be significant but resulting from a source that is not common to local conditions). Secondly, with a view to assess what could be a “normal level” of disturbance and provided that the court is left with a discretionary power in that respect, it is

\(^{286}\) See Supreme Court (Hoge Raad) 30 January 1914, *Nederlandse Jurisprudentie*, 1914, 497; Supreme Court 10 March 1972, *Nederlandse Jurisprudentie*, 1972, 278.


interesting to have a look at the “travaux préparatoires” that have preceded the final version of this Act. Those draft documents provide the illustrative example according to which disturbances at an ordinary level that would result from a factory situated within an industrial area will not give rise to compensation for people living in this area. The contrary would apply whether the very same factory would be located within a residential area.

Such a provision aims at balancing all the interests at stake. On the one hand, a severe strict liability regime is imposed on operators. On the other hand, it takes into account the legitimate interests of industries, including the right to operate but without resulting in excessive damage or disturbances. In any case, courts enjoy a large discretionary power.

Beyond such a limitation, one has to examine whether further defenses are available to defendants to escape from liability.

Firstly, commonly to many national regimes, polluters cannot rely upon the “state of the art” defense, which means that they could not argue that they have used the Best Available Techniques (BAT) or the Best Available Techniques not Entailing any Excessive Costs (BATNEEC) to exonerate themselves from liability or to contend that it was impossible to predict the damages on the basis of the past technology.

Secondly and more surprisingly, it is to be noticed that there is not an “act of God” defense available to operators which cannot then rely upon the occurrence of an unpredictable natural event (earthquake, flooding etc.), of a case of force majeure.

Thirdly, the Swedish Act does not make any distinctions between damage which is caused by activities carried out in accordance with the laws, regulations or permits and those which result from an accident. Therefore, compliance with regulatory standards does not exonerate polluters from liability. Such a provision features most of the national civil liability regimes. It means also that a polluter may be held liable strictly when he has acted in accordance with legislative provisions or may be held liable on the base of a fault-based liability when a pollution results from the violation of such a provision.

Fourthly, the 1986 Act does not draw a difference between damage caused by “hazardous” and “non hazardous” substances. For example, if water at a tourist sea resort gets “contaminated” by sand resulting from the clean-up of a neighbouring forest, the liability regime would apply even if the sand does not produce any personal damage nor affects the bathing of tourists. As a matter of fact and theoretically, any foreign body is seen as a pollution.

Finally, one has to keep in mind that the scope of application of such a liability regime is limited in terms of the types of damages which are compensable (Section 1, al. 1) in the sense that only property damages and “pure economic losses” are taken into consideration.
Also the 1990 German Environmental Liability Act contains several limitations.

Art. 6.2 provides that the alleviation of the burden of proof of the causal link does not apply once it is has been proven that the establishment has operated in accordance with the relevant legislative, regulatory provisions or with the permit conditions. Moreover, the operator must also prove that there has not been a disturbance in the operation of the installation. In such a case, the victim will have to prove the causal link without being able to rely upon the principle of presumption of liability – propensity. The objective of such a provision is to create an incentive for German industries to comply with laws and regulations. Note, however, that compliance with regulation does not free the operator from liability; it merely has an influence on the burden of proof.

In addition, Art. 7 of the German Act provides that, even if the establishment concerned cannot prove that it has operated in accordance with legislative and regulatory provisions, it can still deny the application of the principle of presumption of liability and causal link in demonstrating that there have been other circumstances which may have caused the damage. Whereas the term “other circumstances” does not cover other Annex I establishments so that the operator cannot simply reject his own liability by pointing at other industries, Art. 7 indicates that the operator can nevertheless refer to natural causes (climatic conditions) or to the personal conditions of the victims or simply refer to indefinite causes.

Therefore, to determine whether victims will benefit from favourable conditions to bring about their compensation interests will depend on the way courts will rule on the ability for industries to reject the principle of the alleviation of victims’ burden of proof of the causal link and on the terms “other circumstances”. Undoubtedly, it would be preferable if those terms were interpreted in the following fashion: an establishment will be able to reject the presumption of causation only if it proves that “other circumstances”, taken individually, may have caused the damage concerned. Otherwise, it would imply that the operator would always be able to deny the application of the presumption principle by relying upon general climatic conditions or existing pollution levels.

Finally and similar to the Swedish legislation, the German civil liability regime does not allow operators to rely upon the defense of the “state of the art” to escape from liability. Yet, it provides for cases of “act of god” or “force majeure”. On the other hand, an operator will be held liable even if he proves that he had acted in accordance with laws and regulations or that the damage resulted from an accident. However, in such a case, the principle of presumption of causation is replaced by the obligation to bring about the full proof of causation as opposed to the Swedish legislation. Finally, Art.11 focuses on the principle of contributory negligence according to which liability may be shared among parties in case of the victim’s contribution to the damage. The question will be then to examine whether the operator was in position to avoid the damage to arise.
E. FRANCE

A defense which is discussed in French doctrine concerning environmental liability is the first use defense. This means that polluters will not be held liable for damages vis-à-vis a victim who will have settled down after and next to an already existing source of pollution.

This is to be found in art. 70 of the 31\textsuperscript{st} of December 1976 Law amending art. L. 421.9 of the Code of Urbanism that provides that:

“Les dommages causés aux occupants d’un bâtiment par des nuisances dues à des activités agricoles, industrielles, artisanales ou commerciales, n’entraînent pas droit à réparation lorsque le permis de construire afférent au bâtiment exposé aux nuisances a été demandé ou l’acte authentique constatant l’aliénation ou la prise de bail établi postérieurement à l’existence des activités les occasionnant dès lors que ces activités sont poursuivies dans les mêmes conditions”.

Then, such an art. L 421.9 was amended in turn by the 4\textsuperscript{th} of July 1980 Law on Agriculture that inserted art. L 112.16 in the Code of Construction and Housing.

The latter is twofold. On the one hand, it extends the rule on non-liability of the polluter in all cases of posterior installation of the victim (not only in the above-mentioned case of the granting of a permit to the victim). On the other hand, for the polluter to benefit from such a rule of liability exemption, the latter’s activities have, not only to be pursued in similar conditions but, they are also to be exercised in accordance with any relevant law and regulation in force. As a consequence, the fulfillment of legal requirements becomes the means by which the polluter may be exempted from liability.

Such a provision has been heavily criticized as it sets up a sort of right to pollute provided that the time condition is fulfilled, that nuisances are caused in similar conditions than before and within the limits set by law. Many argue that this goes against the idea according to which it belongs to the courts to determine whether the victim has committed a negligence by settling down next to a source of pollution. Furthermore, it seems to be inefficient since it does not create any incentive for polluters to modernise their production processes since nuisances have to remain similar except if legislative or regulatory provisions prescribe otherwise. It also appears discriminatory since it is often the case that persons with low wages are those who will have to settle down next to pollution sources. At last, such a provision may be deemed to be anti-constitutional since it breaches the general constitutional principle according to which everyone is equal before the law, including in terms of justice.

§ 5. Summary

A. GOAL OF THE COMPARATIVE ANALYSIS

Above we compared the basic framework of the environmental liability as proposed in the white paper with the theoretical principles explained in chapter 2. In chapter 3 we addressed the role of possible defenses which may exclude environmental liability, from a theoretical perspective. Now, in this
chapter 4 we had a brief look at a few legal systems. Obviously we realise that this brief look which simply addressed the main principles of liability, the retroactivity issue and some defenses is a too small basis for a serious comparative research. Moreover, an in-depth comparative research has already been provided in a study executed by Mc Kenna in 1996 as one of the documents preceding the white paper. The only reason we had a brief look at the main principles of environmental liability was to examine whether, although there may obviously be many differences in legal form or practice, some of the main principles of the environmental liability system correspond with the theoretical model as presented in chapters 2 and 3. Since we concluded that to a large extent the liability regime proposed in the white paper corresponds with these theoretical starting points it would be reassuring to find that at least to some extent the same would be true for legal systems. However, the purpose of our analysis obviously was not to examine whether the regime proposed in the white paper constitutes a "common core". The purpose of our study is indeed not comparative legal research, but to examine the assurability of the regime proposed in the white paper.

B. MAIN PRINCIPLES

Nevertheless we found that as far as the main principles is concerned, many of the legal systems we had a brief look at follow the main ideas of the theoretical model. As we explained, the theoretical model assumes that environmental liability is a system which affects the incentives for prevention. Moreover, in cases where it can be assumed that the influence of the victim on the risk of pollution is only minor, strict liability may be a superior device, since only under strict liability it is also possible to control the activity level of the potentially responsible party. This, however, calls for a balanced approach of a strict liability rule for those types of cases which can truly be considered as unilateral.

To some extent this approach is indeed followed in the legal systems we had a brief look at as well. For instance the strict liability rule in the common law, which originated from Rylands V. Fletcher and was recently applied to an important environmental pollution in the case Cambridge Water Company, is based on the idea of an increased danger. However, in the UK the liability law is apparently clearly considered as a system to affect incentives. The Cambridge Water Company case made clear that the damage needs to be predictable to make the operator strictly liable. This balanced approach seems to a large extent to follow the logic of the theoretical model. The same can be said about the 1990 German environmental liability act which introduced strict liability for environmental damage, but limited the application of the statute to specific cases of damage caused by some classified installations. If these classified installations constitute a particular danger one can again argue that the strict liability rule applies particularly to unilateral accident cases, which would follow the theoretical model. The same could be said about the Belgium case law concerning environmental liability and the proposals of the Flemish Interuniversity Commission. They propose a strict liability rule for environmental harm, more particularly for classified installations whereby the operator will be held liable. On the other hand, a soil clean up decree, which was promulgated as a result of the proposals of the Interuniversity Commission clearly stated that it applies only for new soil pollution. Again this follows the idea that a

291 Mc Kenna and Co., Study of civil liability systems for remedying environmental damage, London, June 1996 (a summary of this study is provided in annex 1 to the white paper, 33-36).
292 See chapter 2 § 5.
liability rule should affect the incentives for future behaviour. However, in some cases one can note that (environmental) strict liability goes further than the theoretical model would require. Take the example of France where the strict liability for defective "things" of article 1384 (1) of the Civil Code applies even in cases where a particular "thing" did not cause a specific danger. The case law of the Court de Cassation has apparently interpreted this provision broadly in order to be able to provide a widest possible compensation to victims. Victim compensation is nowadays considered in France to be a more important goal of tort law than the prevention of damage via deterrence.

In sum, this brief overview of the applicable rules in a few legal systems showed that to a large extent they seem to align with the theoretical principles and with the environmental liability regime proposed in the white paper. If there are deviations it mainly concerns a widening of liability in favour of victim compensation. We believe, however, that this should not lead to a change of the theoretical starting points, being that liability rules combined with safety regulation should be used to provide incentives to prevent harm. Compensation should primarily be achieved via other means which will be discussed in the remainder of this study.

C. Retrospectivity

Also as far the retrospectivity issue is concerned one can notice deviations from the theoretical model. We made clear above that if prevention of damage should be the goal of liability law there should be no retroactive liability. The regime chosen in the White Paper therefore complies with this theoretical principle. However, a finding of no liability because of retrospectivity will obviously in some cases mean that victims remain uncompensated, if no other compensation mechanisms are available. This led some judges or legislators to accept retrospective liability. Illustrative is the example of the UK where the House of Lords denied retrospective liability in the Cambridge Water case, but where the subsequent environment act 1995 introduced a strict retrospective liability for the restoration of contaminated sites. Also the struggles in Dutch case law illustrated the difficulties judges had in accepting that some polluters would be off the hook because the pollution happened in a distant past. Nevertheless we believe that e.g. the example of the Flemish Interuniversity Commission shows that a balanced approach which introduces strict environmental liability for new activities can only be based on the idea that this strict liability will affect the incentive for prevention of the polluter. Hence, we believe that the white paper should stay with its starting point that the new liability regime will be not retrospective. It should, however, be a point of attention and further study whether there should be additional mechanisms in case of a finding of no liability because of retrospectivity. Precisely the fact that there may not have been additional compensation mechanisms to cope with these cases might have led some judges and legislators to the (debated) solution to use liability law for the sins of the past. Alternative compensation mechanisms may prevent this tendency.

The reader should, however, be aware of the fact that the regime in the white paper assumes that there is a identifiable polluter who can be held responsible for the damage and who can be made liable. The compensation mechanisms to be discussed apply hence only in case there will be liability. Another question is whether there should be (public?) compensation mechanisms as well when there is no identifiable polluter or when the latter cannot be held liable. That, however, goes beyond the scope of this study.

See chapter 2 § 7.
D. DEFENSES

Finally we had a brief look at how some legal systems deal with the possible defenses against environmental liability. We already stated that we do not claim to provide an exhaustive overview of all possible defenses. It is also a topic that the white paper has hardly touched upon. Nevertheless the issue of defenses is important to determine the scope of environmental liability. If defenses would be too large they could potentially endanger the functioning of the environmental liability system itself.

The most important defense, which we, however, have not formally listed as a defense is undoubtedly the retrospective nature of the tort. This, so we have argued, should in principle be accepted. An exception might be made, however, for the case where the liability regime itself does not change, but where insights on liability change as a result of technical developments. This is the well-known development risk defense. We have argued that a liability for development risks is not inefficient as long as it positively influences incentives for prevention. However, one should be careful that a development risk liability does not become a disguised retrospective liability.

Classic defenses such as force majeure and contributory negligence are applied in almost all legal systems and should, for the reasons we have explained above, been maintained. In bilateral cases, a strict liability rule without a contributory or comparative negligence defense may increase the risk of accidents, since it would not control the incentives of the victim in case of strict liability. Force majeure excludes the risk that liability would be applied in cases where the potential polluter could not at all have influenced the risk. This defense is, hence, the logic consequence of the belief that is central in the white paper, being that environmental liability is used as an incentive system.

We noticed that some member states struggle with the possibility of a so-called "first use" or "coming to nuisance" defense. Although these defenses will probably mostly be used in property rights conflicts (in nuisance law) they might play a role in tort law as well. As we indicated in the theoretical analysis, a coming to nuisance defense will seldom help a potential polluter who could have taken additional measures to reduce the risk. However, it may play some role, as some cases made clear, in the framework of a contributory or comparative negligence defense. Victims who knowingly and foreseeable came to the nuisance can hardly claim compensation unless the character or amount of the nuisance changed in an unforeseeable way. Most of these problems, however, should (and to a large extent are) solved via planning and zoning laws, indicating which activities should take place on what type of territory.

The touchiest type of defense follows from the fact that, as we have indicated above, the prevention of environmental harm does not only follow from environmental liability, but also from environmental regulation. Some legal systems struggle with the argument often put forward by industry that there should be no liability if they followed the conditions of regulation and more particularly of a license. We made clear that although following regulation may play some role in assessing liability, most legal systems hold that following regulation is merely a minimum. There is, hence, generally not a

295 An exception is constituted by Sweden where the liability applies also in case of force majeure.
"regulation compliance defense". This could, as was indicated\(^{296}\) merely play a role in exceptional cases were all the interests have been weighed *ex ante* and also the potential victim's damage has been taken into account when the administrative conditions were set. This should, however, not be regulated in a general matter, but left to the discretion of the judge. As a general rule compliance with regulation should not exclude liability, unless exceptional conditions are met on which the judge should decide. If the policy maker would wish to provide more specific guidelines to the judge on when to take the effect of regulatory compliance into account, a general principle could be introduced, such as the one proposed by the Flemish Interuniversity Commission, discussed above\(^{297}\).

Strikingly we found no specific reference to the position of small and medium sized enterprises when looking at the legal situation concerning environmental liability in some member states. At least case law or legislation does not seem to awards specific advantages as far as the liability regime is concerned simply based on the fact that the potentially responsible party was "small". This finding therefore backs up our conclusion\(^{298}\) that the environmental liability regime proposed in the white paper should apply irrespective of the size of the polluter involved.

### E. AGAIN: INSOLVENCY RISK

Again, this brief overview of the main principles in a few legal systems provided in this chapter was mainly used to provide some further backing to the theoretical analysis provide in chapters 2 and 3. It was obviously not meant to examine whether the white paper constitutes a "common core". This would, moreover, be difficult since the white paper itself claims to deal with a subject matter, damage to biodiversity, on which there would be no specific provision in the member states. The brief overview provided in this chapter showed at least that the theoretical principles sketched out above seem to play – at least implicitly – a role as well in the legal systems discussed. Obviously this brief overview cannot constitute a final assessment of the efficiency of the environmental liability in the legal systems discussed. At least the fact that the theoretical principles and the ideas in the legal system corresponded to a large extent provides some backing to use the theoretical principles of chapters 2 and 3 to assess the insurability in the next chapters.

However, one reason that we cannot finally assess the efficiency of the legal systems described is that we noticed in chapter 2 that the efficiency of strict environmental liability depends on one crucial feature, being the question whether there is an insolvency risk. If the expected damage may be higher than the individual wealth of an injurer we showed that strict liability will lead to underdeterrence. The crucial question therefore remains whether a system of financial security can adequately remedy this insolvency risk in such a way that strict environmental liability, as proposed in the white paper, is an efficient solution. That will be the subject of the next chapters.

\(^{296}\) See chapter 3 § 3 E.

\(^{297}\) See chapter 4 § 4 A 2.

\(^{298}\) In chapter 3 § 7.
Chapter 5  Insurability of environmental harm

§ 1. Introduction

In this part of the study we will try to focus on the general concern of the commission, being whether the liability regime as sketched out in the white paper is insurable. To be able to answer that question we have first sketched out in chapter 2 general conditions for the efficiency of an environmental liability regime and have confronted these theoretical requirements with the liability regime as sketched out in the white paper. We will now address the theoretical conditions which have to be fulfilled to guarantee insurability of a certain risk. Therefore it is necessary to briefly show how liability insurance works. In addition we will have to examine how a number of factors may undermine the effectiveness of a liability insurance regime in case of environmental harm. Also the technical annex specifies specific factors which may endanger the assurability of environmental liability.299

We will therefore outline the general principles of insurability, as they have been identified in the literature and apply these to environmental liability and obviously more specifically to the liability regime proposed in the white paper. Most of this literature has focused on traditional liability insurance and has identified the reasons why traditional liability insurance may be difficult to apply to environmental liability.300 Therefore we will have to examine in the next chapters whether some of these difficulties might be remedied by either making coverage compulsory (chapter 6) or by providing a financial limit (a so-called cap) on liability (chapter 7). In addition the general question should be asked whether insurability should at all be considered as a condition for a liability regime (chapter 8). Moreover, although we basically address traditional insurance (as provided by insurance companies) in this chapter, other forms of financial security could be examined as well to cover environmental harm. The technical annex explicitly makes clear that for the purposes of this study insurance includes also other forms of financial security, such as self insurance, bank guarantees and participation in funding pools. However, many of the general principles of insurability which will be discussed in this chapter are also relevant for this alternative forms of financial security. Some of these alternatives to liability insurance will be more carefully examined in chapter 9.

There is an important point (and inherent limitation) to this analysis which has to be made clear from the outset. Since this study is explicitly meant as a conceptual one, we can describe which conditions have to be fulfilled to promote the insurability of certain risks. Although this might seem theoretical, some of this information will be highly practical since it can e.g. identify which conditions the legislator or insurers must fulfil to optimally guarantee the insurability of environmental harm. In that sense, some of the issues identified in this chapter which may affect the insurability of liability are certainly policy relevant. However, this study is not empirical in the sense that we will not elaborate on why, even if the theoretical conditions are met, insurers may wish not to provide coverage. In other words: we can identify theoretical conditions which may help to improve insurability of risks, but it

are ultimately the providers of financial security (in practice mostly insurance companies) which will
decide whether they consider risks to be insurable. This is obviously a critical issue when judging the
insurability of the regime in the white paper. We may well identify that the environmental liability
regime as sketched out in the white paper is theoretically insurable. If, however, the market would
decide not to cover that particular risk, the theoretical insurability would remain a dead letter.
Therefore the theoretical conditions for insurability provided in this study have to be completed with
the empirical information on availability of liability insurance for environmental harm in the various
member states, which has been commissioned as well. Moreover, this dependence upon the market
which will finally define the insurability of certain risks may obviously have a policy relevance as
well. It may e.g. be a reason to be careful with the introduction of compulsory insurance (as we will
argue below) or it may be an argument to look for alternative compensation mechanisms which may
make the policy maker less dependant upon the willingness of the traditional insurance market to co-
operate towards coverage.

There is one other aspect which may effect insurability, but which may not sufficiently be taken into
account in this study, being the fact that insurance business is, not only in Europe but also world-wide,
a regulated financial services sector. This means that insurers are subject to prudent rules and
ongoing supervision by competent authorities. The goals of insurance regulation is usually the
protection of the insured persons. This may have an impact on market behaviour of insurance
companies. The reader should therefore be aware that the possibilities for an insurance company e.g.
to set premiums and other policy conditions according to the economic principles set out in this
chapter, may sometimes be limited as a result of (national or European) regulation. Also, the
possibilities to extent capacity may also be restricted as a result of regulation e.g. requiring a minimum
solvency margin.

Finally, the reader should be aware that within the scope of this study and the time limits we can not
discuss the complex issue of insurability of environmental liability in all its aspects. We will therefore
mainly focus on those issues which may be of importance to assess the insurability of the liability
regime proposed in the white paper. We can obviously not explain in details how the environmental
risk is insured in practice. For additional information we refer to the literature referred to in footnotes.

§ 2. Predictability of the risk as starting point

A. Risk aversion and insurance

Economists have used the concept of risk version to explain that many persons will be averse towards
risks with a relatively low probability of occurring, but with a possible large magnitude when they
occur.

The utilitarian approach with respect to insurance has demonstrated that risk creates a disutility for
people with risk aversion. Their utility can be increased in case of loss spreading or if the small prob-
ability of a large loss is taking away from the injurer in exchange for the certainty of a small loss. The latter is of course exactly the phenomenon of insurance. The risk averse injurer has a demand for insurance; he prefers the certainty of a small loss (the payment of the insurance premium) whereby the probability of a larger loss is shifted to the insurance company, thereby increasing the utility of the injurer. It is remarkable that in this utilitarian approach of insurance liability insurance is in the first place regarded as a means to increase the utility of a risk averse injurer, not so much as a means to protect victims as is sometimes argued by lawyers.

The reason an insurance company can take over the risk of the injurer is well-known: because of the large number of participants the risk can be spread over a larger group of people. The insurer only has to pay attention that he builds relatively small risk groups in which the premium is as much as possible aligned to the risk of the members of that group.

In addition to this utility based theory of insurance which sees insurance as a instrument to increase the expected utility of risk averse persons through a system of risk spreading, Skogh has powerfully argued that insurance may also be used as a device to reduce transactions costs.

B. APPLIED TO ENVIRONMENTAL INSURANCE

1. Uncertainty and “insurer ambiguity”

Hence, one can argue that also with respect to environmental liability these general principles will apply: insurance can provide protection for risk averse injurers. By accepting a certain loss in the form of the payment of a premium the future risk in case an accident would happen can be removed from this injurer. This arrangement will be utility maximising for the particular injurer and may reduce transaction costs since ex ante this has been decided who will intervene in case an accident occurs. The insurance company will be able to provide coverage if he can aggregate similar risks in risk groups and thus spread the risk among his insured via the law of the large numbers.

Obviously for every insurance scheme, also for environmental liability insurance, it is crucial that the insurer possesses accurate information on the likelihood that the event will occur (the probability) and on the possible magnitude of the damage once the accident will occur. These expectations on probability and magnitude of the loss are essential for the insurer to be able to calculate his so-called actuarily fair premium. Increased with the so-called loading costs (for among others administrative expenses) and, depending on the market structure, a profit margin, this will constitute the premium to be paid by the insured.

In this respect environmental liability insurance is obviously not different than any other type of insurance; for these general principles we can hence refer to the insurance economics literature mentioned in the previous footnotes. However, it is important to stress that one crucial element in

302 See Shavell, S., o.c., 190.
insurance, already to make an accurate premium calculation possible, as we just indicated, is precise information on the probability that a certain loss will occur and the possibility to make a more or less accurate estimate of the potential magnitude of the damage. This is not only necessary in order to make an accurate estimation of the premium to be charged, but also to set aside a reserve in case the accident for which insurance coverage was sought occurs.

A conclusion of this simple introduction to the working of liability insurance is that an insurer needs information concerning the probability that a certain event (the fact that his insured will be held liable) will occur and he will need information on the possible magnitude of the damage. The multiplier of these (pxD) constitutes the actuarily fair premium. The reason the insurer can take over this risk is the law of large numbers: a larger group of insurers with a similar risk can be brought together in a risk group and thus risk spreading becomes possible.

If the insurer ideally has \textit{ex ante} perfect information on the predictability of the probability and the magnitude of the damage, we call the particular risk insurable. It is precisely on the basis of statistics that the insurer will require information on the likelihood that the risk will occur with a particular insured; statistics may also provide information on the possible magnitude of the damage. Both these requirements may, however, be a problem in the case of environmental (liability) insurance. Several elements may negatively influence the \textit{ex ante} predictability of the risk\textsuperscript{303}. The \textit{ex ante} information on the predictability of the risk is often low, given the relatively new character of environmental risks. Reliable statistics may sometimes be missing both with respect to the probability of the event occurring and with respect to the damage\textsuperscript{304}. Hence, there may not be a “law of large numbers” to be applied. This obviously is not only a problem for environmental insurance, but occurs in every case where insurers are confronted with new risks, where reliable data may be missing. As far as natural resource damage is concerned an additional problem lies in the fact that generally accepted measurement techniques to quantify environmental damage may be lacking\textsuperscript{305}.

However, the predictability of the liability risk is obviously a crucial element to guarantee the insurability of environmental liability\textsuperscript{306}. The question therefore arises whether the predictability of the liability risk can be increased, even in the absence of reliable statistics or whether in that case the particular risk should be judged as uninsurable. The literature has indicated that uncertainty concerning the probability or the damage is of course an element with which the insurer can – in principal – take account \textit{ex ante}. If there is uncertainty, because of a lack of reliable statistics, this should not necessarily lead to the conclusion that a particular risk is uninsurable. We are then dealing with the concept referred to as “insurer ambiguity” addressed by Kunreuther, Hogarth and Meszaros\textsuperscript{307}. They argue that the insurer can react to this uncertainty concerning either the probability of the event or the magnitude of the damage by charging a so-called risk premium to account for this

\textsuperscript{303} Monti rightly points out that the fact that there may be both factual and legal uncertainty (Monti, A., \textit{l.c.}).
\textsuperscript{304} Rogge, J., \textit{o.c.}, 4.
\textsuperscript{305} White paper, 23.
\textsuperscript{306} As has also correctly been identified in the Technical Annex, 2-3.
\textsuperscript{307} Kunreuther, H., Hogarth, R. and Meszaros, J., “Insurer Ambiguity and Market Failure”, \textit{Journal of Risk and Uncertainty}, 1993, 71-87. We will come back to the importance of “insurer ambiguity” when dealing with the insurability of retrospective liability.
unpredictability. Hence, an insurer can in principle also deal with a “hard to predict” event, by
charging an additional premium. Although theoretically the additional risk premium is hence the
answer to insurer ambiguity, in practice the insurer will at least need some information to make more
than an educated guess concerning the risk premium he has to charge. Moreover, given the fact that an
insurer finds himself in a competitive environment market forces may well drive him to engage in
liability insurance even when an appropriate risk premium can not be charged. Whether this will in
practice actually be done is hard to predict. On the one hand we have to remind that insurance business
in Europe is to a large extent regulated. This might limit the possibilities of insurers anyhow to engage
in extremely risky activities by charging high premiums. The direct link between tarification and
provisioning is indeed the subject of insurance supervision. Moreover, since many insurers are
traditionally conservative and prudent, they might be inclined to be quite cautious with providing
cover if uncertainty should be considered too large.

2. Co-operation between insurers versus competition policy

Hence, other ways need to be examined to increase the predictability of environmental liability. In that
respect an interesting point concerns the fact that obviously there is not just one insurer confronted
with environmental liability. Hence, co-operation between insurance companies, maybe even with the
help of an association of insurers, may lead the individual insurers to disclose information on the risk
to the advantage of the whole market. However, competition authorities and economists are
traditionally cautious when it comes to any form of co-operation between enterprises, such as
insurance companies. The risk is always there that such a co-operation may lead to welfare losses as a
result of cartel agreements. Is it possible to enjoy the benefits of co-operation concerning information
on risk without the potentially averse effects of cartelisation?

The question whether such a co-operation is possible has been dealt with in a commission regulation
nr. 3932/92 of 21 December 1992 on the application of the (old) article 85 (3) of the treaty to certain
categories of agreements, decisions and concerted practices in the insurance sector. This exemption
clearly allows a co-operation between insurers with the view of information exchange. Consideration 6
preceding the regulation specifies:

“Collaboration between insurance undertakings or within associations of undertakings in the
compilation of statistics on the number of claims, the number of individual risks insured,
total amounts paid in respect of claims and the amount of capital insured makes it possible
to improve the knowledge of risks and facilitates the rating of risks for individual
companies.

…

Joint studies on the probable impact of extraneous circumstances that may influence the
frequency or scale of claims, or the yield of different types of investments, should also be

308 Official Journal L398/7 of 31 December 1992. For a comment on this exemption regulation see Levie, G. and Cousy, H.
included. It is, however, necessary to ensure that the restrictions are only exempted to the extent to which they are necessary to attain the objectives”.

From an insurance perspective it can be important to carry on joint research with respect to the insurability of certain risks, such as environmental liability. This joint research may bring about important economies of scale. It does not seem very useful that every individual insurer would separately examine the probability of damage to bio-diversity in specific cases. A co-ordination and collaboration to this end seems important. In that respect there can be an important role for e.g. an association of insurers. This association could gather the statistical information and provide this information to individual insurers. If the provision of this information then allows individual insurers to differentiate risks in an optimal way, the role of the association has thus served a social interest as well. This type of collaboration to ensure an optimal exchange of information is therefore allowed under the exemption number 3932/92.

It is, moreover, interesting to point at a recent report of the commission to the European Parliament and to the Council on the operation of the mentioned regulation number 3932/92. This commission report, issued on 12 May 1999, examines how the exemption regulation has worked in practice and examines whether there is a need to amend the exemption regulation. This report is interesting, also for the area of liability insurance since several practices which are relevant for the domain of liability insurance are discussed within this report. In this report the commission also examines whether systems of keeping registers or exchanging information on aggravated risks are allowed from a competition policy perspective. The commission holds that these agreements on keeping registers or exchanging information have the aim of making it possible for insurers to know better the nature of the risks to be insured. These agreements do not fall formally within article 81-1 (ex-article 85-1) if they restrict themselves to giving information on aggravated risks. In any case, the commission holds that a simple exchange of information on the nature of a risk does not appear to have the aim of restricting competition between insurers. However, the commission is careful and argues that it is different if the exchange of information is accompanied by an agreement aiming to adopt a common attitude with regard to the risk in question. For example, recommendations to refuse to cover the aggravated risks in question or to raise the risk premiums for these risks fall clearly within the scope of article 81-1 (ex-article 85-1) and do not appear exempt under the terms of article 81-3 (ex-article 85-3), so the report reads.

This report therefore clearly states that also from a competition policy perspective an exchange of information on risk between insurers is allowed in order to increase the availability of reliable statistics and data. At the same time the limits of such a co-operation are made clear as well: exchanging information is allowed, formulating recommendations to refuse coverage or to raise risk premiums obviously not.

310 See report, nr. 47.
C. PREDICTABILITY OF THE LIABILITY REGIME IN THE WHITE PAPER

1. Strict liability for bio-diversity and contaminated sites

In addition to the possibility of co-operation between insurers to increase the predictability and the possibility of charging an additional risk premium, the predictability of liability (and hence the insurability of that liability) will obviously also be determined by the way in which the conditions for liability have been described. It is obvious that the clearer the conditions for liability are described by the legislator and the less uncertain the wording, the higher the predictability of the exposure to liability of the insured will be. The more ambiguous the liability laws, the more difficult it may be for an insurance provider to predict the cost of the liability claims, so the technical annex correctly states\(^{312}\). The conclusion at the normative level is that the policy maker should obviously achieve making the scope of liability \(ex\ ante\) as clear as possible. In other words: the legislator should try to avoid legal uncertainty which may endanger insurability\(^{313}\). Obviously a theorist could refer once more to the Kunreuther \(cs.\) story that even with ambiguous wording a liability risk remains insurable since an insurer can add an additional risk premium to cope with this uncertainty resulting from ambiguous wording. However, it is equally clear that such a solution would only be second best; the less costly and preferred solution would be to choose wording which exclude ambiguity and hence contribute to the \(ex\ ante\) predictability of the risk.

One could go as far as Rogge, director of the Belgian Association of Insurers, and hold that any coverage for ecological damages would be uninsurable if they are not identifiable and measurable\(^{314}\). Also another expert in Belgian environmental insurance, Ranson, recently argued that ecological damage would be uninsurable\(^{315}\). This would, accordingly to him, include damage to biodiversity and e.g. the depletion of the ozone layer\(^{316}\).

A question which should unavoidably be asked in this context is whether the wording chosen in the white paper on environmental liability to describe the scope of liability are precise enough to guarantee an assurability of this liability regime. Are they "identifiable and measurable"? It is at this stage not possible to provide a firm statement on whether the liability regime as provided in the white paper is sufficiently clear to provide a predictable scope of liability. The reason is simply that the white paper sketches various ideas, but equally invites all interested parties for comments. The precise scope of the regime is therefore yet unknown. However, several comments are now published on the white paper and although inevitably academics always critique such proposals, most of the criticisms do not refer to the fact that these academics would not understand the liability regime. Apparently the proposed regime is, at least as the main features are concerned, reasonably clear, at least for the

\(^{312}\) Technical Annex, 3.
\(^{313}\) So Monti, A., \(i.e.\).
\(^{314}\) Rogge, J. \(o.c.\), 6.
\(^{315}\) Ranson, D., "Verzekering van milieuaansprakelijkheid", \(Milieu-\text{en}\ \text{Energie} \text{recht}, 2000, 66-73.
\(^{316}\) This, however, does not answer the question whether remediation costs would be uninsurable as well.
academics who have commented on the white paper so far. Obviously there are still doubts with respect to the issue where the commission has not taken firm decisions yet, e.g. concerning the defenses.

One could argue that the balanced approach of the commission to make a distinction between dangerous and potentially dangerous activities on the one hand and non-dangerous activities on the other hand may potentially endanger legal certainty, if it were unclear which is a potentially dangerous and which is a non-dangerous activity. However, the white paper makes clear that the dangerous activities would later be listed, which should hence clarify the activities which are subjected to a strict liability respectively a fault regime.

As of yet uncertainty still exists with respect to the new approach of the white paper, being that it concerns primarily environmental damage. The concept of “bio-diversity damage” is obviously as such rather vague. However, the white paper links the damage to bio-diversity to the type of bio-diversity which is protected in Natura 2000 areas based on the habitats and the wild birds directives, which again limits the scope and thus increases the clarity. Also, the white paper specifies that not all damage to bio-diversity would be covered, but that there should be a minimum threshold for triggering the regime. Only significant damage should be covered. Criteria for this notion have not been defined yet but should, according to the white paper, be derived in the context of the habitats’ directive. A document concerning the interpretation of this notion will apparently be published shortly. The fact that not every damage to bio-diversity (which would indeed be too vague) is covered, but that a minimum threshold will have to be met may increase the possibility for an individual insurer to judge whether his insured may endanger a particular habitat and thus be subjected to the environmental liability regime as proposed in the white paper. However, the precise description of the minimum threshold and the definition of “significant damage” which will take place at a later stage, should of course be such that the predictability of the liability is guaranteed. The same holds for a very touchy issue, being the question how natural resource damage should be valued. Various economic techniques exist, but they remain debated. To some extent this problem may be remedied by the fact that the main goal of the liability regime in the white paper is, as far as biodiversity damage is concerned, to ensure restoration. This could to some extent circumvent the debate on the valuation of natural resource damage. However, still a minimum level of restoration will have to be determined, which may give rise to uncertainties (and hence unpredictability) as well.


318 For the reason that with respect to some issues (e.g. causation or defenses) no firm decisions have been taken yet. Rehbinder is rather critical of the white paper. He hopes for 'major improvement of the proposal' (see Rehbinder, E., "Towards a community environmental liability regime: the Commission’s white paper on environmental liability", Environmental Liability, 2000, 85-96); others are critical with respect to the proposals on action rights of NGO’s (Hunter, R., "European Commission white paper proposals on NGO rights of action: wrongful rights of action", Tijdschrift voor Milieu-aansprakelijkheid, 2000, 125-126.

319 See footnote 14 in the white paper on environmental liability.

320 See also white paper, 23.
The same can be said concerning the liability for contaminated sites. Again, the white paper states that the “dangerous activities approach” would apply and that the regime would be triggered only if the contamination is significant. The liability for contaminated sites is hence only strict in case of dangerous and potentially dangerous activities (to be specified at a later stage). For contaminated sites caused by non-dangerous activities the EC environmental liability regime will not apply. The white paper seems, as far as the liability for contaminated sites is concerned, to follow largely the Flemish approach of the Interuniversity Commission, which has resulted in the Flemish Decree on Soil Clean-up, described above. The white paper relies, as the Flemish approach does, on clean-up standards which will have to evaluate whether clean-up of a contaminated site is necessary and on clean-up objectives which should define the quality of soil and water at the site to be maintained and restored. This approach is not unfamiliar to member states where liability for soil pollution damage is actually insured, so that it can hardly be argued that the liability for contaminated sites, as proposed in the white paper, would be such unpredictable that it would be uninsurable.

There is, however, one particular point of worry concerning the regime proposed in the white paper which may endanger the insurability. This has to do with the balanced approach chosen in the white paper which may make a future liability regime highly complex. A scheme provided in the white paper itself makes clear that the proposed regime is not only very balanced, but also very complex. Indeed, as the summary shows the applicable regime will depend upon the type of damage (traditional damage, contaminated sites or damage to biodiversity) but in addition upon the type of activity (dangerous or not). Moreover, the white paper argues that it focuses on damage to biodiversity, since most existing member states environmental liability regimes would not cover that type of damage. The question, however, arises whether that is generally true; member states certainly have rules on traditional damage and contaminated sites.

This entails hence a risk of increased legal complexity, which could lead to cases whereby different legal regimes (different European and national regimes) apply to various types of damage, resulting from a single pollution case. That would obviously create legal uncertainty and may hence endanger the insurability.

To a large extent this is due to the fact that until now the white paper has not addressed the question how the different regimes proposed should be combined if e.g. a non dangerous activity causes damage to the soil, to human health but to biodiversity as well. A future regime should definitely better clarify how these (European and national) rules apply to specific cases in order to create the legal certainty necessary to make the risk insurable.

Before addressing the various formulations of environmental damage, it seems useful to make clear, as will be discussed below, that a case of environmental pollution may, in addition to the 'traditional' types of damage (personal and property damage), also referred to in the white paper, give rise to various types of what may generally be called 'environmental damage'. It is in this respect particularly

321 Which we have included in annex 2.
322 See supra the discussion on subsidiarity in chapter 1 § 5.
323 See white paper, p.21.
important to distinguish the liability for clean-up of soil or water pollution from damage to natural resources\textsuperscript{324}. An example may illustrate this:

A wetland, where many different species live, is contaminated by hazardous substances and this involves water pollution. Suppose the contamination takes 4 years to clean-up (remove the contaminants or monitor until they disperse naturally to a level considered safe for the species). The costs involved in cleaning-up the contamination would be subject to liability for clean-up. However, during the 4 years that it takes for the swamp to be cleaned up, its ability to support the species that used to depend on it for its subsistence is weakened or totally absent. To compensate for this damage it may be necessary to recreate a similar natural resource proving equivalent (biological) services. The costs involved in the recreation amount to the liability for natural resources.

As we will try to illustrate below, most member states had rules concerning clean-up but not concerning natural resource damage and the same seems to a large extent the case for the existing insurance covers, whereas the white paper precisely focuses primarily on natural resource damage, under the heading of ‘damage to biodiversity’.

2. Formulations of “environmental damage”

Although it is as yet, as we have argued, unclear whether the definition of damage to bio-diversity would cause any specific problem from the predictability/insurability perspective it might be interesting to address briefly the way in which other legal systems have dealt with the definition of “environmental damage”. Obviously in this study which mainly addresses the assurability of the environmental liability regime proposed in the white paper we can not go into this issue in any detail. The liability for ecological damage has, moreover, been the subject of a brilliant dissertation\textsuperscript{325} and an elaborate study for the Commission\textsuperscript{326} to which we can add very little. We will just look at the types of damage covered under some environmental liability regimes, to examine whether these would provide a description of the notion of damage which is better predictable than the regime proposed in the white paper.

a. Interuniversity Commission of Flanders

The definition of ecological damage has been an issue which has been addressed by legal doctrine in Belgium. Some solutions in case law have already been presented above\textsuperscript{327}.

Also the Interuniversity Commission in the Flemish region, already mentioned before, introduced special proposals also concerning compensation for ecological damage. These have, however, not been implemented in Flemish legislation yet.

\textsuperscript{324} As the white paper does. See p.19-21.
\textsuperscript{325} Carette, A.
\textsuperscript{326} Brans, A. and Uilhoorn, M., Liability for ecological damage and assessment of ecological damage, study executed for the Commission to prepare the white paper (a summary is included in the white paper, 46-48).
\textsuperscript{327} See chapter 3 § 2 A 2 b.
The proposal of the Interuniversity Commission also aimed at bringing ecological damage within the reach of the liability regime. It did so by introducing a different regime for, on the one hand, "damage", which is basically personal damage (such as damage to health, damage to property, economic loss) and, on the other hand, "environmental impairment", which covers ecological damage.

As far as damage is concerned, article 9.1.7 § 1 provides that any person who suffers damage as a result of an emission, may claim restoration in kind or compensation in money. In the case of impairment of the environment, which cannot be defined as damage, article 9.1.8 § 1 provides that it shall only be possible to apply for measures of reinstatement of the environment (restitutio ad integrum) or for the reimbursement of the cost of these measures. This claim can, according to article 9.1.8 § 2, only be made by the Flemish government, either on its own initiative or at the request of the municipality where the impairment of the environment took place. Environmental associations are thus not given standing to sue for the treatment of environmental damage. They can, however, seek an injunction to prevent illegal polluting activities.\(^{328}\)

It is equally interesting to address the other regimes we have discussed so far to examine more generally what type of damage can be recovered under the specific environmental liability regimes. We will take a slightly broader approach and look generally at the types of damage covered. This seems warranted since the proposed regime in the white paper would cover traditional damage as well.\(^{329}\)

b. Personal injury.

It refers to cases of death, physical injuries, mental distress or pain and suffering (préjudice moral - pretium doloris), temporary or permanent handicap resulting in economic losses. Generally, this type of damage does not raise any problems in terms of compensation as plaintiffs obtain a full indemnification provided that they prove the truthfulness of their damages and show the relevant causal link with the polluting activity concerned.

However, difficult questions in terms of evaluation of damages and quantification of compensation may remain, including differences among national legislation and provisions. For example, art.1 para.15 of the 1990 German Environmental Liability Act provides for a maximal amount of DM 160 millions in case of death, physical injury, property injury and economic losses. Such an amount is then to be divided among all victims no matter how many they are. Such a limit results from the fact that an absolute financial limit is imposed in general principles on strict liability in German law. Where no such financial ceiling exists in law, it is then up to the courts to assess damages and set up such a limit that may be very complex when one deals with death, physical handicap, moral damage etc.

Another interesting point refers to the refund of medical expenses and other treatments as well as of economic or revenue losses resulting from a work knock off. Within that context, the Swedish system

\(^{328}\) See Bocken, H., Ryckbost, D. and Deloddere, S., *o.c.*, 220.
\(^{329}\) White paper, 16-17.
provides victims with a satisfying mechanism. Indeed, whereas non-financial damages such as death or personal injury are more or less standardised together with a maximal amount of 600,000 Swedish Crowns allocated to each plaintiff, the 1972 Tort Liability Act (the 1986 Environmental Damage Act does not deal with the issue of the assessment and quantification of damages) establishes the principle according to which any compensation is to be equal to the total economic losses without any financial ceiling as opposed to the German provision. In addition, on the basis of the Swedish social insurance regime, any victim suffering from losses in revenues resulting from personal injury will enjoy social benefits, no matter whether the liability of the polluter is proven or not.

c. Property injury

From a general point of view, many national civil liability regimes provide for a full compensation of victims for damage caused to their property. Such a reparation can occur either through the reinstatement of the damaged property into its original condition (the polluter can himself do the work or provide for funds amounting to the full costs of reinstatement) or, in case of irreversible damage, through a financial indemnification the amount of which would be evaluated on the basis of the loss of the market value of the property.

However, whereas damage caused to property may easily be quantified, it is much more difficult in terms of non-financial losses such as in case of damage linked to the use of the property. For example, it concerns the inconvenience resulting from smells, noises, aesthetic damages or losses of flowers or trees. In general, those types of damages are not compensated but exceptionally on the basis of the national rules and principles of good neighbourliness (bon voisinage). Indeed, very often such as in Sweden, the owner of a real property where a tree has died because of air pollution may be compensated on the basis of the value of the tree or the loss of the value of the real property without that tree (economic or monetary losses) as opposed to be compensated for mental distress (non-economic damage) as it would be very difficult to assess and quantify such a type of damages. Yet, there are some national legislations and some case law which do provide for some compensation such as the Finish 1994 Environmental Damage and Compensation Act that states that a “reasonable” compensation may be provided to victim for non-financial damage linked to the reduced use of the property. The term “reasonable” is to be defined in terms of the duration of the nuisance and the degree at which the victim could have reduced or prevented it. In all cases, the judge enjoys a great room of discretion. In this respect we can also refer to the few Belgian cases discussed above where compensation for 'lost trees' has been awarded\textsuperscript{330}.

d. Pure economic losses

Pure economic losses are those economic losses, which do not refer to personal or property injury as such. Rather, it concerns for instance cases of oil pollution that may affect fishermen suffering from reduced fish catches and revenue losses. In addition, it may also affect hoteliers, restaurateurs, shopkeepers who may all suffer from the decline of the tourist activity.

\textsuperscript{330} See chapter 4 § 2 A 2 b.
Whereas some countries do not provide for compensation for this type of damage such as the 1990 German Environmental Liability Act, other liability regimes such as the 1994 Finish Environmental Damage Compensation Act or the 1988 Swedish Environmental damage Act do contain relevant provisions. However, the issue of pure economic losses is still debated because of bordering problems. Indeed, traditional rules and principles of civil liability regimes refer in general to the protection and compensation of a property right and rights of individuals as opposed to collective public rights. As a consequence, such a distinction lies at the heart of the issue of pure economic losses.

In effect, in many jurisdictions, to obtain compensation in terms of pure economic losses requires that a specific individual right be affected. Therefore, in many cases, compensation is limited to those who have suffered from a pure economic loss within the context of their commercial activities and resulting from a damage caused to a public or collective environmental resource. It is the case for instance of the 1981 Norwegian Pollution Control Act (par., 57.c). This has for effect to exclude those who use their right to benefit from collective environmental resources for their own pleasure, such as roads to go for a drive, rivers and watercourses to go for a swim or to go fishing. For those people, compensation will not normally be provided as opposed to the ones using such collective environmental resources as a source of revenue and who are dependant upon the quality of those resources.

However, even if such a compensation is to be provided, the question of the assessment and quantification of such an indemnification remains. Within this context, par. 1 of the 1988 Swedish Environmental Damage Act argues that such compensation will only be possible when pure economic losses are not “significant”. This leaves the judge to decide what is to be considered as “significant” and when a compensation is eventually to be provided.

In order to show how difficult the issue of pure economic losses may be, one may have a look at the way US courts have dealt with them and in examining in particular the so-called “Bright-Line Doctrine”.

Above all, it is to be noted that general principles of customary or common law do not provide for compensation in case of pure economic losses in cases where no personal or property injury occur. Such a doctrine was adopted for instance by the US Supreme Court in the 1927 Robins Dry Dock & Repair Co. v. Flint case where it concerned a ship owner who sued a repair company in arguing that the later had negligently damaged the ship and lengthened the repair work resulting in a revenue loss for the plaintiff331. However, the Supreme Court ruled that the plaintiff could not get compensation for pure economic losses on the ground that no personal injury had occurred. Thus, according to the case law, many US courts have rejected claims for compensation for pure economic losses resulting from a breach of a contractual provision in arguing that there were neither personal injuries nor property injuries.

331 Robins Dry Dock & Repair Co. v Flint, US Supreme Court, 275, U.S. 303 [1927].
Such a “Bright-Line doctrine” was applied for example in the 1982 Local Joint Executive bd. & Culinary Workers Union v. Stern case whereby the court rejected a compensation claim based upon the concept of pure economic losses and brought by the employees and unions of the MGM Las Vegas Hotel which had been damaged by fire resulting in salary and employment losses\textsuperscript{332}.

In effect, such a doctrine has also been applied to environmental damage and pollution cases. For example, one may look at the 1988 General Public Utilities v. Glass Kitchen Lancaster inc. case where plaintiffs sued the Three Miles Island nuclear power station authorities for pure economic losses that had resulted from a 1979 nuclear accident causing a sharp decline in tourist activities in the whole area\textsuperscript{333}. However, plaintiffs were not provided any compensation for albeit their revenue losses on the basis of the “Bright-Line doctrine”. Another example is the 1988 Philip Morris Inc v. Emerson case where a camping site owner situated next to a site that had been contaminated by the release of toxic substances was ordered to empty and close his camping. He was nevertheless denied compensation provided that he had not suffered from any personal or property injury\textsuperscript{334}.

Yet, one has also to mention the 1973 Burgess v. M/V Tamano case where potential exceptions to the scope of application of the “Bright-Line doctrine” appeared to be possible\textsuperscript{335}. In the case in points, plaintiffs were commercial fishermen, hotel, restaurant and shop owners who sued an oil company for revenue losses after an oil spill contaminated a coastal area of Maine, USA. The interesting point was that the court ruled that only commercial fishermen were entitled to compensation as they were the only ones who had a “direct” contact with the polluted environmental resource as opposed to the remaining plaintiffs. Therefore, the court used the criteria of the direct impact of the pollution on a resource that provides directly the revenue source contrarily to shop owners who live in an indirect way of such a resource via the tourist activity. Such case law was then confirmed in the 1974 Union Oil Co. v. Oppen case where only fishermen were compensated for losses of fishery revenues resulting from an oil spill\textsuperscript{336}.

Therefore, apart from commercial fishermen, US courts have applied the “Bright-Line doctrine” in cases of pollution affecting public environmental resources and resulting in pure economic losses on the ground that a liability and compensation claim required an existing damage caused to the plaintiff himself in terms of personal or property injury.

With a view to determine the reasons why such a doctrine has developed, one may notice that one of the arguments refers to the need to filter out claims, which would be unsolvable in points. Indeed, to balance out all the interests at stake, including the need to reach equitable, fair and efficient solutions, requires the exclusion of losses of revenues claims, which are too complex to verify and to allow legal certainty and transparency. Indeed, whereas a defendant may argue that any loss of revenue may have been caused by other factors, courts have felt that there was a need to apply predictable rules and

\textsuperscript{332} Local Joint Executive Bd., Culinary Workers Union, Local No. 226 v Stern, 98 Nev 409. 651 P. 2d 637 [1982].


\textsuperscript{334} Philip Morris Inc, v Emerson., 235 Va. 380, 368 S.E. 2d 268 [1988].

\textsuperscript{335} Burgess v M/V Tamano., 370 F. Supp. 247 [D. Me. 1973].

\textsuperscript{336} Union Oil Co. v Oppen., 501 F. 2d 558 (9th Cir. 1974).
criteria and to avoid the use of arbitrary rules so as to preserve the transparency of judicial processes and to allow parties to anticipate. Another argument in favour of such a doctrine refers to the need to take into account the economic efficiency in the sense that an economic activity that declines in such or such place will eventually benefit the economic activity located in another place. Therefore, the economy taken as a whole is not affected but only shifted to another location. Moreover, such a doctrine allows insurance companies to provide coverage for certain hazardous activities. In effect, which insurer would ever agree to cover pure economic loss damages when their scope is not quantifiable?

Moreover, compensation of economic losses will be discussed in further detail in a separate report, dealing with US law.

e. Natural resource damages.

Along with personal or property damages and pure economic losses, we should also mention natural resource damages that are damages caused to the environment per se, including to the fauna, flora, landscape. This is precisely the type of damage on which the liability regime of the white paper focuses.

On the one hand, the general opinion commonly agreed has argued that natural resources as such are to be considered as common or collective property belonging to the society taken as a whole and not entailing any individual rights. However, on the other hand recent developments have shown that, in many countries, individuals and environmental groups or NGOs can nowadays act as plaintiffs with a view to obtain compensation for damages caused to natural resources.

There is also the case where it concerns natural resources located within a private property, such as a contaminated site where the natural resource is privately owned. In general, public authorities or the private victim may ask that measures be taken for the damage or pollution to be remedied. Yet, the question remains as far as the evaluation of such damages is concerned. How can the value of a landscape or a of tree be defined where a compensation is to occur? What is the most appropriate remedy?

As a matter of fact, the reinstatement of the natural resource concerned is often the preferred solution. The polluter has then to prevent the damage to go on, including to remedy to the source of the damage and also to restore the environment in its original status. As an example, article 22 of the French 1992 Law on Water provides that courts may order the polluter to restore the contaminated aquifer environment. The victim may also ask to engage himself into the restoration of the natural resource at the expense of the polluter. Where the damage is not repairable, polluters can then be asked to provide for a reparation in equivalence in the sense that another component of the environment will be enhanced in qualitative or quantitative terms.

Therefore, even if solutions may vary among national jurisdictions, to require restoration of the environment is very often preferred compared to pecuniary indemnification, provided that it is almost impossible to assess natural resources in monetary terms (on the other hand, it is to be reminded that monetary figures exist in terms of death or physical handicap such as in the German Act).

In this context, we can indeed refer to § 16 of the 1990 German Environmental Liability Act which provides for an interesting mechanism to valuate natural resource damage. More particularly, it states that the property owner, whose property has lost some of its natural resources can rely upon a general principle contained in section 251.2 of the German Civil code, which stipulates that the owner can ask for restoration of the contaminated natural resources only if the restoration costs are not disproportionate compared to the value of the property. Should those costs be disproportionate, the owner can then obtain a sum of money which can be freely spent either to restore natural resources or for any other purposes. Hence, the German Act at least provides for a proportionality test, as far as restoration costs are concerned. Thus the owner can ask for the natural resources to be restored, provided that restoration costs are not disproportionate to the value of the damaged natural resource damage and provided that the money concerned will be entirely used to restore the environment. This shows once more that even if it is difficult to put a monetary value on damaged natural resources, it is commonly agreed that such a value will in any case be superior within a proportionality test than the mere value of the property itself. This follows from the literal text of § 16. It provides for a right of restoration under the conditions of § 251 (2) of the civil code "but the expenses insured for restoring the prior condition shall not be considered unreasonable for the sole reason that they exceed the value of the property". It would mean that, in financial terms, the owner will have more to gain to rely upon § 16 of the 1990 Act than on the Civil Code provision. Even if questions will remain as to what will be considered as proportionate or not, the objective is clearly to provide the victim with an incentive to spend the compensatory money to restore the environment. However, it is to be noted that the German provision does not provide solutions when restoration is impossible or insufficient, where the pollutant is not creditworthy or where natural resources are not located within the boundaries of a private property.

Indeed, the second aspect of the question of natural resource damage concerns those resources on which no individual property interests or rights can be exercised, but which belong instead to the whole community. Generally, it is argued that only public authorities can engage liability and compensation or environmental restoration claims. It is the case for instance where public authorities clean up contaminated sites and then ask polluters to refund clean-up costs. One may cite for example section 6 of the 1994 Finish Environmental Damage Act or par. 58 of the 1981 Norwegian Pollution Control Act that state that public authorities can claim from the polluter the refund of “reasonable costs” of existing or future restoration measures. Yet, such a provision raises questions when one needs to determine at what degree natural resources should be restored, what should be done when restoration costs are very important?, when is a restoration considered as successful? etc. In effect, the term “reasonable” is, in many cases, used as a calculation basis to undertake a cost/benefit analysis

338 See Pfenningstorf, W. l.c., 134-123.
339 For further details see Hagen, G. "Umwelt haftungsgesetz: the New German Environmental Liability Law", *Environmental Liability*, 1993, 41-44.
whereby the proportionality principle helps to determine whether a restoration is due to take place and what is its scope. However, all those issues are far from being resolved as it remains extremely difficult to quantify this type of damages.

Another interesting point refers to the question how to determine who, apart from public authorities, could bring liability and compensation suits as far as collective natural resource damages or res communis ominium is concerned. In effect, in many jurisdictions, public interest groups or NGOs enjoy locus standi not only to ask the courts to take an injunction against an operator who would breach a legislation or a regulation but also to ask for the refund of the costs of restoration measures that would have been taken to remedy a natural resource damage. Within such a context, one may mention par. 58.3 of the 1981 Norwegian Pollution Control Act that provides that an environmental association may bring a claim along with those brought by public authorities to obtain a refund of the costs of restoration actions given that such costs are “reasonable”. One may also refer to the 1981 Dutch Borcea case where the Dutch Royal Society for the Protection of the Birds was provided with the reimbursement of the costs it had incurred in transporting and cleaning up sea birds who had been victim of an oil spill. Such an association obtained this refund on the ground that the association’s interests were aiming at environmental protection. Indeed, it seems crucial that environmental groups enjoy locus standi as public authorities may lack political willingness to bring legal actions forward against certain polluters to preserve economic or industrial interests. Within such a context, there are common features that can be identified among national procedural rules to allow environmental groups to have access to courts. That includes the enjoyment of a legal status in virtue of national law, the fact that such or such association has been existing for a certain time, the obligation according to which their legal actions must correspond to their corporate objectives and the fact that they do not have to aim at making profits.

A recent Belgian act on the protection of the marine environment also constitutes an interesting example of an original compensation system for environmental damage. The Act of 20 January 1999 contains interesting provisions, among others concerning the liability for damage caused to the marine environment.

An important innovation constitutes the fact that the Act follows the proposals made by the Interuniversity Commission for the Reform of Environmental Law in the Flemish region by introducing a distinction between traditional damage and environmental impairment. The Act applies to damage as defined in article 2, 6°, being any loss or disadvantage suffered by an individual

343 See for the proposed liability regime by the Interuniversity Commission, supra chapter 4, § 2 A 4 d.
or by a legal entity as a result of a pollution of the marine environment, whatever the cause may be. This notion of “damage” is to be separated from the notion “environmental impairment”, which is defined in article 2, 7° of the Act of 20 January 1999 as any negative influence on the marine environment, as long as this does not constitute damage. This, hence, refers to liability for environmental damage as such, collective interests, even if these have no private ownership. That the liability applies not only to damage, but also to environmental impairment corresponds with the polluter pays principle, which includes a liability of the polluter, not only for traditional damage, but for all negative consequences of environmental impairment \(^\text{344}\).

Obviously this idea of a liability for environmental impairment as defined in article 2, 7° of the recent Belgian Act comes close to the liability for damage to biodiversity of the white paper. However, the definition in the Belgian Act, which only states that there is environmental impairment if there is a negative influence on the marine environment is not very precise either \(^\text{345}\). Hence, this definition does not bring the predictability which would be required from an insurance perspective.

It is, however, interesting to mention that, as was apparently the case in many other legal regimes, the primary remedy for “environmental impairment” is restoration. Article 37, § 3 of the Belgian Act of 20 January 1999 stipulates that only the Belgian state can claim compensation for environmental impairment; a right of standing is, hence, not granted to NGOs which has been criticised in the literature \(^\text{346}\). The Belgian state hence has the right to claim compensation. Indeed, article 4, § 6 of the Act stipulates that in principle an action should lead to restoration of the marine environment in its original state (restitutio ad integrum) as far as possible. However, if restoration (which is the primary goal of the action by the state) is not possible, the state can claim monetary compensation, although the method of assessment has not been made clear by the legislator \(^\text{347}\).

f. Summary

This section aimed at providing an overview of the main types of environmental damages which may be subject of liability and compensation claims in some member states. We looked at the issue of personal injury, property injury, pure economic losses and natural resources damages. Those are categories of nuisances that can be found in nearly all national legislation and case law. In addition, one may mention also measures taken voluntarily by individuals in cases of large pollution such as oil spills to prevent, to remedy or to clean up damages.

However, in general, a financial limit is established as far as personal injury is concerned, except regarding medical treatments and losses of revenues. The desirability of those financial caps will be discussed in further detail in chapter 7. Concerning property damage, full compensation is often provided to the victim, except when one deals with a nuisance caused to the use of the property instead of to the property itself and where the judge’s discretion plays its full role. With regard to pure

\(^{344}\) So Carette, A., \textit{i.e.}, 363.

\(^{345}\) So also Carette, A., \textit{i.e.}, 364.

\(^{346}\) See Carette, A., \textit{i.e.}, 370.

\(^{347}\) Carette, A., \textit{i.e.}, 372.
economic losses, difficulties may arise as it concerns damages caused to public environmental resources. Referring to the most difficult, but for our study the most important issue, natural resource damages, environmental restoration is, as also the recent Belgian Act showed, in many legal systems the preferred option so as to avoid the difficulty in assessing such resources in monetary terms. However, where the restoration remains unfeasible or too costly, then a compensation by equivalence or a proportionality test take place.

Above we have indicated that we have doubts whether the environmental liability regime proposed in the white paper is precise enough yet to allow it to be predictable and thus insurable. On the other hand, the white paper merely sketches the general ideas so that a final judgement on the insurability of the proposed regime can not be made at this stage.

On the other hand, our brief look at a few other regimes did not provide an alternative which would provide for a definition of environmental damage which would be more precise and thus better insurable than the regime proposed in the white paper. This should obviously not be a surprise since the proposals in the white paper have been based on extensive comparative research.

The one issue one can learn from this brief look at the damage notion is that apparently many legal systems face the same problem as the white paper in estimating the precise definition and amount of ecological damage. That is obviously the crucial issue from an insurance perspective as well. As long as it remains difficult or even impossible to calculate the monetary value of damage to biodiversity ex ante calculations of premiums remains difficult. Many legal systems apparently try to avoid these problems by focussing on the costs of remediation instead of valuation the natural resource damage in financial terms. Obviously the remediation costs may be more predictable (and hence better insurable) than liability for ecological damage, which can hardly be assessed. This is apparently also the approach chosen in the Lugano Convention. But this of course assumes that clear criteria will be developed to ensure a minimum level of restoration. This should thus be a major concern of a future liability regime.

A problem is, however, that in many countries insurance policies have not even addressed the question of the coverage of ecological damage, let alone damage to biodiversity. For instance in Belgium the liability insurance, if it covers pollution at all, still only covers sudden and accidental pollution; gradual pollution is still excluded. The damage which is covered is traditionally limited to:

- personal injury damage;
- material loss and damage to property;
- immaterial loss which is the result of the previous types of damage.

348 Although some problems may also arise in the insurance of restoration costs. See Cousy, H., l.c., 240.
349 See on the difference between sudden events and gradual pollution § 9 of this chapter.
There is, hence, no provision on coverage for damage to natural resources or remediation costs. These remediation costs are, however, covered in policies which provide coverage for the liabilities for soil clean-up which result from the Flemish soil clean-up decree (this is implementing proposals of the Interuniversity Commission). Moreover, also in Belgium a new environmental insurance would now be available which equally covers remediation costs. The Dutch environmental damage insurance which we will discuss below however, clearly covers the remediation costs for the insured site.

In sum, if one would take a cynical approach one could point at the fact that in so far as the white paper proposes a liability regime for biodiversity it is uninsurable, since the experts in both Belgium and the Netherlands declare that a well defined environmental liability regime is insurable, but a vague damage notion such as biodiversity damage is not. It will therefore be important to see how the notion of liability for biodiversity damage will precisely be defined in the future regime. If the concept is 'liability for biodiversity' but the remedy is a duty to pay for (reasonable and proportional) remediation costs, practice showed that policies covering remediation costs are available. This is more particularly the case if insurance is not offered via traditional liability insurance, but on a first party basis.

However, a point of worry remains the fact that the proposed liability regime will come on top of national laws, which may make it difficult to determine in specific cases which legal rules apply. That should certainly be clarified, since also legal uncertainty could endanger insurability.

3. **Defenses**

Finally one could question whether the possible defenses, as described above, would positively or negatively affect the insurability of a particular risk. In chapter 3 the importance of the traditional force majeure exception was explained. If force majeure were not accepted as a defense this would mean that an insurer could be held to compensate for his liable insured although the insured could never have affected the risk. The fact that the white paper accepts act of God (force majeure) as defense should hence be considered as an element which contributes positively to the insurability.

In chapter 3 it has equally been explained that compliance with regulatory requirement is, from an economic perspective, usually merely a minimum. Only in exceptional circumstances should compliance with regulation or a licence have a justificative effect in tort. In cases where a particular polluter could do more than merely following the regulatory standard to prevent environmental damage it would be efficient to hold him liable, since this liability would positively effect his incentives. If the legal regime at stake makes clear that complying with regulation does not have a justificative effect a liability regime which makes clear that potential polluters are subjected to liability even though they comply with regulatory norms is as such not unpredictable and hence not uninsurable. Insurers have often argued that the reverse is the case, i.e. if the pollution is not the result

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350 For that reason Niezen, G.J., *l.c.*, 177-178 is pessimistic concerning the insurability of the liability regime of the white paper.
351 Ranson, D., *l.c.*, 69-70.
352 See below chapter 9 § 3 B.
353 "Insured are the remediation costs for the insured site" (article II.1.1.).
of an 'accident' but of the wilful violation of regulations\textsuperscript{354}. To some extent this is limited to the difficulty that pollution is often "gradual" instead of "sudden and accidental". We will come back to that aspect below\textsuperscript{355}. The fact that the pollution is the result of a violation of regulations does not make the pollution uninsurable. That would only be the case if the harm were caused intentional. Most insurance laws exclude intentional harm from coverage. This can be understood. In legal terms there would be no 'risk' in case of intent\textsuperscript{356} and in economic terms 'intent' may cause insurmountable problems of moral hazard which may make a risk uninsurable\textsuperscript{357}.

A key issue to guarantee the insurability (and the efficiency) of a liability regime is that the liability regime only applies to new activities. The most important condition to guarantee insurability is therefore, as we will argue below in further detail, the non-retrospectivity of a liability regime. But as we already indicated, this is precisely one of the main features of the environmental liability regime as proposed in the white paper.

§ 3. Capacity

A. Techniques to Increase Capacity: General

We already mentioned that a requirement for insurability is that the insurer should have \textit{ex ante} information on the predictability of the risk and on the magnitude of the damage. So far we dealt with the importance of the predictability of liability. However, also the magnitude of the harm may constitute a problem\textsuperscript{358}. There may be uncertainty as far as the possible magnitude of the harm is concerned. The insurer may react to this uncertainty by providing for an adequate reserve to be able to provide coverage for the environmental damage once it occurs. However, in many cases the expected loss may exceed the possibilities of the individual insurer. In that case the insurer can use various traditional insurance techniques to cope with this capacity problem. One possibility is to insure a similar risk jointly with a few insurers (so-called co-insurance); another possibility is re-insurance. One other solution which is often used in case of environmental liability insurance is pooling of capacity by insurers. In many countries insurers have shared risks in mutual pools on a non-comparative basis to be able to provide coverage, also for risks with a relatively high potential magnitude. This is typically the case for the nuclear risk\textsuperscript{359}.

Generally legal doctrine has pointed at the fact that the possibilities to insure large risks have increased as a result of changes in the insurance industry. One effect of creating a European internal insurance

\textsuperscript{354} Cousy, H., \textit{I.c.}, 235-237.
\textsuperscript{355} This chapter § 9.
\textsuperscript{356} Cousy, H., \textit{I.c.}, 235.
\textsuperscript{357} Moral hazard will be discussed in § 4 of this chapter.
\textsuperscript{358} See Rogge, J., \textit{o.c.}, 3-4.
\textsuperscript{359} In addition an increasing number of alternative possibilities of financing potential liability for environmental harm emerge. These will be discussed in chapter 9.
market had been that the size of insurance markets (and hence the capacity) has considerably increased.  

B. EXAMPLE: POOLING BY INSURERS

The insurance of the nuclear risk is provided by the nuclear pools. Since the risks faced are considered to be very serious, the major national insurance companies in every nuclear country decided to pool their resources in the fifties on a non-competitive bases in order to be able to provide coverage for the nuclear risk. The result of this pooling arrangement is that at the beginning of each year the insurers determine the amount that they are prepared to commit for every nuclear installation. The total of contributions made by the participating insurers at the beginning of the year constitutes the capacity of the national pools involved. Pools are organised on a national basis. Reinsurance is obtained from similar "pools" or "syndicates" in other countries. Nowadays 28 pools exist world-wide. Through this organization of the reinsurance with other pools the whole nuclear insurance is connected world-wide. Therefore, for example, Belgian insurance companies that joined the Belgian nuclear pool SYBAN intervened in paying the damages caused by the nuclear accident at Three Miles Island in the United States.

These pools do not only provide for coverage for third party liability, but also first party insurance for the damage caused to the nuclear power plant itself. This is an aspect of considerable importance since the amount available for third party liability insurance is limited by the amounts made available for the first party insurance for the nuclear power plant. In some literature it is even argued that the amounts that should be available for coverage of the nuclear power plant should be much higher than the amounts to be made available for the liability of the licensee of the power plant toward third parties. According to some authors first party insurance even has priority over third party liability insurance since a nuclear accident will probably first affect the installation itself and only then the surrounding area. This combination of first party and third party liability insurance through the nuclear pools

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360 Cousy, H., "Recent developments in environmental insurance", in Abraham, F., Deketelaere, K. and Stuyck, J. (eds.), Recent economic and legal developments in European environmental policy, 227-241.


364 For details on the functioning of SYBAN see Van den Borre, T., o.c., Grensoverschrijdende milieuproblemen, 472-477.

365 See Dow, J., l.c., 180.

366 Muller notes in this respect: "In view of the rising cost of erecting nuclear energy plants, nuclear property insurance, which is likewise borne by the nuclear pools, is under considerable pressure and, in turn, represents an involvement by the insurance industry to the machinery insurance which, in the case of a nuclear power plant, also goes into the billions. Both forms of cover have priority over liability insurance, since a theoretical large scale nuclear occurrence would probably first affect the material assets within the plant, then the surrounding area. It is naive to consider only the third party suffering loss or damage - as occasionally happens - and to regard property insurance as an unnecessary appendage which only absorbs capacity. Every reasonable person knows that a nuclear power plant requires a heavy investment and that not only the operators, but also their creditors, should be protected. It is quite simply foolish to regard the loss of this investment as a sort of "punishment" for having brought about a nuclear occurrence and to ignore the interests of the power supply company and the investors in safeguarding their material assets" (Müller, W., "The role of insurance industry in covering
therefore leads to a limitation of the amount available for third party liability insurance. It is also remarkable that brokers argued during an OECD conference in Munich in 1984 that the first party insurance should be removed from the pools; the premiums would be relatively high due to the monopoly. They also argued that an exclusion of competition was possibly justified 30 years ago at the beginning of the nuclear age, but could not be defended nowadays\textsuperscript{367}. Given this high concentration on the nuclear insurance market in some countries initiatives have been taken by the nuclear industry, in co-operation with some brokers, to withdraw the first party insurance from the nuclear pools and to cover this through a new mutual insurance fund of nuclear power plant operators\textsuperscript{368}.

Pooling is not only used in nuclear liability insurance, but also in environmental liability insurance generally. For instance in the Netherlands initially, when environmental insurance still was relatively new, a pool provided for environmental liability insurance\textsuperscript{369}. Environmental pools exist in many other countries as well\textsuperscript{370}. Now many more companies also individually provide coverage for the environmental risk. It is interesting to note that the nuclear example showed the possible negative consequences of pooling in the long run: if pools act like monopolistic insurers premiums might be relatively high and unattractive for specific operators. This lead some nuclear power plants to withdraw from the pools as far as first party coverage was concerned and to examine the possibilities of a mutual between operators. Hence, one should clearly distinguish this pooling of insurers from the pooling of risks by operators through risk sharing agreements\textsuperscript{371}. The pooling of risks by operators as a result of risk sharing agreements is considered something different than liability insurance and will therefore be discussed in further detail in chapter which deals with alternatives to liability insurance.

For now it is important to realise that co-insurance, re-insurance and pooling are instruments which allow individual insurers to provide coverage for amounts which can largely exceed their individual capacity. Therefore the financial capacity should no only be judged by looking at the individual financial possibilities of one insurance company.

However, also with respect to these collaborations between insurance companies the question could be asked how they can be reconciled with a competition policy which generally looks with suspicion to any form of co-operation between enterprises.

C. POOLING VERSUS COMPETITION POLICY

Also the issue of pooling has been the subject of the already mentioned commission regulation 3932/92 concerning the application of competition policy on the insurance markets. A co-operation between insurers is undoubtedly necessary to increase the capacity which may be necessary to cover

\textsuperscript{368} In Belgium a European Mutual Association for Nuclear Insurance (EMANI) has been funded in 1978, which covered already in 1984 1,4 billion Belgian francs of the property damage to the nuclear power plants per installation in Belgium.
\textsuperscript{369} The working of this pool will be described in chapter 9 § 3.
\textsuperscript{370} See Cousy, H., \textit{i.e.}, 234 and Rogge, J. \textit{o.c.}, 36-37.
\textsuperscript{371} This will be discussed below in relation to the alternative compensation mechanisms.
large risks. This can not only be the case for environmental liability, but also for the insurance of large industrial risks. As we just mentioned, pooling of risks is well-known in the liability insurance business, more particularly with respect to nuclear liability, but also with respect to environmental liability. The Dutch liability insurance was for a long time provided through a so-called environmental pool, which consisted of co-operating insurers who provided liability coverage.

The European Commission is, from a competition policy perspective, rather cautious with respect to allowing collaboration between insurance undertakings with a view on pooling. Article 11 of the exemption regulation provides that the exemption shall apply on the condition that the insurance products underwritten by the participating undertakings represent:

- in case of co-insurance groups, not more than 10% of all the insurance products that are identical from the point of view of the risks covered and
- in the case of co-re-insurance groups, not more than 15% of all the insurance products.

It is doubtful whether the nuclear liability pools can be justified within these strict limits set by the commission. Indeed, most of the insurance companies which co-operate e.g. within the Dutch atomic pool have a market share which is much larger than the strict limits set by the commission. The exemption regulation does not seem to provide a specific exception for the nuclear or the environmental risk, so that some of the mentioned pools, which have a market share of more than 15% seem unreconcilable with the competition policy of the commission.

From an economic point of view one can argue that pooling of risks can in itself be efficient, since pooling allows also smaller companies to operate on the market for catastrophic risks. Without pooling only larger companies could cover catastrophic risks. Hence, pooling could lead to a larger number of market participants. If, on the other hand, pooling does not lead to an increased competition, which seems to be the case at least in the nuclear field, pooling remains inefficient.

The issue of pooling has also been discussed by the commission in its already mentioned report to the European Parliament and to the Council of 12 May 1999 concerning the operation of the exemption regulation 3932/92. The commission clearly discusses the common coverage of certain risks, which we have referred to here as “pooling”. The commission states that the starting point remains that any institutionalised grouping is in itself restrictive of competition. However, a pool can benefit from the block exemption if the market share of its members does not exceed the thresholds as specified in the exemption regulation. The commission however remains flexible and recognises that in some areas of insurance an insurer must, in order to be present on a market without incurring excessive risk, insure a sufficient number of risks so that the risk profile of its portfolio corresponds to the average for the totality of risks in the category. The commission continues:

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372 See on that point e.g. Hamburger, M., “De aansprakelijkheidsverzekering in Nederland voor schade door kernongevallen in West-Europa”, Nijl, 1996, 1340.
“There therefore needs to be a strong probability that the real level of claims incurred by the insurer will be the same as the average level of claims of all insurers. This strong probability can only be obtained above a certain number of risks covered by the insurer. Certain catastrophic risks may be such that no individual insurer is capable of insuring it alone. In such a case, the pooling of capacity does not restrict competition. If anything, the pool strengthened competition since it allows several insurers who are unable alone to provide cover for the risk at hand to put their resources in common and create a new competitor for the benefit of customers in need of such cover”.

The commission even holds:

“In any event, the commission will consider that pools no matter how high their market share is, are not covered by article 81-1 (ex-article 85-1) when they are necessary to allow their members to provide a type of insurance they could not provide alone”.

This probably may save nuclear and environmental pools who could argue that (no matter how high their market share is) they are necessary since without a pool this type of insurance could otherwise not be provided.

The commission also discusses the perspectives for the future and announces that its services have just launched their investigation into “co-insurance or co-reinsurance pools dealing with environmental risks and nuclear risks. Several of those pools have been notified (the French environmental pool Assurpol was actually granted an exemption in 1991. This exemption expired last year). All these pools will be assessed in the light of the tier legality test spelled out above”.

In other words, there is to be expected more news from the competition authorities of the European Commission with respect to the legality of the co-operation within environmental and nuclear pools.

D. POLICY PERSPECTIVE

What is precisely the importance of the capacity problem in environmental liability insurance from a policy perspective?

1. Limited capacity and insurability

We can summarise that the high possible magnitude of the expected damages does not make a certain risk as such insurable. One should remember that competitive insurance markets have worked out all kinds of devices to cope with relatively large, even so-called catastrophic, risks as well. Tyran and Zweifel report for instance that if today an earthquake would happen of the magnitude of the 1906 San Francisco earthquake there would be insurance coverage available up to 39,5 billion US dollar. As

375 Report, nr. 28 (B).
376 See report, nr. 32.
far as environmental insurance is concerned Ranson recently reported that the current insurance capacity on the European market would be 100.000.000 EURO per insurance policy\(^\text{378}\), which is quite substantial as well\(^\text{379}\). More fundamentally we can refer to the discussion on caps where it will be argued that the capacity problem is not an argument to introduce a financial limitation on liability\(^\text{380}\). The individual insurer can always limit insurance coverage up to the amount for which he is willing to provide coverage, either himself or in combination with co-insurance, re-insurance or pooling. The capacity problem is therefore not a reason to argue that certain risks would be uninsurable; the capacity will only define the amount of coverage available which will be defined in contractual limitations. It is obviously possible that the magnitude of the harm could still be larger than the insured amounts (even with pooling and re-insurance). This may then be an argument to examine whether alternative compensation mechanisms could provide for larger amounts than insurance, but there is no reason to assume that this will as such automatically be the case.

Moreover the capacity to cover the environmental risk is depending on a variety of complex elements and not only upon the individual reserves of one insurer or his capacity to obtain reinsurance. For instance, the method of coverage in time may have a far more important influence on the capacity, as we will show below\(^\text{381}\).

2. Reliability of information on capacity

It is, at the policy level, dangerous to infer anything from the possibly limited capacity for environmental liability, since it appears to be extremely difficult to obtain reliable information on insurability in general, but more particularly on the capacity, from the insurance market. This difficulty is connected with the fact that insurance markets in some member states are relatively highly concentrated. Lobbying theories have predicted that when an industrial sector has been well organised (e.g. in a cartel) their transaction costs will be low and their potential success in the field of lobbying may be large. This justifies the question whether the extent of liability should be judged on the basis of information provided by monopolistic insurers concerning insurance possibilities. If the argument that liability should be “insurable” is taken seriously, it is obviously of high importance for the policy maker to require reliable information on the actual insurability of certain risks. Precisely for that goal a well-functioning competitive market is of importance, so that the policy make could e.g. inquire with several companies what the precise possibilities of insurance coverage are.

Experience with the nuclear field has learned that the information provided may be unreliable if the policy maker becomes completely dependant upon information provided by a monopolistic insurer. Take the example of nuclear insurance which, as we just mentioned before, is dominated in every country by the so-called nuclear pools. In the Netherlands the Dutch government relied almost blindly

\(^{378}\) This remarkable statement is a literal quote from Ranson, D., *l.c.*, 72.

\(^{379}\) Kerremans also mentions insured amounts in Belgian environmental liability insurance up to 1.000.000.000 Belgian Francs (Kerremans, H., “Aansprakelijkheid voor milieuschade en verzekeringsmogelijkheden” in Bossaert, L. (ed.), *Milieuzorg in de onderneming, I, Juridische, fiscale en organisatorische aspecten*, Antwerpen, Standaard Uitgeverij, 575.

\(^{380}\) See chapter 7.

\(^{381}\) See § 9 D of this chapter.
on information provided by the Dutch nuclear pool on the availability of coverage for liability insurance when fixing the liability limit in the new Dutch Act on Nuclear Liability of 26 June 1991. Minister Kok declared during the parliamentary debate that “during the whole preparation of the draft negotiations have taken place with the nuclear pool. In all cases the nuclear pool could agree with the proposals. There has hence been an optimal involvement of the sector”382. Critical voices have asked the question whether the liability limit for the licensee of a nuclear power plant had to be set at the amount of 500 million Dutch guilders and should not be tested periodically according to the increasing possibilities of coverage on the private insurance market383, but the availability of insurance remained fully based on information provided by the nuclear pool384.

The fact that the policy maker often relies on information provided by monopolistic insurers to judge the capacity of the insurance market is obviously not merely a Dutch phenomenon. Precisely the same took place when the Belgian Act of 22 July 1985 concerning the liability of the licensee of a nuclear plant was discussed in parliament. Also in Belgium the government contacted the Belgian nuclear pool, referred to above, Syban, with the question whether an amount of more than 4 billion Belgian Francs would be available in third party liability coverage. Syban, the nuclear pool in Belgium, fiercely denied this. Later it turned out that the nuclear power plant itself is insured in first party insurance (property insurance) for an amount of more than 40 billion Belgian Francs. It is obviously relatively unclear why the nuclear pool only had an amount available for third party liability insurance of 4 billion Belgian francs, whereas the damage to the nuclear installation itself could apparently be insured for 40 billion Belgian Francs 385. This Belgian act has, by the way recently been changed, since the parliament accepted recently a legislative proposal (launched by two eco-ministers) to increase the amount of the licensee of a nuclear powerplant to 12 billion Belgian Francs 386. But that obviously does not change the points made here: again the amount was based on the insurability according to insurers.

These “nuclear” examples obviously also have importance for our study on the insurability of environmental liability. They show that one should be careful with judging the “insurability” of a particular risk, more particularly concerning the capacity aspect, on the basis of information provided by insurance, at least when there is a high degree of concentration on this insurance market. It is striking that with respect to the nuclear insurance all national pools do not compete (in order to increase the capacity) but again co-operate. The national nuclear pools indeed only insure the nuclear installations on their own territory, so that there is no competition between these pools. This example shows, once more, that in the nuclear case the pooling takes the restrictions of competition further than would be necessary to increase the insurability of the nuclear liability risk.

384 For further details see Faure, M., “De verzekering van het nucleaire risico” in In volle verzekerdheid, Essays offered to Prof.Mr. A.J.O. Van Wassenaer van Catwijck, Zwolle, Tjeenk Willink, 1993, 241-254.
This discussion shows that one has to be very careful with the argument that capacity may be limited. The policy recommendation one can do is to allow co-operation between insurers on the condition that it increases competition, which is precisely the spirit of the report of the commission of 12 May 1999 on the operation of the exemption regulation number 3932/92. Discussions on capacity obviously often play a role to justify a financial cap on liability. We will, however, argue below, that a limited capacity (how difficult it may be to judge this) should not necessarily lead to a limitation of the liability via financial caps but may eventually lead to a limitation on the amount of coverage provided by an individual insurer\textsuperscript{387}.

Finally, it should be reminded that in this section we merely dealt with some insurance economic techniques to increase capacity. These possibilities may, however, in some cases be limited as a result of the regulation of insurance industry.

\section*{§ 4. Moral hazard}

\subsection*{A. Importance of the concept}

A further condition for insurability is that moral hazard can be cured. All insurance schemes are, as the technical annex correctly stated, vulnerable to moral hazard\textsuperscript{388}.

Moral hazard is the well-known phenomenon that the behaviour of the insured injurer (and every insured for that matter) will change as soon as the risk is removed from him. This is precisely the essential contradiction in liability insurance. The disutility the injurer suffers because of his exposure to risk was precisely needed to give him correct incentives for care-taking.

If risk is fully removed from the injurer and shifted to the insurer the injurer will indeed miss the incentive for care-taking that was exactly given to him by the deterrent effect of having to pay compensation in case of an accident. Marc Pauly has, by the way, indicated that in fact this behaviour of the injurer is not immoral but completely rational since he simply reacts to varying costs for his behaviour\textsuperscript{389}. For the insurer of course the problem arises how nevertheless incentives can be given to the insured to behave in exactly the same way as if no insurance were available. This is of course the goal of an optimal control of moral hazard\textsuperscript{390}.

\textsuperscript{387} This will be elaborated below in chapter 7.
\textsuperscript{388} Technical Annex, 4.
B. Remedies

1. Monitoring

In the literature two ways of controlling the moral hazard problem are indicated. The first is a control of the insured and an appropriate adaptation of the premium; the second is exposing the insured partially to risk. A first best solution is a detailed control of the insured. In that case the premium conditions would be exactly adapted to the behaviour of the insured and the premium would reflect the care taken by the insured. In an optimal world this should give the insured incentives to behave exactly as if no insurance were available and the premium would reflect the true accident risk. Of course this first best solution is only possible in the ideal world where control by the insurance company would be costless and information on the behaviour of the insured readily available. In practice this is of course not true. There are, however, some means for a control of the insured and a differentiation of premium conditions according to certain groups of risk. This can either be an ex ante screening with a higher premium for certain high risk groups or an ex post premium increase or change of policy conditions based on previous loss experience. This is the so-called experience rating. Much of insurance legislation is also aimed at reducing moral hazard. Think in this respect e.g. of the prohibition, contained in many insurance laws, to insure accidents which are caused with intent.

A second best solution is exposing the insured partially to risk. This is considered second best because insurance should ideally exactly aim at removing risk from the injurer. Exposing the insured to risk will mean that some degree of risk aversion will remain. This has on the other hand the advantage that the insured injurer will still have some incentives for care-taking although he is insured. This exposure to risk can be either at the lower level of damage or at the higher level. One could indeed think of a system with a deductible whereby a lower threshold applies or one could introduce an upper limit on coverage whereby the insured bears his own loss in case the damage exceeds the insured amount.

3. Combination

In practice one will of course see a combination of both systems of the control of moral hazard. Usually there is some degree of differentiation within the policy conditions, a deductible and an upper limit on coverage. Of course the methods used depend upon the information costs, but also on the value of the insurance policy. Obviously an insurer will more readily tend to invest resources in making a nicely tailored insurance policy for a large company that pays a substantial premium than in case of consumer risks.

If moral hazard is controlled optimally through the use of the above mentioned devices the insured will again behave as if no insurance coverage were available, with the benefit that the disutility of risk is removed from him. The incentives for care-taking are in that case no longer given by liability law since the threat to have to pay compensation to a victim is shifted to the insurance company. In case of insurance the care-taking of the injurer is achieved through an appropriate adaptation of the policy conditions to the behaviour of the individual insured. This also explains that liability insurance has a very important social function. Under liability insurance the insurer has to guarantee that the insured will take efficient care and thus have an incentive to avoid accidents. This makes clear that an appropriate control of moral hazard is not only in the interest of the individual insurer, but also of society. If there was no efficient control of moral hazard, insurance would on the whole do more bad than good.

§ 5. Adverse selection

Also the adverse selection problem is identified in the technical annex 395. How can this problem of adverse selection briefly be described?

Already above we indicated that the insurance is based on a system of loss spreading. Therefore the insurer needs a minimum number of similar risks he insures. At the same time risk pools have to be constructed as narrow as possible, meaning that the average premium in the risk pool should correspond with the risk of most of the members in the particular pool. Would this not be the case, than the average premium would be relatively high for low risk members which would then leave the group. In that case the well-known phenomenon of adverse selection could emerge, which has been described in the seminal paper of Akerlof on the market for lemons 396.

Adverse selection will, in other words, arise if potentially responsible parties fail to disclose their true risk profile appropriately, which may endanger the narrowing of risk pools 397. Rogge holds that in Belgium the financial capacity to insure would be limited 398 precisely because only bad risks would have a demand for insurance. If this can not be 'compensated' with good risks an incurable adverse selection would remain 399. Thus "lack of demand has been matched by lack of supply" 400.

Let us now address which remedies the literature has prescribed as appropriate medicine to cure the risk of adverse selection.

397 See Technical Annex, 4. See also Wagner, G., o.c., in Umwelthaftung, Risikosteuerung und Versicherung, 105-106.
398 Although he mentions that some larger companies are (in 1996) able to get coverage up to 1 billion Belgian Francs.
399 Rogge, J., o.c., 5.
400 So Cowell, J., "Compulsory environmental liability insurance", in Bocken H. and Ryckbost, D. (eds.) Insurance of environmental damage, 327.
§ 6. Risk differentiation

The literature has indicated that the appropriate remedy for both moral hazard and adverse selection is risk differentiation. We will first identify what the theoretical benefits of risk differentiation are; then we will show by, once more, using the Dutch example that there is, in liability insurance in general, but also with respect to environmental liability, far more scope for risk differentiation than is used today. Then we will turn to environmental liability insurance by showing how through an appropriate specialization and monitoring the insurer should be able to check the ecological reliability of an enterprise, which constitutes the effective risk differentiation in the environmental case.

A. Risk differentiation: theory

It follows from the economic principles of liability insurance that an adaptation of the policy conditions to the individual risk is essential to control both moral hazard and adverse selection. George Priest has claimed that the adverse selection problem has caused an insurance crisis in the United States and that it can only be cured by an appropriate differentiation of risk. If the insurance policy requires preventive action from the insured party and provides for a corresponding reward in the premium this should give optimal incentives to the insured for accident reduction. Thus risk pools should be constructed as narrowly as possible so that the premium reflects the risk of the average member of that particular pool.

A further differentiation of the risk is obviously only efficient as long as the marginal benefits of this further differentiation outweigh the marginal costs of such a differentiation. Risk differentiation certainly does not mean that insurers would have to use an individual tariff in each case. The possibilities for individual differentiation will inevitably also depend upon the value of the particular insurance policy. For mass insurance products with a low premium, risk differentiation can only take place in general categories. In professional liability insurance of enterprises, however, the benefit of detailed differentiation, rewarding an enterprise for preventive action, may well outweigh the costs.

It is, thus, not difficult to make an economic argument in favour of effective risk differentiation as a remedy for a growing liability risk. If good risks are not rewarded for preventive action, either they will not have an incentive for prevention or they will leave the risk pool, and consequently the risk pools will be unravelled, as described by Priest.

401 Discussed above in this chapter in § 2.
402 Priest, G. o.c., 1521-1590. Priest has been criticized by Viscusi, who claims that there were other reasons for the product liability crisis in the U.S. than adverse selection on its own (Viscusi, W.K., "The Dimensions of the Product Liability Crisis", Journal of Legal Studies, 1991, 147-177).
403 Abraham, K., o.c., 949-951.
B. **RISK DIFFERENTIATION: THE DUTCH CASE**

Considering the current practice of many European insurers, especially as far as the liability risk of enterprises is concerned, one is struck by the fact that so little use is made of the possibilities of risk differentiation. In that respect we specifically refer to the insurance of the risks of enterprises in the Netherlands where premiums merely depend on the turnover of a company and almost no individual differentiation takes place\(^{406}\). Up to now, one lump sum premium has been charged for a whole variety of risks going from environmental liability to occupational health. Such a global tariff for a whole variety of different risks obviously does not correspond to the economic need for individual risk differentiation. This system might have worked in a legal system where liability law was not used as the main source for compensating victims. But now that governments in Western Europe are increasingly withdrawing from social security systems, victims may need to use the tort system more often\(^{407}\). This will inevitably force insurers into more effective risk differentiation. Looking at the Dutch example, there are many ways to improve risk differentiation in practice. One could start with specific categories of risk, such as environmental liability and occupational health.

Moreover, the insurer will have to invest in procuring information on the specific risk so as to be able to differentiate. This may trigger a need for specialization. If an insurer can recognise good risks through his specialised information, he may offer these risks a reduced premium and thus receive a comparative advantage. Insurers should recognise that they can only provide an adequate answer to growing liability and at the same time improve their competitive position by investing in obtaining information on specific risks. As far as the liability risk is concerned, case law may give a good indication of the circumstances under which enterprises are held liable. This information, combined with adequate statistics, may lead to specific obligations, as far as prevention is concerned, being laid on the insured party and amendment of the premium.

Some of the information the insurer may need to form an adequate risk differentiation is publicly available. Administrative agencies, for instance, often publish statistics on specific health risks within various enterprises that provide valuable information for insurers\(^{408}\). Furthermore, some of the information may be acquired through research performed at the request of an association of insurers. Obviously, the question will arise whether such an intervention by an association of insurers does not limit competition. However, as long as the association only makes the information available, individual insurers can still make different uses of it and hence policy conditions and premiums may still vary. As we have discussed above the recent group exemption of insurance companies also does not exclude this type of co-operation as long as no fixing of the premium takes place\(^{409}\).

\(^{406}\) See Faure, M.G. and Hartlief, T., *o.c.*, 316-322.


\(^{408}\) The problem is, however, that under a system of strict employer’s liability for occupational diseases, such as in the Netherlands, there is no incentive to keep data, so that a lot of valuable information is lost (*Advies Asbestdichters*, Prof. J. de Ruiter, March 1997, 43).

\(^{409}\) Actually the group exemption (Regulation 3932/92, O.J., L 398/7) even allows for indicative premiums, which could lead to inefficient restrictions of competition (see art. 2 that refers to concerted practices with respect to pure premiums). For a critical analysis of this exemption, see Faure, M. and Van den Bergh, R., “Restrictions of Competition on Insurance Markets and the Applicability of EC Antitrust Law”, *Kyklos*, 1995, 65-85. See also § 2 B 2 of this chapter.
In sum, the Dutch example shows that insurers may yet learn from the economic argument in favour of risk differentiation. In a world of growing liability this seems to be one of the remedies that allows insurers to compete on the basis of specialised information on risk while at the same time providing an adequate answer to increasing liability. It should be noted, however, that interesting legal questions arise with respect to the limits of risk classification; for example, whether very detailed risk differentiation collides with the non-discrimination principle. Recently Wils argued that too detailed differentiation according to age, gender or sexual preference of the insured could, under certain circumstances, be considered a violation of the non-discrimination principle, laid down in European law. This may not, however, directly cause problems in the field of environmental liability where risk differentiation is much needed.

C. MONITORING VIA POLICY AND LICENCE CONDITIONS

These general principles concerning the control of moral hazard obviously apply to the environmental risk as well. As was indicated, the ideal and first best method of control is to monitor the behaviour of the insured as much as possible and react to this behaviour by requiring specific preventive measures through the policy conditions and by adapting the premium accordingly. Such an individual monitoring of the risk may obviously be costly. On the other hand, in environmental insurance the amounts at stake are obviously larger than e.g. in consumer insurance policies. Hence, this may merit investments in information on the individual risk. Moreover, some classification based on prior experience is possible as well. It is, hence, essential for the insurer of the environmental risk to obtain accurate information on the risk ex ante and during the performance of the insurance policy and preferably at the lowest costs possible.

The insurer can of course rely on existing mechanisms to control the 'ecological reliability' of his insured. In this respect one should not forget that most insured in case of environmental risks are licensed operators. Hence, an absolute minimum would be that the insurer e.g. checks whether the insured operator in fact possesses a valid license. In addition he could require expressly in the policy conditions that the operator follows the conditions of the license and could make insurance coverage even dependant upon that. In other words: the insurer could make use of the fact that a decision concerning the way to reduce environmental harm has already been made by the administrative agency and possibly been laid down in the administrative license. This is by the way what is current practice in Belgian environmental liability insurance. Many insurance policies stipulate that there would be no coverage in case the damage resulted from a violation of regulatory norms.

Obviously, we should refer to the argument made above that following regulatory standards is, from a perspective of tort law, often merely a minimum. If socially efficient care is higher than the regulatory

412 Rogge, J., o.c., 28-29.
standard the potential polluter may be held liable, even in case of regulatory compliance. However, from the insurer’s perspective it seems useful to rely at least on regulatory standards, even though they may not always constitute the optimal norm and even though his insured may be held liable even tough regulatory standards were met. Compliance with regulatory standards is, in other words, a minimum which an insurer could require. But other techniques should be used to well to control whether the insured could have taken more cost effective prevention measures than the ones required by regulation.

D. INSTRUMENTS TO CHECK ‘ECOLOGICAL RELIABILITY’

As far as the operation of the plant is concerned the insurer could check whether the operator does not only formally comply with the conditions of the license, but also has other devices which may ensure that he will reduce environmental harm in an optimal way. One possibility is to check whether the operator has e.g. installed an environmental management system which has adequate warnings and whether there are e.g. regular eco audits. The insurer could even require that the results of regular eco audits are made known to him and could stipulate in the insurance policy that coverage may be suspended if the audit reveals an overall negative impression. Hence, audit- and self-reporting systems as well as external controls which are sometimes required anyway can be used by the insurer to control the ‘ecological reliability’ of his insured. Thus the insurer obviously acts in his own interest by obtaining information on the risks he covers at relatively low costs and at the same time exercises his social functions in a responsible way by stimulating ecological behaviour and reduction of environmental harm from his insured. The importance of environmental audits as tools of an effective environmental risk management is also stressed in the white paper. Rogge even considers it the ‘life insurance’ for a company.

The insurer could of course take his responsibility one step further and, especially at the design stage of plants, e.g. require that cleaner production technologies are used instead of the classic ‘end of pipe’ technologies. From an insurance point of view monitoring is obviously much easier and therefore less costly if one knows that a clean production technology is used by the insured from the outset which eliminates or reduces the possibility of harmful emissions. End of pipe technologies are in a certain sense always a risk for the insurer since they may (deliberately or negligently) sometimes fail to operate, in which case harm may occur and the insurer may have to intervene. If insurers go this far of requiring cleaner production technology from the outset of the design stage of plants as a requirement

413 See chapter 3 § 3.
416 Compare in this respect the UNEP Statement of Environmental Commitment by the insurance industry, Geneva, 23 November 1995 to which insurance companies can adhere.
417 White paper, p. 23, footnote 22.
418 Rogge, J. o.c., 41.
for coverage of the environmental risk once more they could combine an optimal control of moral hazard with taking up their social responsibility.

E. THE NEED FOR SPECIALIZATION

All these examples show that there are a variety of techniques the insurers may use to control moral hazard in case of environmental risks. However, these examples also make clear that such a control is only possible if the insurer has adequate information on the risks he is covering. For an average insurer who covers e.g. traffic liability, fires and professional liability and who occasionally takes one insurance policy of environmental liability as well, this may be a problem. Information may be purchased at lower costs if the insurer is willing to specialise in the environmental risk. This specialization may give the insurer adequate information on the appropriate techniques to reduce the environmental risk. Thus he may attract good risks by offering them a lower premium if certain preventive measures or e.g. cleaner production technologies are used. Hence, in the end this specialization may provide the insurer a comparative advantage. At the same time specialization may be the only way in which some of the complex environmental risks can be insured anyhow, controlling the moral hazard in an optimal way.

§ 7. CAUSAL UNCERTAINTY

A. EXAMPLES

There is another trend in liability law, which may indeed seriously endanger the predictability, and therefore the insurability, of certain risks. This concerns the tendency to shift the risk of causal uncertainty to enterprises (and therefore to their insurers)\textsuperscript{419}. There are two well-known situations that arose in Dutch case law to illustrate this tendency\textsuperscript{420}.

The first example concerns the drug DES. It was the fact that this product caused birth defects and that certain daughters of mothers who took DES during pregnancy suffered physical harm. The causal link between the use of DES by the mother and the daughter's symptoms was not disputed. It was also known that certain manufacturers had brought DES onto the market. However, uncertainty existed with respect to which manufacturer had sold a specific product to a particular mother. Several "DES daughters" sued all the producers that had brought DES onto the market at the time, although they could not prove from which manufacturer their mother had bought the drug. This gave rise to a lengthy debate about whether some sort of proportional liability rule should be applied to apportion the burden of liability between the manufacturers. A market-share liability would be an example of such a proportionality rule. The Dutch Supreme Court, however, applied a so-called "alternative causation" rule, meaning that the DES daughters are allowed to claim full compensation from any of

\textsuperscript{420} This topic is also discussed in the recent dissertation of Akkermans, A., Proportionele aansprakelijkheid bij onzeker causaal verband, Deventer, Tjeenk Willink, 1997.
the manufacturers. A manufacturer can still rebut the presumption by proving that he did not sell DES to the particular mother, but this will often be impossible in practice. Hence, this result is like a joint and several liability rule.

A second example of shifting the burden of causal uncertainty relates to the employer’s liability for occupational diseases. In a well-known Supreme Court case, Cijouw v. De Schelde, a victim of asbestosis could not prove at what time he had been in contact with the fatal asbestos fibre that caused his disease. The determination of this moment was crucial for the case since Cijouw had worked for the defendant firm for several years, but in a first period the employer could not have known that he had to take measures to protect his employee against asbestos and thus could not be liable. The Supreme Court once more shifted the uncertainty concerning causation to the enterprise by holding that it was presumed that the employee had been in contact with the fatal asbestos fibre during the second period of his employment with the defendant. This presumption could have been rebutted if the defendant had been able to prove that it was not during the second period that Cijouw was employed by the defendant that he was in contact with the fatal fibre. Obviously, this would have been practically impossible for the employer.

In both cases there is some causal uncertainty whereby the burden of proof is shifted to the enterprise. Since causation issues are very often difficult to prove with scientific certainty, this shift of the burden of proof will often be decisive for the outcome of the case. Other legal systems than that of the Netherlands have been confronted with the consequences of causal uncertainty as well. This plays a special role in the so-called toxic torts, whereby some of the population have been exposed to hazardous substances or radiation and subsequently a certain disease, such as cancer, is discovered. The problem is that, unfortunately, people do get this particular disease, cancer, from various sources. So the identity of the injurer is certain, but there is uncertainty about who the victim is. Indeed, they may well have got the disease from some background risk and not from the presence of, say, a nuclear power plant. Such questions have indeed arisen both in Belgium and in the United Kingdom. Causal uncertainty played a role in the famous British Sellafield case, where an English court had to decide on the causal relationship between childhood leukaemia and the nearby presence of a nuclear power plant.


at Sellafield\textsuperscript{428}. Similarly, Belgian courts have been confronted with the question of whether the physical complaints of inhabitants of the community of Mellery in the Walloon Region were caused by emissions from a nearby waste site\textsuperscript{429}.

B. LEGAL SOLUTIONS, ECONOMIC PROBLEMS

An example will illustrate the difficulties that may arise when deciding questions as these. Suppose that in an average population only 20 people would be victims of cancer, whereas it is suddenly established that the number is significantly higher in a population living near, say to a power plant. Assume that in that particular population we find 30 cases of cancer. If we further assume that the marginal increase in the number of victims by 10 has been caused by the presence of the power plant, the question further arises of which of the 30 victims got cancer from the background risk and which are really victims of the presence of the power plant. The Dutch Supreme Court cases that shifted the risk of causal uncertainty to the enterprise would lead to dramatic consequences in this example\textsuperscript{430}. In this the particular example this would mean that we would have to presume that all 30 cases of cancer had been caused by the power plant, unless the plant can prove that some of the cancers had not been caused by its presence. This shift in the burden of proof puts an impossible load on the enterprise and will effectively lead to the result that it will have to compensate all 30 victims. The result then is that the enterprise pays in 20 out of 30 cases for victims whose cancer was not caused by the presence of the plant\textsuperscript{431}. This perverse result could be avoided through a proportionate liability rule, such as a market-share liability in product-liability cases. This proportionate liability rule has been defended by several American scholars and is also defended in the economic analysis of law\textsuperscript{432}. The negative consequences of causal uncertainty could then be limited. A proportionate liability rule is less rigorous than the all or nothing approach of the reversal of the burden of proof\textsuperscript{433}. The proportionate liability rule would indeed mean that all victims can claim a proportion of their damage equal to the amount by which the power plant contributed to the risk\textsuperscript{434}.  

\textsuperscript{428} Gardner, M., "Results of a case-control study of leukaemia and lymphoma among young people near Sellafield nuclear plant in West Cumbria", British Medical Journal, 1990, 423-434.
\textsuperscript{429} For a discussion of that case see Lavrysen, L., "Judicial responses in the nineties to Dutch (and German) shipments of waste to Belgium in the eighties", Maastricht Journal of European and Comparative Law, 1995, 219-243.
\textsuperscript{430} Nevertheless this has been advanced by some authors. See, e.g., Van Maanen, G.E., "De civielrechtelijke aansprakelijkheid voor kernongevallen naar Nederlands Recht", in Faure, M. (ed.), Aansprakelijkheid voor het Nucleaire Risico, Antwerp, Maklu, 1993, 19-36.
\textsuperscript{431} See further on these problems, Faure, M., (G)een schijn van kans. Beschouwingen over het statistisch causaliteitsbewijs bij milieu- en gezondheidschade, Antwerp, Maklu, 1993.
C. **FOR THE INSURABILITY**

In sum, the danger of shifting the burden of causal uncertainty to the enterprise is that the insurer of the specific employer or producer will be required to compensate for damage which, on the whole, had probably not been caused by the insured party\(^{435}\). Unless a proportionate liability rule is followed, it is not possible to cover a risk if that would mean that the insurer would not only cover the damage of his own insured parties but also the damage that might possibly have been caused by another party. These tendencies lead to a liability of enterprises for risks that they have not caused themselves (in the case of causal uncertainty) or for risks that were not foreseen at the time when the tort was committed (in the case of retrospective liability). They are largely caused by a hidden redistributive agenda: the wish to provide victim protection no matter what it may cost. These tendencies may be far more problematic from an insurability point of view than the shift towards strict liability itself. Indeed, whereas we argued that strict liability as such is insurable, this is no longer true if retrospective liability is introduced or the risk of causal uncertainty is shifted to the enterprise.

\[^{435}\] Also Abraham, K., *o.c.*, 959-960 and Katzman, M., *o.c.*, 89-90.

§ 8. **Joint & several and channelling of liability**

Also these features, which deviate from the principle that an insurer can only be held liable for the damage he has caused himself, may lead to difficulties when it comes to insuring environmental liability. Several of these deviations can, however, be noticed precisely in the area of environmental liability.

A. **JOINT AND SEVERAL LIABILITY**

1. **Deterrence**

One is an area which is closely related to the issue of causal uncertainty, just discussed. It is the tendency to hold joint tortfeasors jointly and severally liable for all the damage to which their behaviour might have contributed. The reasons for doing so are well known. For the victim it is often difficult to prove a clear causal link with the actions of one particular polluter. This may sometimes lead to alleviations of the burden of proof or to holding several insurers jointly and severally liable. The often debated superfund regime under Cercla is an example of such a joint and several liability regime.

The effects of a joint and several liability are obviously that also the risk of insolvency is shifted to the injurer who will be sued by the victim. Indeed, joint and several liability means that the victim can claim full compensation from one injurer who then can exercise a redress against the other parties who contributed to the loss in proportion to their contribution. If, however, the other parties would all be insolvent the one insurer who was defendant will have to compensate for the total loss, also for the losses he has not caused. In addition the risks of uncertainty concerning the causal link are, under joint and several liability, also shifted to the one injurer who is sued in the particular case. The victim can suffice with suing just one of the many potentially liable insurers and claim full compensation. If the
one injurer does not succeed in proving that others contributed to the loss the damage will ultimately fall on him.

Although an argument could be made in favour of joint and several liability, being that ex ante it should give excellent incentives for mutual monitoring of potential injurers, there seem to be disadvantages as well. Joint and several liability may violate the principles of fair and efficient compensation which held that an injurer should in principle only be held to compensate to the proportion in which he contributed to the loss. The effects on deterrence largely depend upon the legal regime chosen and upon the insolvency of the injurers.

2. Insurance

From an insurance perspective joint and several liability may be dangerous for the simple reason that the insurer is done no longer merely insuring the risk post by his individual insured (which he can still control), but also the risk caused by all the others. The welfare losses resulting from such a system of joint and several liability may be large. This mutual monitoring may ex ante not always be possible and the transactions costs involved (also in the systems of redress) can be huge. Hence, on balance it is doubtful that joint and several liability will have positive incentive effects. The insurance effect is obviously, as the case of causal uncertainty illustrated, that an insurer will be held liable for the risks that his insured never caused. Remind the example of the Des-case where the Dutch Supreme Court de facto applied a joint and several liability rule. This means that any victim can claim full compensation of any of the manufacturers. The insurer of the particular manufacturer then becomes de facto the insurer of the whole market. This tendency towards joint and several liability seems therefore to endanger the insurability.

The white paper apparently has not taken firm decisions yet e.g. with respect to the issue of joint and several liability. It is only indicated that some measures might be introduced to alleviate the burden of proof and causation for the victim. In this respect we can thus formulate the warning that we believe that joint and several liability might seriously endanger insurability.

436 An argument in the direction is made by Tietenberg, T., l.c.
438 See Cousy, H., l.c., 235.
439 See § 7 A of this chapter.
440 Monti, A., l.c.
B. CHANNELLING

1. Deterrence

There is another feature of some environmental liability statutes and/or conventions where again a deviation can be found from the principle that only the injurer who caused the damage should be held fully liable for the loss. This is the so called channelling of liability. Whereas with joint and several liability a victim can in principle claim full compensation from any of the multiple insurers, channelling is in fact the reverse: under channelling the liability is channelled to one party who than becomes fully liable for the damage. This channelling, which indicates which party will be held liable for the loss is often exclusive, meaning that the victim can only sue the “channelled injurer” and not another party who might have contributed to the loss as well. Channelling can be found again in international conventions concerning nuclear liability and oil pollution. In the nuclear liability conventions the liability is channelled to the licensee of a nuclear power plant; in the conventions concerning damage caused by marine oil pollution there is a channelling to the tanker owner.

It has been argued that this channelling is inefficient because it has perverse effects on the incentives for care in the case the liability applies exclusively to one operator. This is the case if channelling means that victims no longer have the right to sue another party who could influence the accident risk as well. Excluding that third party from liability is inefficient since his incentives for prevention would be diluted. That effect is obviously reduced if the licensee or operator who would be held liable still has a right of recourse against the third party or if a liability could be passed on e.g. the basis of contract. In that case one could argue that the liability is simply transferred and that such a reallocation complies with the principles of the Coase theorem. However, this private reallocation of liability may not always be possible and some of the conventions, moreover, even restrict the possibilities of a right of recourse. Channelling can hence hardly be considered as an efficient mechanism for the prevention of accidents.

2. To increase insurability?

The reason that we discuss channelling within this chapter on insurability is that some have argued that channelling might improve the insurability of risks. Some have held that e.g. as far as nuclear liability is concerned channelling has the advantage that only the licensee of a nuclear power plant would have to take insurance coverage. Also the channelling in oil pollution cases is defended by arguing that it would reduce insurance costs since only the tanker owner would have to take insurance coverage. This insurance argument is wrong. Assume that other parties than the licensee or tanker

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446 So Van den Borre, T., o.c., in Ius Commune en Milieurecht, 366-367.
The current version of the white paper does not seem to address the issue of channelling of liability explicitly. A previous version referred to the fact that channelling of liability would bring lower transaction costs and a better internalisation of costs. But as we mentioned the contrary might be true. Under channelling transaction costs are likely to be high since the benefit of addressing one insurer will be outweighed by all the necessary recourse actions against third parties by the channelled operator. If channelling is moreover exclusive there will not be a better internalisation of costs. Quite to the contrary channelling would have a negative influence on the incentives of third parties to prevent the damage.

Although the issue of channelling is not expressly addressed in the white paper, the issue who should be liable is briefly addressed. The white paper proposes that this should be the person who exercises control over an activity by which the damage is caused. This sounds logic and, as far as this liability does not exclude the liability of others it should not be problematic from the point of view of providing adequate incentives for prevention.

§ 9. Insurability of long-tail risks

A. SUDDEN EVENTS VERSUS LONG-TAIL RISKS

There are, moreover, some other specific features of environmental liability insurance, which are discussed in the literature, which make it difficult to apply traditional insurance principles to environmental liability. One of these aspects, often stressed, is that liability insurance traditionally provides for coverage of accidents, meaning a sudden event whereas, as we just indicated in environmental liability there is often a long time laps between the emission and the occurrence of the harm. Moreover, many of the pollution cases are not sudden events, but evolve gradually. This causes many technical problems, e.g. relating to the question when the damage actually occurred. These and other questions relating to the application of insurance principles on environmental liability are extensively discussed in law and economics literature 448.

447 For further arguments see Faure, M. and Van den Bergh, R., Objectieve aansprakelijkheid, verplichte verzekering en veiligheidsregulering, 357-358.
One particular aspect of the potential long time lapse between the wrongful event and the damage is that this may have as result a retrospective liability. We already addressed the question whether retrospective liability can be considered efficient and denied this. Now we will argue that retrospective liability is not only inefficient as far as giving incentives for accident prevention is concerned, but leads also to uninsurability\(^\text{449}\).

Let us, before answering the question whether retrospective liability is insurable, once more come back to the requirement of foreseeability as a basis for insurability. We already briefly discussed this in the context of predictability. It is important to stress that, apart from exceptional situations, there should be no reason to argue that there is uninsurability of environmental liability as long as the present day insurer can see a growing liability threatening its position and can adjust its policy conditions accordingly.

B. FORESEEABLE RISKS

1. Principle: insurability

As long as insurers can foresee new risks, they can calculate the risk beforehand, demand a corresponding premium and build up a reserve. Indeed, as long as the insurer is able to demand a premium that is equal to the probability \((p)\) of an event with a damage \((d)\) occurring, together with a surplus for administrative charges, there should not be a problem of insurability provided that the problems of adverse selection and moral hazard mentioned above can be controlled as well. Irrespective of the fact of whether the change in the scope of liability involves a higher probability of being found liable (an increase in \(p\) in other words) or an increase in the damage \((d)\), a competitive insurance market will in principle be able to cope with the accompanying rising demand for insurance, provided that there is sufficient capacity.

Many of the changes that occur nowadays in liability law do not as such cause uninsurability because they are relatively foreseeable. Changes in liability law have been taking place since the beginning of the 1960s and most of these changes have only amounted to an increase in the liability of businesses. Since the new case law or legislation applies to future situations, an insurer can assess whether this increase in liability amounts to a change in \((p)\) and/or \((d)\), and hence necessitates a change in premium or another change in policy conditions. Legal practice has also demonstrated that insurers are well able to deal with some of these changes.

2. **Example: Products Liability Directive**

A nice example is seen in the European Product Liability Directive of the 25 July 1985\(^{450}\). For some member states, which already had product liability regimes at the time of the promulgation of the directive, this European initiative probably did not even substantially enlarge the scope of liability for manufacturers. For other member states, such as Spain and Greece\(^{451}\), the directive probably did substantially change the liability of producers. However, the strict liability regime of the new directive only applies to situations that occur after the entering into force of the new regime. Art. 17 of the Product Liability Directive explicitly states that the directive only applies to products put into circulation after the legislation implementing the directive has entered into force. Hence, the implementation of the European Product Liability Directive does not seem to have posed too many problems from an insurance perspective, since it respected the golden rule that the new regime was only applicable to new risks.

This seems to comply with recent findings of the so-called 'Green paper on liability for defective products'. Indeed, the Product Liability Directive of 1985 had called for a five-year review to analyse the working of the Directive\(^ {452}\). This five-year review has resulted in a green paper of the Commission which was launched on 28 July 1999 which is addressed to the larger European business and consumer community with two aims:

1. It allows to seek information which will serve to assess its application in the field in view of the experience of those concerned (in particular industry and consumers) and to establish definitely whether it is achieving its objectives;
2. It serves to “gauge” reaction to a possible revision as regards the most sensitive points of this legislation\(^ {453}\).

The Commission wishes to promote the reflection and debate and therefore invites replies provided on facts. Obviously, the Commission has indicated guidelines for discussion concerning all of the important topics in the product liability area, such as the existence of financial limits, the 10-year deadline, the burden of proof, the assessment of the insurability of risks, the suppliers' liability and the type of goods and damage covered. Although the green paper clearly states that it does not prejudge the Commission’s position on these areas, the fact that a lot of topics which were previously highly criticised are now put on the agenda for possible reform is interesting in the light of the analysis provided in this study.


\(^{451}\) Bourgoigny argued that the Directive brought about drastic changes for Greece, Italy, Spain and Portugal. Other countries already had - in his view - a product liability system, which equals the liability system of the EC Directive (Bourgoigny, T., "Responsabilité du fait des produits: arguments connus pour un nouveau débat", Revue Européenne de Droit de la Consommation, 1987, 17).

\(^{452}\) See article 21 of the product liability Directive which states “Every five years the Commission shall present a report to the Council on the application of this Directive, and, if necessary, shall submit appropriate proposals to it”.

\(^{453}\) See green paper on liability for defective products, 2.
Indeed, as far as insurance of the product liability is concerned the Commission wishes to analyse how the cases brought under the directive have affected the insurance sector\textsuperscript{454}, but apparently it is assumed that the product liability risk is covered through insurance. This also follows from a brochure provided by the Swiss Reinsurance Company on product liability claims in Europe, which describes a wide availability of cover for the product liability risk in all member states\textsuperscript{455}.

This obviously complies with the general finding in the literature of law and economics, that strict liability will lead to a demand for third-party insurance from risk-averse injurers\textsuperscript{456}. A shift from negligence to strict liability will, therefore, lead to a shift from first-party victim insurance to third-party liability insurance. As long as strict liability also allows a narrowing of risk groups, this shift towards strict liability should not as such lead to uninsurability\textsuperscript{457}.

C. RETROACTIVE LIABILITY: UNINSURABILITY

This picture, however, changes when liability expands in such a way that it is no longer foreseeable and policy conditions can hence not be adapted \textit{ex ante}. The question whether a change in the liability regime therefore leads to an insurability, when this is applied in a retrospective manner seems hence to be answerable relatively easily.

At first sight one could argue that this certainly is the case. If the insurer were not aware that the behaviour of this insured party might potentially have been considered wrongful, no premium would have been charged for this risk, no preventive measures would have been required in the policy conditions and no reserves against losses would have been set aside. Indeed, insurance assumes that the insurer covers future risks which are at least to some extent foreseeable. Insurance requires some degree of predictability. However, the mere fact that insurers of, say, industrial waste disposal sites in the 1960s have - as a matter of fact - not foreseen that the activities of their insured parties could lead to a liability in the future, does not make this event totally unforeseeable. The potential of a change in the scope of liability is an uncertain element which the insurer can - in principle - take into account \textit{ex ante}. We are dealing here with the concept of `insurer ambiguity’ addressed by Kunreuther, Hogarth and Meszaros\textsuperscript{458}. If insurers could foresee the likelihood of a possible change in the liability system, they could react to uncertainty by estimating the probability that this event would occur and charge an additional risk premium to account for this legal uncertainty. In sum: in an \textit{ex ante} perspective one can argue that nothing is totally unforeseeable or unpredictable; insurers can in principle cope with ‘hard to predict’ events such as the introduction of retrospective liability by charging an additional premium. However, in an \textit{ex post} perspective this message is not very helpful for insurers who, at the time, did

\textsuperscript{454} Green paper on liability for defective products, 17.
\textsuperscript{455} Narita, S., \textit{Product Liability Claims in Europe}, Zurich, Swiss Reinsurance Company, 1996 available through www.swissre.co.uk/e/publications.
\textsuperscript{456} Shavell, S., o.c., 211. We will elaborate this point also below in chapter 8.
\textsuperscript{457} Priest claimed that the liability insurance crisis in the US has to a large extent been caused by a shift to third-party liability insurance, combined with too little risk differentiation by insurers (Priest, G., \textit{The Current Insurance Crisis and Modern Tort Law}, \textit{Yale Law Journal}, 1987, 1521-1590). The need for effective risk differentiation has been discussed in this study in this chapter in § 6.
not take this risk into account and now have to provide cover to enterprises for risks which the insurers considered apparently unforeseeable. Hence, no additional premium was charged and no reservations were made, which explains why the retrospective liability which is now laid down, say, for soil clean-up costs, leads to major problems for insurers. There is, hence, no problem of the uninsurability of retrospective liability as such, but only the simple fact that insurers did not take these risks into account when the policy was drawn up.

From the above it follows that real retroactive liability, where any change in the law was not foreseeable will pose problems for insurers. Also insurers argue in their publications that liability for past pollution is uninsurable. Our theoretical analysis supports this claim. However, the problem of a long time laps between the wrongful event (e.g. the emission of a toxic substance) and the damage will obviously often happen in environmental insurance. A question which is closely related to the issue of retrospectivity is whether the system of coverage should be changed to be able to cope with these long-tail risks. This concerns more particularly the question of how insurance cover in time should be taken care of.

D. COVER IN TIME

1. Options

We have already indicated above that insurance problems may arise with so-called ‘long-tail exposure’, meaning that the damage can occur much later than the wrongful act. In such cases it is of utmost importance to examine what the precise period of cover under the particular insurance policy is. In that respect a distinction is usually made between three systems:

a. The act-committed system: in that case the wrongful act must have taken place during the period of insurance cover;
b. The loss-occurrence system: in that case the damage must have taken place within the period of insurance cover;
c. The claims-made system: in that case the claim for damages must have been received by the insured or his insurer during the period of insurance cover.

Nowadays a definite increase in claims-made policies throughout Europe is clearly apparent. This is due to the obvious disadvantages, at least for insurers, connected with the two other systems in cases of long-tail exposure.

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459 See also Zeckhauser, R., "19th Annual Lecture of the Geneva Association and Catastrophes", The Geneva Papers on Risk and Insurance, 1996, 5, who equally argues that retrospective liability may affect the predictability of risks; as well as Abraham, K., o.c., 957-959.

460 For Belgium see e.g. Rogge, J., o.c., 6.

461 On the importance of this issue for environmental liability insurance, see Abraham, K., o.c., 970-972.

462 See also Cousy, H., l.c., 237-239.

2. Changes

In the act-committed system, which was especially popular in the 1950s and 1960s, there is only cover if damage can be attributed to a wrongful act of the insured that took place during the period of insurance cover. Obviously, this system is advantageous for the insured party since the potential claim remains in existence until a statute of limitation has passed. In addition, cover is in accord with the policy conditions valid at the moment that the damage was caused, meaning the moment that the wrongful act occurred. As a consequence limitations of cover that might be introduced at a later stage cannot be invoked against the insured. For insurers this act-committed system can be highly disadvantageous. Indeed, if an insurer provided cover for example, for product liability and the policy expired shortly after a certain product was brought onto the market, under an act-committed system of cover the insurer can still be held liable if, several years later, it appears that this particular product caused damage to a victim. This may be problematic, especially when the insurer has not foreseen the possibility of this ‘long tail’ and has therefore not charged an adequate premium.

These problems caused the international reinsurance market to introduce a loss-occurrence system of cover. Under loss-occurrence, the damage must have taken place within the period of cover. Under loss-occurrence, therefore, cover is also provided if the wrongful act that caused the damage took place before the insurance contract entered into force. However, a loss-occurrence system does not completely eliminate the problem of the long tail; indeed, if an injury manifests itself during the period of cover, the insurance policy will apply for future consequences over, say, twenty years in the case of long-lasting diseases. Therefore, insurers changed to claims-made cover. Although claims-made policies may exist in different forms, it is essential to a claims-made system that the claim for damages should have been received by the insured party or his insurer during the period of insurance cover.

Although claims made policies are probably the only way insurers can protect themselves adequately against the long tail risk Abraham argued that these policies could dilute the deterrent function. The argument is that policy holders under claims made would only internalise the costs that would arise during the year of coverage and not the future costs. This argument is not totally convincing since, irrespective of insurance the policy holder will be liable for these future costs as well. Nevertheless, in the ‘future’ an insolvency problem may arise if as a result of the claims made coverage the cover would be limited in time.

464 In this respect we can inter alia refer to the discussion of the Dutch DES-case above: § 7 A of this chapter.
466 See a discussion by Wansink, J.H., o.c., 110-112; and see Haazen, O.A. and Spier, J., in De uitdijende reikwijdte van de aansprakelijkheid uit onrechtmatige daad, 56-79.
468 Richardson, B.J., "Financial Institutions for Sustainability", Environmental Liability, 2000, 52-64.
3. **Legal Responses**

Although this system may have some benefits for the insured party as well[^469] the most important effect is that it will allow the insurer effectively to control the long-tail risk. This 'long tail' may be a particular problem in those cases where insurers cannot acquire information on the (perhaps highly technical) risks and thus cannot demand a risk premium to cope with insurer ambiguity. This hardly manageable long-tail risk is indeed fully excluded in a claims-made policy. As soon as the insurance policy expires, the cover ends. This also applies for claims filed after the period of insurance cover for damage that occurred during the period of insurance cover. For this reason many legal systems have been rather critical of so-called claims-made cover[^470]. Spanish case law has held claims-made cover void[^471]. In Belgium the new insurance act of 25 June 1992 originally did not allow claims-made cover. However, in these two countries this rather rigorous point of view with respect to claims-made cover has recently been relaxed. A recent legislative change in Spain allows claims-made cover on the condition that the cover extends at least one year after the insurance contract expires. Moreover, the Belgian Insurance Act has been amended with respect to the problem of insurance cover over time. The starting point is still the loss-occurrence system, but the act now provides for the possibility of allowing claims-made cover for certain types of liability insurance via royal decree[^472]. Again the Belgian legislation prescribes that some long-tail risk must be covered: cover should extend at least to claims made within 36 months after the insurance contract expires relating to damage that occurred during the period of cover or referring to circumstances that could give rise to a claim and which have been announced to the insurer during the period of the insurance cover[^473].

This brief overview of legislative and jurisprudential responses to claims-made cover shows that although claims-made cover may be the appropriate response of insurers to the long-tail risk[^474], legislators and judges apparently pay a lot of attention to the interests of the insured, which might be seriously restricted under claims-made cover. The most important argument against a pure claims-made system is that insured parties may not be awarded cover due to coincidental circumstances, although they paid a premium for the risk that occurred. In addition, claims-made cover may cause problems if the insured party wishes to move to a new insurer who will immediately have to cover the "old" risk. Therefore, legislators or judges assuming that insured parties may lack appropriate information on the precise consequences of claims-made cover may react by limiting the effects of claims-made cover in order to protect the insured parties. Nevertheless the tendency increasingly to

[^469]: Insurance cover is indeed awarded immediately, even if the damage had its origin long before the insurance policy entered into force.
[^473]: On the scope of coverage of pollution insurance in Belgium see Rogge, J. o.c., 18-24.
[^474]: Katzman argues that claims-made policies are less risky for insurers than occurrence-based ones, since there is no commitment into the indefinite future (Katzman, M., o.c., 88).
use claims-made cover is apparently unstoppable. In the Netherlands recently the insurers association
advised their members to move to a claims-made system of cover.\textsuperscript{475} The idea in the Netherlands is
that the interests of the insured parties can be protected by mitigating the harshest consequences of
claims-made cover. One possibility is to provide for an extension of the period of cover after the
insurance contract has expired; another possibility is to stipulate that the insured party has the
possibility of reporting circumstances or facts that may lead to a claim to the insurer during the period
of insurance cover although no damage has occurred yet. Provided that these relevant circumstances or
facts have been reported during the period of the insurance contract, cover will be awarded even if the
damage only occurs after the insurance contract has expired.\textsuperscript{476} This is apparently the system that is
currently followed in the Belgian Insurance Act as well.

4. Acceptability of “claims-made”?

In fact, there does not seem to be anything inherently unfair about claims-made cover: the cover ends
in principle when the insurance policy expires, but the insured party obviously does not pay for cover
after expiry either. Another system whereby the risk of the ‘long tail’ is shifted to the insurer is worthy
of consideration. In that case one would go back to, for example, the traditional act-committed cover
systems. The insurer, knowing that he will have to cope with the uncertain long-tail risk will then
charge a risk premium so that in the end the premium charged would be higher than under a claims-
made cover system. Once more one should realise that the sudden enthusiasm of insurers for claims-
made cover can largely be explained as an \textit{ex post} - and therefore late - reaction to risks which they
had not foreseen at the time when the insurance policies were drawn up.

Anyway, claims made policies seem to be a major success in the practice of environmental liability
insurance. Whereas authors report e.g. for Belgium that the traditional liability coverage provided
coverage for amounts up to 50 million Belgian Francs for personal injury damage, the amount of
coverage for environmental claims would now have increased up to 1 billion Belgian Francs as a result
of the introduction of claims made coverage.\textsuperscript{477} This shows that the system of cover in time can
apparently indeed have an important effect on the insurability of environmental risks.

Although many varieties of claims made policies exist, the bottom line is that the claim must have
been received by the insured or his insurer during the period of insurance cover. Thus the insurer is
able to exclude the “long tail” coverage, which seems an adequate remedy for risks which are hard to
predict \textit{ex ante} for the insurer. However, also claims made policies only provide help for the problem
of retrospective liability to a limited extent. Suppose that an insurer, providing coverage on a claims
made policy, is suddenly confronted with a change in the liability regime as a result of which he now
has to provide coverage for old risks, which might have been unforeseeable at the time when the
insurance policy was concluded. It might then obviously be tempting for the insurer to quickly end all
the insurance policies on which claims can be expected. But that is obviously an aspect of claims made
policies that a lot of legislators and judges in many European legal systems do not like. There will,

\textsuperscript{475} See, in that respect, Haazen, O.A. and Spier, J., “Amerikaanse toestanden en de nieuwe aansprakelijkheidsverzekering voor
\textsuperscript{476} See Wansink, J.H., \textit{o.c.}, 116-118.
\textsuperscript{477} Deketelaere, M., \textit{o.c.}, in \textit{Jaarboek Milieurecht}. Status Questionis Anno 1997, 706-709.
hence, always be the risk that either the claims made policy will be declared void or that some coverage must still be extended even after the expiration of the insurance policy. Hence, also claims made policies can not provide insurers a full guarantee against politicians or judges introducing retro-active liability.

5. Other remedies

Since claims-made policies can not provide a waterproof guarantee for insurers against retrospective liability, the question arises whether other remedies are available for insurers to protect themselves against the possibility of a retroactive application of a new liability regime or a more stringent duty of care.

We indicated above that problems may arise if the scope of liability is changed in a retrospective manner. If the policy conditions do not provide for a solution of this problem, cover will be provided for events for which no premium was paid, no reserve was set aside and for which no preventive measures have been required through policy conditions, simply because the insurer actually did not foresee the particular risk. Some of the problems of the retrospective application of new liability regimes may be dealt with by insurance policies with a relatively short period of cover based on a claims-made system. However, this cannot completely remedy the retrospectivity problem. Ex ante the ideal solution may be to assess the risk of a change in the scope of liability and charge a corresponding premium. However, this may not always be possible because of competitive pressures or simply because the insurer lacks the information to set an accurate risk premium. Therefore, one has to look for alternative solutions as well. One possible solution is to formulate the cover ex ante in such a way that it only refers to the scope of liability applicable at the time that the insurance contract was drawn up. Another possibility is to stipulate that the insurer has the right to terminate the insurance contract as soon as the scope of liability is increased through changes in legislation or case law.

Obviously, the advantages of such policy conditions favour the insurer. The insurer knows under what legal regime he is offering cover and can ask for a corresponding premium in accordance with the principles set out above. The disadvantage for the insured parties is that they are only insured in a very relative sense. They may indeed be held liable, according to, for example, a new development in case law, for events that occurred in the past and hence lack insurance cover. A practical disadvantage of policy conditions limiting insurance cover to the scope of liability applicable at the time of the drawing up of the insurance contract is that it is often not very clear whether there is a change in the scope of liability. Especially as far as case law is concerned, courts will seldom indicate that they have formulated a rule that constitutes a change in comparison with earlier rulings. Sometimes courts also suggest that they only apply already existing legal rules (such as the negligence rule of art. 1382 of the


479 In addition, Hogarth and Kunreuther showed that the willingness to pay of an insured party may be less than the required risk premium, since individuals may underestimate these low-probability events (Hogarth, R. and Kunreuther, H., "Ambiguity and Insurance Decisions", American Economic Review, vol. 75, 1985, 386-390) and Katzman, M., o.c., 86.

480 This and other suggestions have been formulated by Hartlief, T. and Spier, J., "Verzekering en aansprakelijkheid met terugwerkende kracht", Aansprakelijkheid en Verzekering, 1994, 28-29.
French civil code of 1804) to new situations, so that in fact no new legal rule is created. In such situations the insurer may often be unable to avoid providing cover.\footnote{See Dommering-Van Rongen, L., \textit{o.c.}, 1997, 28-29.}

6. \textit{Policy relevance}

The options we discuss in this section obviously cannot provide a remedy for general problems of uninsurability, but may cure the specific problems of insurers that touch upon the predictability of certain risks. A key question will, however, often be whether the solutions suggested are also socially acceptable. From a strictly legal point of view there should not be a problem as long as the insured party and the insurer freely choose a specific limited amount of cover for which the insured party pays a correspondingly low premium. This also complies with the economic principles of insurance. Problems may, however, arise, especially in fields where compulsory insurance exists, where it is widely held that the risk of unpredictability should rest being thrown with insurers instead of on the shoulders of the insured party. This may put pressure on insurers, not only from politicians but also from powerful brokers, to be extremely cautious with the introduction of policy conditions as suggested above. The legal \textit{ex post} approach of nullifying certain policy conditions deemed unreasonable in order to protect an individual insured party may in the end lead to the adverse effect that certain risks will indeed become uninsurable.

As far as advice to individual insurers is concerned, the need for adequate risk differentiation must be re-emphasised. In addition, we have suggested various policy conditions that could be used to limit the risk of unexpected changes in the law. Moreover, a claims-made policy may provide an adequate answer for long-tail risks with unknown consequences.

It is also important, with respect to these suggestions, that legislators realise that these policy conditions may be necessary to keep a risk insurable. Some politicians tend to believe insurers should provide compensation for any loss that occurs nowadays, no matter what the reason is. This wish to find a solvent debtor may lead a judge or legislator, for instance, to prohibit policy conditions excluding specific components of the damage or declaring, for example, a claims-made policy void, as was the case in France and Spain. These reactions would inevitably have the perverse result that insurers would have to withdraw from specific markets altogether. Hence, it seems to be more appropriate to focus on specific conditions that have to be fulfilled \textit{ex ante} to provide insurance cover and respect these, instead of aiming for short-term \textit{ex post} success, which would protect consumers or victims today but result in the total lack of insurance for some risks in the long term.

\section*{§ 10. Statutes of limitations and the financing of “sins of the past”}

A. \textsc{Statutes of limitation and insurance}

Finally it seems important, after having discussed the issue of long-tail risks, to briefly address once more the statutes of limitations. We already briefly discussed the importance of statutes of limitations...
in chapter 2. From an environmental point of view statutes of limitations pose an important problem, precisely since there may be such a long time laps between the exposure to e.g. toxic substances took place and the moment that the damage occurs. What can be said concerning the statutes of limitations, also from an insurance perspective?

Without going into this issue in detail here one can easily argue that it nicely illustrates the balance of interests that has to be taken into account. On the one hand the argument could be made that a liability that is unlimited in time might provide a better incentive for the tortfeasor if he knows that he can never get off the hook, by simply waiting it out.

On the other hand the problems of proving negligence and causation might become so large over time that the wrongfulness of the tortfeasor’s action can no longer be established in a reasonable way. This, together with the argument of legal certainty, is often advanced to justify statutes of limitations. For the insurer the argument can also easily be made that liability which would be unlimited in time would be uninsurable. There are, however, instruments through which the insurer can protect himself. An obvious one is to limit the period of coverage in time, e.g. through a claims made policy. Even if one therefore can argue that there are solid reasons for a statute of limitations, one shall nevertheless find that serious problems will arise as far as the financing is concerned. Indeed, expiry of a statute of limitations has the obvious effect of the tortfeasor no longer having to bear the financial consequences of his wrongdoing and victims receiving no compensation. This of course encourages various attempts to delay the period of limitation to whatever extent possible, e.g. with the argument that the statute of limitations only begins on the date on which the damage manifests itself and not at the time the harmful event occurred. In the end the uncompensated victim will turn to the government to claim compensation for e.g. ’orphaned' sites, so that society at large will pay for the consequences of wrongful acts which occurred in the past. The financial consequences are thus spread over the large community of taxpayers which is often the consequence when no solvent debtor can be found.

B. FINANCING OF PAST POLLUTION

The issue of the coverage in time, statutes of limitation and claims-made policy makes clear that as a result of claims-made policies we will be confronted more often with situations where an insurer denies coverage and hence, the (probably insolvent) injurer finds himself without insurance. Hence, the costs may be drawn once more on society, thus violating the polluter base principle. What can, once more, be said from an equity perspective concerning these questions of the financing of the “sins of the past”?

1. Insurers?

The problem is that these issues are often discussed in an ex post manner, i.e. when the problem arises today. Usually sins of the past are discovered, e.g. a toxic waste dump that was filled 20 years ago and the bottom line is that everyone worries, especially the public authorities, because no one can be found to pick up the bill of the clean up costs. This will create an immense public pressure also on the judiciary to have a liable party and his insurer to pay for these harmful consequences of past
behaviour. Before we already indicated that such an approach is neither efficient, nor fair. The question, however, arises what an insurer should do when he is nevertheless confronted with such a bill in the form of retro-active liability and whether there are any alternative financing mechanisms that can avoid the negative consequences of retro-active liability we discussed.

When an insurer today is confronted with a duty to compensate for losses which he has not foreseen such an insurer is obviously confronted with the question how funds can be generated to meet this obligation. The only practical solution is to generate these funds through an increase of premiums for the insured of today. Such a premium increase leads to negative distributional consequences since the insured today will have to pay for the sins of industry in the past, whereby the industry today is maybe following the new and stringent standard of care and taking preventive measures. Hence, such a redistribution runs counter to our principles of efficient and fair compensation.

In addition it should be mentioned that such a premium increase will only be possible under the assumption that all insurers in the market are hit by the retro-activity problem in the same manner. Would that not be the case then this would have as a consequence that the unlucky insurer who would, by hypothesis, be the only one confronted with many retro-active claims, would not even have the possibility to raise premiums ex post because of competitive pressures. The ultimate consequence might then even be the bankruptcy of the particular insurer.

2. Compensation funds?

Assuming therefore that it is not efficient and fair to confront insurers of today with the problem how to finance the sins of the past, the question arises whether there are any realistic alternatives. An alternative often heard, especially at the policy level, is the use of compensation funds. The argument goes that compensation funds should intervene if certain risks seem uninsurable which is the case e.g. for historic pollution. This argument will be elaborated in chapter 9 where the use of compensation funds is discussed. On second thought it, however, seems that compensation funds are not better capable than insurers to cope with these problems. The crucial question is of course who has to contribute to the fund. At that moment the same question will arise as with liability and insurance. The first and obvious answer is that the industry who caused the risk should contribute to the fund. But if these injurers are identifiable there is usually no need for a fund solution. It is precisely because tortfeasors of the past can not be found any more that often arguments in favour of funds are made. Second, often it is argued that all manufacturers still in business and their insurers should contribute to a fund. But then you let again the good people of today pay for the mistakes of the bad guys of the past. This can never have a positive influence on incentives for future behaviour and amounts once more to negative redistribution.

3. Government?

The third solution that one then comes to is inevitably the government. It seems indeed hardly fair to attribute for instance the cost of old soil pollution caused in the past on the shoulders of the unlucky ones who can still be found today and let them pay a collective debt. Since the problem is a collective one it seems in the end unavoidable that the collectivity of tax payers of today should pay for this
collective failure in the past\textsuperscript{482}. Thus a kind of intergenerational equity is restored whereby the present generation pays for the mistakes of the past. Obviously one can then still discuss on the details of the government intervention. In fact it makes little difference whether the government pays for instance a fund which is installed to compensate victims of historic pollution or whether the government pays the costs of soil clean up directly.

Principally we agree with the starting point in the white paper that, on the basis of the polluter pays principle, it should be the polluter who bears the cost of environmental damage\textsuperscript{483}. Also the Technical Annex correctly states that it is wrong to use public funds to complement a liability regime. This violates the principle of liability since it are the responsible parties who have provided the funds\textsuperscript{484}. This outcome only changes for historic losses where liability could never have affected incentives for prevention positively. For this historic pollution the white paper correctly suggests that the member states would install funding mechanisms instead of relying on liability\textsuperscript{485}.

\textsuperscript{482} Also Boyd and Kunreuther prefer this solution of the “public purse” to a retroactive liability (Boyd, J. and Kunreuther, H., \textit{o.c.}, \textit{Journal of Regulatory Economics}, 1997, 70-90.

\textsuperscript{483} White paper, 13.

\textsuperscript{484} Technical Annex, 2.

\textsuperscript{485} White paper, 16.
Chapter 6  Compulsory insurance?

§ 1. Introduction

In the theoretical analysis provided in chapter 2 we made clear that although there may be arguments in favour of strict environmental liability in cases where environmental harm can be considered unilateral, strict liability may cause underdeterrence in case of insolvency. Hence, we have to consider carefully the risk that a potential polluter would simply chose a “hit and run” strategy whereby he would pollute, irrespective of the strict liability, since the strict liability rule could not effect him given insolvency. This so-called judgement proof problem is also recognised in the technical annex, which correctly points at the risk that responsible parties may have shielded their assets from liability by delegating activities that cause environmental damage to smaller entities with few assets, which intern would be insolvent if found liable for damage\textsuperscript{486}.

This risk of an “orphaned” polluted site is obviously one reason why liability rules alone can not suffice as a deterrent. Regulation is needed in that respect as well as has been shown in chapter 2. In this chapter we will address the question whether insurance, as presented in chapter 5, could remedy this risk. In chapter 5 we have explained how liability insurance generally works and which conditions have to be met to make the environmental liability risk insurable. The question however arises whether the benefits of liability insurance as sketched out in chapter 5 are that large that they warrant the introduction of compulsory liability insurance\textsuperscript{487}.

As mentioned above in legal doctrine compulsory liability insurance is often advanced as a means to protect the innocent victim\textsuperscript{488}. The duty of an injurer to purchase liability insurance would be a good way to protect victims against the insolvency of the injurer\textsuperscript{489}. Economists on the other hand see different benefits of liability insurance. It is an instrument to increase the utility of a risk averse injurer. Whereas economists would therefore see liability insurance mainly as an instrument to serve the interests of the injurer, lawyers tend to rely more on the victim protection argument. Of course these views do not necessarily contradict each other. Sometimes they can go in the same direction in favour of a duty to introduce liability insurance. Let us now address the question under what circumstances the purchase of liability insurance should be made compulsory.

\textsuperscript{486} Technical Annex, 2.
\textsuperscript{487} If we refer to compulsory liability insurance here, this should be read as any scheme whereby the potentially responsible parties are forced to take out financial security. This may hence also take the form of a bank guarantee or a mandatory participation in a funding pool.
\textsuperscript{488} Compulsory environmental liability insurance is proposed by several scholars, including Cowell, J., \textit{i.e.} and Monti, A., \textit{i.e.}
\textsuperscript{489} Some even argue that mandatory financial responsibility could help implement the precautionary principle by ensuring availability of resources to meet the costs of any future environmental damage, so Richardson, B.J., \textit{o.c.}, \textit{Environmental Liability}, 2000, 61.
§ 2. Increasing the expected utility of responsible parties

A first way to look at this question could be to turn back to the basic utilitarian literature on the benefits of insurance\(^{490}\). If insurance is indeed beneficial since it removes risk from risk averse persons and thus increases their utility are not these benefits that large that they warrant the introduction of compulsory liability insurance? A problem with this argument is that the degree of risk aversion varies. A Rockefeller will probably not be averse towards the risk of losing US $1000, but a low income family father probably will be. The low income father will therefore probably have a demand for insurance against this risk of a loss of US $1000, whereas a Rockefeller probably would not. This straightforward example makes clear that the introduction of a duty to insure might be inefficient in as far as it forces some people to purchase liability insurance that would normally not have a demand for insurance. Insurance does not increase their expected utility. A generalised duty to insure might therefore create a social loss. Whether this is the case will of course depend upon the number of people that is actually harmed by the introduction of a duty to insure. This might indeed be outweighed by the fact that others will certainly have a benefit from insurance. This, however, does in itself not justify the need to introduce a duty to insure. These risk averse individuals might indeed have purchased insurance coverage anyway. This means that the simple fact that insurance increases utility can as such not justify the introduction of a duty to insure as long as we assume that all individuals are perfectly informed about the risk to which they are exposed and the availability of insurance.

This argument also rather paternalistically assumes that insurance is under all circumstances beneficial to potentially responsible parties. The argument neglects the fact that, as we have explained above, discussing the basic theory of liability insurance, the insured has to pay a price to have the risk removed from him. This price will unavoidably be a lot higher than the actuarially fair premium, consisting in the multiplier of the probability x damage (pxD). Depending upon the efficiency of the administrative working of the insurance undertaking, a high or low amount of loading costs will be added and depending upon the degree of concentration on the market, also a profit margin could be added. In addition taxes may increase the premium as well. Moreover, we have indicated that if there is uncertainty concerning the risk, the insurer might compensate this insurer’s ambiguity with a risk premium. In sum, the premium charged may well be a lot higher then the actuarily fair premium, this is the objective value of the risk. For some responsible parties this premium will still be attractive, but for others it may not. Moreover, some may chose a balanced approach of e.g. self insuring a basic expected damage and only taking insurance for the excess loss. Compulsory insurance generally neglects the fact that the demand for insurance may vary according to the individual risk situation (and financial possibility) of every responsible party. Other things being equal there is therefore no reason for regulatory intervention solely based on the fact that insurance may increase expect utility. A regulatory intervention would have the disadvantage that it is counter to the more differentiated demand of the responsible parties. However, this assumes that the responsible parties have a knowledge about their exposure to risk, the availability of insurance and make a well informed decision accordingly. If this assumption is not met, the question could again be raised whether insurance should be made compulsory.

§ 3. Information problems

Information problems might arise in case the potential injurer cannot make an accurate assessment of the risk he is exposed to and the benefits of the purchase of liability insurance. An underestimation of the risk would in that case lead to the wrongful decision of the injurer not to purchase liability insurance. The legislator could remedy this information problem by introducing a general duty to insure. This information problem is probably a valid argument to introduce a generalised duty to insure for motor vehicle owners. Maybe the average driver of a car underestimates the benefits of liability insurance. If there would be no information problem and the legislator would nevertheless introduce a duty to insure because this would be “in the best interest” of the insured, this would of course be mere paternalism.

However, if we apply this argument to the environmental case one should not too hastily judge that a regulatory intervention on the basis of information deficiency is mere paternalism. Indeed, the technical annex correctly points at the fact that a major weakness in every environmental liability insurance scheme is the risk estimation bias. The technical annex points at the fact that empirical evidence exists that most potentially responsible parties greatly underestimate the costs of the environmental damage they may cause, and the probability that they will be held liable for this damage. This would then lead potentially responsible parties to reserve too few resources to cover their potential liability491.

If these conditions are met and one can indeed assume that potentially responsible parties underestimate the cost of environmental damage, this information deficiency may be considered an argument in favour of compulsory insurance. But again, the policy argument based on information asymmetry relates merely to the fact that the potentially responsible party would underestimate the potential benefits of liability insurance. There may, however, be another argument why the (uninformed) decision of a potentially responsible party not to insure may lead to underdeterrence. This policy argument is precisely related to the insolvency risk, mentioned in the introduction.

§ 4. Insolvency

Another reason to introduce compulsory liability insurance is indeed the argument often used by lawyers, being the insolvency argument. The argument goes that the magnitude of the harm will often exceed the individual wealth of an injurer, whereby a problem of undercompensation of victims will arise. Lawyers would, hence, push forward compulsory insurance as an argument to guarantee an effective compensation to the victim. This – more distributional – argument obviously may play a role in the context of environmental liability insurance as well. If an injurer would be found judgement proof and hence e.g. a polluted site would be “orphaned” the costs would be borne by society.

491 See the Technical Annex, 4.
It is, however, also possible to make an economic argument that insolvency will lead to underdeterrence problems which might be remedied through liability insurance. Indeed, this so-called “judgement proof” problem has been extensively dealt with in the economic literature.\(^{492}\)

Insolvency may, however, pose a problem of underdeterrence. If the expected damage largely exceeds the injurer's assets the injurer will only have incentives to purchase liability insurance up to the amount of his own assets. He is indeed only exposed to the risk of losing his own assets in a liability suit. The judgement proof problem may therefore lead to underinsurance and thus to underdeterrence. Jost has rightly pointed at the fact that in these circumstances of insolvency, compulsory insurance might provide an optimal outcome.\(^{493}\) By introducing a duty to purchase insurance coverage for the amount of the expected loss better results will be obtained than with insolvency whereby the magnitude of the loss exceeds the injurer's assets. In the latter case the injurer will indeed only consider the risk as one where he could at most lose his own assets and will set his standard of care accordingly. When he is, under a duty to insure, exposed to full liability the insurer will obviously have incentives to control the behaviour of the insured. Via the traditional instruments for the control of moral hazard the insurer can make sure that the injurer will take the necessary care to avoid an accident with the real magnitude of the loss. Thus Jost and Skogh argue that compulsory insurance can, provided that the moral hazard problem can be cured adequately, provide better results than under the judgement proof problem. This is probably one of the explanations why for instance for traffic liability compulsory insurance was introduced. Uninsured and insolvent drivers who have little money at stake which they may lose compared to the possible magnitude of accidents they may cause, may have little incentives to avoid an accident. Insurers might better be able to control this risk and could force the injurer to take care under the threat of shutting him out of the insurance. Thus the insurer becomes under a duty to insure the licensor of the activity.

Indeed, this economic argument shows that insolvency may cause potentially responsible parties to externalise harm: they may be engaged in activities which may cause harm which can largely exceed their assets. Without financial provisions these costs would be thrown on society and would hence be externalised instead of internalised. Such an internalisation can be reached if the insurer is able to control the behaviour of the insured. As we have shown above, when discussing how risk differentiation can be applied to environmental liability insurance, the insurer could set appropriate policy conditions and an adequate premium. This shows that if the moral hazard problem can be cured adequately insurance even leads to a higher deterrence than a situation without liability insurance and insolvency.

Again, this issue has also been rightly identified in the technical annex, where it is mentioned that insurance providers can require as a condition of coverage that firms invest in a prescribed level of


preventive measures. If such a type of adequate risk differentiation is required by insurance providers the technical annex correctly argues that the availability of insurance may in fact lead to greater prevention than would occur if insurance were not available. Hence, insurance will lead to a situation where the potentially responsible parties are forced to internalise the costs of their liabilities since insurance premiums are priced in a way that they reflect the liability risk which the insured party poses.

This potential benefit of insurance in case of insolvency is also recognized by the white paper. It states that insurance availability reduces the risks to which companies are exposed, thus declining their incentives to circumvent liability. In addition the insurer will require prevention and an effective risk management system.

Of course, this argument in favour of compulsory insurance relies on a few assumptions and conditions, which will be discussed in further detail below. One is obviously that the argument is only valid if moral hazard can be controlled adequately and insurers also have appropriate incentives to do so. Another condition is that the insurance markets should be competitive. But one can notice that indeed both from a legal and from an economic point of view the potential insolvency of the injurer is a problem since it can both lead to underdeterrence and to undercompensation. Compulsory insurance may remedy both problems since it may provide adequate victim compensation and – if certain conditions are met – remedy the risk of underdeterrence.

An issue which merits attention is that one should raise the question whether compulsory liability insurance is the best instrument to remedy the insolvency problem. Indeed, several alternatives may exist that might be able to cure the insolvency problem at lower costs. A first obvious alternatives would be to turn to (compulsory?) first party insurance instead of third party liability insurance; another alternative worth examining is the instalment of a compensation fund. These alternatives will be examined in chapter 9.

In sum, one could argue that compulsory liability insurance might theoretically be an adequate means to remedy the insolvency problem. However, one should equally examine whether other compensation mechanisms are available that might be able to cure that problem at lower costs.

§ 5. Potential dangers of compulsory insurance

A. Moral hazard

After having discussed these three basic criteria for compulsory liability insurance two other points cannot remain to be undiscussed either. Firstly, one should remember that with liability insurance there will always be a moral hazard problem. This means that even if a legislator decides to introduce compulsory liability insurance he should not restrain the possibilities of an insurer to control the moral

494 See the Technical Annex, 4-5.
495 See white paper, 23 and particularly footnote 22.
hazard problem. Otherwise compulsory liability insurance will create more problems than it solves. Nevertheless, there seem to be problems since the legislator often limits the possibilities to expose the insured to risk. Indeed, with compulsory liability insurance the duty to insure is often equal to the total amount of liability and deductibles are not allowed. Hence, the total risk is shifted to the insurer which means that the only instrument available for the insurer to cure the moral hazard problem is a monitoring of the insured. If this would seem difficult or very costly the introduction of compulsory liability insurance might indeed create problems. Shavell even goes as far as to state that if the moral hazard problem cannot be controlled the only regulatory intervention with respect to insurance should be a prohibition of liability insurance. In any case an introduction of compulsory liability insurance does seem problematic if the moral hazard problem cannot be controlled.

B. CONCENTRATION ON INSURANCE MARKETS

A second, related, issue is that until now we assumed that insurance markets are perfectly competitive and that thus premiums and policy conditions will be nicely tailored to the individual needs and the behaviour of the insured in order to control moral hazard optimally. In practice, however, many restrictions on insurance markets exist. Important differences remain in that respect between the various European Union member states. Insurance markets seem to be fairly competitive for instance in the United Kingdom and the Netherlands, but far more concentrated in for instance Germany and Belgium. In other research the negative consequences of a high concentration on insurance markets with respect to premiums, but also for the incentives of the insurer to control the moral hazard problem have been addressed. Indeed, if monopolistic premiums can be set an insurer will have less incentives to align his premiums to the individual behaviour of the insured and thus there is less control of the moral hazard problem.

From a policy viewpoint it also seems highly problematic to make liability insurance compulsory on concentrated insurance markets. Indeed, in that case the inefficiencies on the insurance market would be reinforced by making the purchase of insurance compulsory. Also here the interest group theory of government can of course explain why insurers might want to lobby in favour of compulsory liability insurance. If they already can determine the supply-side of the market through monopolistic premium setting all such insurers should strive for is that every possible injurer should be forced to purchase insurance coverage. Through this regulatory intervention a certain demand is then guaranteed as well.

Nevertheless in practice insurers are never enthusiastic concerning compulsory insurance, at least for the environmental risk. Cousy claims that this is related to the fact that as a matter of law under compulsory insurance the insurer can often not invoke defenses against the third party beneficiary of insurance. Moreover there would be problems related to the implementation and actual carrying out of the obligation to insure.

496 Shavell, S., l.c., 1986, 43-58.
498 See Faure, M. and Van den Bergh, R., o.c., Kyklos.
499 Cousy, H., l.c., 241 and Rogge, J., o.c., 39.
§ 6. Further warnings

A. Dependence upon insurance market

The refinements and potential dangers just presented show that although theoretically a compulsory liability insurance mechanism may be desirable, also for environmental liability more particularly to cure information problems and the underdeterrence risk as a result of insolvency, in practice one should be cautious with the advise to introduce compulsory liability insurance for environmental damage. There are some more reasons to formulate such a cautious warning. One is that the legislator should be aware of the fact that as soon as it introduces compulsory liability insurance, it becomes dependant upon insurers to fulfil this duty to insure. The practical possibilities of an effective enforcement of a duty to insure will obviously to a large extent depend upon the willingness to insure on that particular market. Indeed, here one should remember what has been mentioned in the introduction to chapter 5, being that we can only discuss insurability from a theoretical perspective. It will ultimately be the insurance market who will decide whether they are willing to cover a certain risk. This may in the end lead to the undesirable situation that the legislator would introduce a duty to take out compulsory insurance, but that the market would refuse to provide such coverage. Introducing a duty to insure leads to a high reliance of the policy maker upon the insurance market. This seems to have lead to problems with the German Environmental Liability Act of 1990 (Umwelthaftungsgesetz) which requires the owner of an installation that can cause significant damage to take out liability insurance or to have sufficient financial guarantees500.

One should indeed realise that if one makes the availability of insurance coverage a prerequisite for the operation of an enterprise, insurance undertakings in fact become the licensor of the industry, which may be questionable from a policy point of view501. In fact the insurer becomes the ‘environmental policeman’502. This risk is also recognised in the technical annex where it is stated that if insurance is an absolute condition for operation, the lack of insurance may have significant economic impacts if firms can not operate503.

This may, moreover, cause practical problems. Imagine that an insurer has stipulated in the policy conditions that coverage will be excluded in case of non-compliance of the insured written mandatory government regulation. This may well be, as we have suggested above, an effective instrument to control moral hazard. If, however, an accident happens under compulsory insurance the insured will not be able to call on this exclusion ground vis à vis the third party beneficiary of the liability insurance policy. The fact that defenses in the insurance contract are not opposable to third parties is a well known problem under compulsory insurance. The insurer will thus have to compensate the victim and may have a (statutory or contractual) legal right of recourse against the insured, provided that the latter is solvent. This is, as we explained, one of the reasons why insurers are reluctant against compulsory insurances.

501 This point is also made in the Green Paper, 13. See also Rogge, J. o.c., 40.
502 So Monti, A., i.c.
503 Technical Annex, 3.
B. NECESSITY OF CO-OPERATION WITH INSURERS

One could obviously argue that these problems can be remedied if a good co-operation takes place between the policy maker and the insurance world, whereby the insurance world would inform the policy maker on the insurability of environmental damage. However, practice (again with the nuclear liability) has shown that information provided by insurers concerning the insurability of a certain risk or with respect to the available amounts of coverage may not always be reliable. We may refer her to the information provided by the Belgian nuclear pool Syban that only 4 billion Belgian Francs was available for third party liability coverage for nuclear accidents, whereby Syban forgot to mention that an amount of 40 billion Belgian Francs was available to cover the first party damage to the nuclear installation itself\[^{504}\].

There seems to be a trade off in that respect: introducing a duty to insure without any co-operation with the insurance world (which may have been the case in Germany) may lead to the catastrophic result that the government forces industry to take out a certain insurance coverage, whereby the market would not be willing to respond with the provision of such a coverage. However, a close co-operation between the insurers (usually represented through one insurance association) and the government only increases the risk of high concentration on insurance markets, mentioned above. One effect will often be that as soon as compulsory liability insurance is introduced, heavy pressure will also be exercised by industry to obtain a financial cap on liability\[^{505}\]. As we will argue in chapter 7 below, there is, however, no reason to limit the scope of liability for reasons of uninsurability. Nevertheless one will often find a combination of compulsory insurance and (according to us) inefficient financial caps.

C. ENVIRONMENTAL LIABILITY INSURANCE “GROWN UP”?  

A further problem is that the policy maker should equally realise that today liability insurance coverage for environmental harm is still a relatively young and inexperienced branch. Also the white paper notices that the insurance availability for environmental risks is likely to develop gradually\[^{506}\]. The empirical studies, exercised in parallel to this study, will precisely indicate in what way competitive markets are able to provide a differentiated offer of various liability insurance policies for damage to bio-diversity. But if these studies would show that such a differentiated offer of insurance policies is limited, one could again question whether it makes sense to introduce a mandatory insurance if such coverage could only be found to a limited extent (or without sufficient competition) on private insurance markets. Of course, the limited availability of insurance cover for environmental liability today is to a large extent caused by the adverse selection problem: since too little companies had a demand for insurance an optimal risk spreading (via the law of large number) is not possible\[^{507}\]. Moreover, only the bad risks will have a demand for insurance which precisely causes the adverse selection problem. Hence, one could naively argue that this can be cured by forcing all polluters, good


\[^{506}\] White paper, 144.

\[^{507}\] See Rogge, J., *o.c.*, 38.
and bad risks to take insurance coverage. However, it seems strange to cure the limited availability of insurance for environmental risks which may largely be due to its – difficult – to – insure – nature by forcing all polluters to purchase coverage.

In this respect we can refer to the discussion above indicating that a risk differentiation in environmental liability insurance still stands at the beginning of its possibilities and that far more possibilities exist to relate policy and premium conditions in an appropriate way to the ecological reliability of firms. Hence, one can really question whether today insurance firms are yet able to differentiate environmental liability risks in such a way that one can argue that moral hazard can be controlled optimally on competitive insurance markets. The cure to these problems is obviously not to make a poorly functioning insurance system compulsory.

D. DUTY TO ACCEPT?

Obviously one could naively react with the suggestion that if insurance markets refuse to provide appropriate liability coverage, the policy maker should not only introduce a duty for industry to take out mandatory liability coverage, but also a duty for insurance companies to accept. Such a duty to accept would, so it could be argued, at the same time remedy the risk that the insurance undertakings would de facto become the licensors of industry. However, introducing a duty to accept certain industries as insured seems like an extremely dangerous path to go, given the importance of an effective control of moral hazard. One important instrument of insurers to control moral hazard is precisely to have the possibility to monitor ex ante the risk which a particular insured may pose. This could ultimately lead an insurance undertaking to the decision that it considers the liability risk a particular industry poses as too high. A logic consequence of the wish to have an optimal control of moral hazard should be the right of insurance undertakings to freely decide which potentially responsible parties to insure and which not. A duty to accept certain risks seems therefore to collide with the basic principles which have to be respected to guarantee an effective functioning of liability insurance markets.

E. LEGAL PRACTICE

If one takes a look at legal practice, one can notice that so far the European legislators seem to have been pretty cautious with the introduction of compulsory liability insurance. As far as the countries are concerned discussed in this study we already referred to the German Environmental Liability Law of 1990. The functioning of compulsory insurance under that scheme will be further addressed in a parallel study executed by the Munch Re.

A compulsory insurance scheme seems to exist in Sweden. Sweden adopted the Ordinance on Environmental Damage Insurance which came into force on the 1st of July 1989 and that incorporated

509 For an overview see Richardson, B.J., o.c., Environmental Liability, 2000, 61-62.
within the 1969 Environmental Protection Act insurance provisions. More particularly, activities that are qualified as hazardous and that require a permit or licence to operate in virtue of the 1969 Act do have the obligation to take on insurance coverage for environmental damages and risks.

The objective is to guarantee compensation of victims and environmental restoration where liability rules as provided in the 1986 Environmental Damage Act are lacking such as in case of the polluter’s insolvency. Therefore, within this context, compensation will be provided to victims on the basis of the insurance coverage for personal and/or property injury. However, financial limits apply as in the case of personal injury where compensation is limited to 5 millions Swedish Crown for each victim and in case of property injury with a ceiling not exceeding 50 millions Swedish Crown. At last, there is a total annual limit amounting to 200 millions Swedish Crown regarding personal and/or property injury. It is important to note, however, within the context of the present study, that although this compulsory insurance scheme emerged within the framework of the Environmental Protection Act, the insurance effectively deals only with property damage and personal injury, not, however, with damage to natural resources or bio diversity.

Therefore, such an insurance mechanism does apply solely on a complementary basis in the sense that the polluter will at first bear the costs of his activity and liability and will be then backed up by his insurance policy once his financial capacities will be exhausted. Thus, such an insurance scheme does not aim primarily at protecting the activity concerned by insuring his risks but rather at guaranteeing victims’ compensation and indirectly at protecting the environment. On the other hand, relevant financial ceilings aim at making sure that insurers will not have to confront enormous refund costs, which will lead them to bankruptcy together with the activities concerned.

Another point of interest relates to the fact that damage caused by an act that took place before the entry into force of the Ordinance on Environmental Damage Insurance will not be covered by this insurance regime. Such damage will therefore be financed out of public money that may be justified by some authors on the ground that it would seem unfair to have the industry and insurers pay for acts of the past.

Whereas those compulsory insurance provisions appear simple and efficient, Swedish authorities seek nevertheless to amend them. One of the reasons refers to the increasing number of bankruptcies of small and medium size companies, including those ones that deal with the treatment and storage of toxic chemical products and wastes. Often, the relevant financial limits imposed by the law do not suffice nor the assets and monetary capacities of the activities concerned to ensure an appropriate compensation and environmental restoration. As a consequence, the Swedish government thinks of setting up new compensation funds so as to guarantee the restoration of the environment and to prevent very serious impacts of natural resources. Therefore, it would be a matter of including damage caused to natural resources within the insurance coverage which would on the other hand require coverage limits that would need to be adjusted vis-à-vis the nature itself of this particular type of damage.

Moreover, the Swedish government is also thinking of establishing a compulsory insurance regime that will be imposed on any potentially hazardous activity as opposed to be imposed solely on those activities that require a licence or permit in virtue of the 1969 Environmental Protection Act. That would broaden significantly the scope of application of the compulsory insurance scheme and would call for criteria of dangerousness. Such criteria could for instance embrace a whole industrial sector as the one of chemical or waste products etc.

In any case, the basic principle will remain the same in the sense that insurance will be used only on a complementary basis in the sense that it is first up to the polluter to bear the costs of his pollution. He will be backed up by the insurance policy only when he can no longer provide compensation. He will be then backed up by his insurance policy but within the legislatively prescribed financial limits.

The Swedish insurance regime provides an illustrative example of what could be a “basic” compulsory insurance scheme. It is to be qualified as “basic” since it does not yet cover environmental clean up and restoration costs nor retroactive liability. Nevertheless, it aims at creating incentives for companies to adopt more environmentally-friendly industrial behaviours as insurance plays a role only on a complementary basis.

One should notice that the mentioned dangers of compulsory insurance schemes apparently do not arise in this Swedish model. Several reasons can be indicated for this. Some argue that this Swedish compulsory insurance scheme is not based upon liability insurance, but upon direct insurance. As we will argue below, a direct insurance scheme for environmental harm may be better insurable than liability insurance. The insurance provides direct coverage to the benefit of victims and only intervenes when victims cannot use liability law, e.g. because of insolvency of the injurer. The Swedish system, therefore, has more the character of a guarantee fund to the benefit of victims, financed by potential polluters via insurance.

If we, to conclude, look at Europe, and more particularly at the European Product Liability directive, we can note that this directive did not contain a duty to insure or provide financial security either. However, one issue which the Commission explicitly wishes to re-examine, so it is announced in the green paper on liability for defective products, is the question whether there would be a need to require producers to have insurance cover for risks linked to production.

§ 7. Policy recommendation

From the above it follows that it is rather difficult to provide a final judgement with respect to the desirability of compulsory insurance scheme for the type of liability covered by the white paper. This is an issue which can not be decided without having a careful look at the outcome of the empirical studies. Indeed, theoretically there are arguments in favour of introducing a compulsory insurance

512 See chapter 9 § 3.
scheme, based on possible information deficiencies and on the risk of underdeterrence as a result of insolvency. This problem, however, especially arises under strict liability. However, already theoretically one can point at dangers as well, more particularly the fact that insurers may become the licensors of the activities which may cause the environmental harm. This should not be remedied through a duty to accept, since this may cause uncurable problems of moral hazard.

All these considerations are therefore arguments for a policy maker to be extremely cautious with the introduction of a regulatory duty to purchase liability insurance coverage. Apparently the white paper has taken these warnings very seriously since it states:

"Moreover, the EC Regime should not impose an obligation to have financial security, in order to allow the necessary flexibility as long as experience with the new regime still has to be gathered. The provision of financial security by the insurance and banking sectors for the risks resulting from the regime should take place on a voluntary basis."\(^{513}\)

But the Technical Annex has apparently reopened this debate since it clearly states that the question whether there should be a duty to provide financial security should be subject of this study. One should, moreover, remember that introducing strict liability without guarantees against insolvency may dilute the incentives for prevention. If the policy maker should therefore wish to wait with the introduction of a duty to provide financial security it would be logic to postpone the introduction of strict liability as well.

Here again maybe the example of the Flemish Interuniversity Commission can be useful. The draft decree on environmental policy chose, more particularly for the reasons mentioned above, not to introduce a compulsory liability insurance, but provided that an obligation can be introduced for the licensee of a classified activity to provide a deposit in order to guarantee that specific obligations shall be complied with. We will discuss below how these deposits and guarantees could work according to this Flemish proposal.

It shows, however, one probably important conclusion from this discussion on compulsory liability insurance. Although it may be important from a theoretical perspective to introduce a duty for the permit holder to secure appropriate means, it seems more appropriate to look for a flexible system whereby the licensing administrative authorities could judge in individual cases whether the obligation to provide financial security has been met. Such a system, whereby it is left to the administrative authorities to decide the form and amount of the financial obligation seems more flexible and entails less of the risks and dangers of a generalised system of compulsory liability insurance.

But to reiterate clearly: the principle that strict liability should be covered through some form of financial assurance (not necessarily insurance) should be laid down in legislation. The authorities would then only have to fix the amount, taking into account the expected damage (this will allow for an individualization and differentiation), and they would have to check whether the type of financial

\(^{513}\) White paper, 24.
assurance offered by the potentially responsible party will be adequate to meet his financial obligations. As proposed by the Flemish Interuniversity Commission, the authority to fix the amount and to control the offer of financial assurance could be the one who grants the licence at the start of the operation of the activity. In terms of the IPPC Directive this would be the competent authority granting the permit.\footnote{514 See Council Directive 96/61/EC of 24 September 1996 concerning Integrated Pollution Prevention and Control, \textit{Official Journal}, 10 October 1996, L 257/26.}
Chapter 7  Financial limits on liability?

§ 1. Introduction

The risk that the amount of the damage may largely outweigh the individual wealth of an injurer or potentially even of his liability insurer has caused some legal doctrine (and followed by some legislators) to argue that in case the expected amount of the damage would be extremely high, a financial limit of the compensation due to the victim should be introduced. These ceilings which are put on the compensation due to a victim are known in the literature as limitations of compensation or “financial caps”.

Often they can be found jointly with strict liability. Apparently the (implicit) underlying argument is that the strict liability forcing a potential injurer to pay compensation to the victim even if he is not at fault can only be justified if this is compensated by a financial limit on the amount of compensation. This is also one of the arguments advanced in legal literature in favour of financial caps: in combination with strict liability the victim would still be better off with caps. He would be relieved of the heavy burden of proving a fault of his injurer and would thus be certain of receiving some form of compensation. This certainty would then outweigh the fact that the amount the victim receives might be less than the total amount of the loss. Caps can often be found in cases where the expected losses may be large; it is apparently judged that without a cap an injurer would anyway be unable to compensate the victim. A combination of strict liability and financial caps can precisely be found in many environmental liability regimes under international conventions. In this respect we can for instance point at the conventions on nuclear liability and on liability for marine oil pollution. But the financial caps are certainly not merely "modern" reactions against "crushing" strict liabilities. Already in ancient times caps could be found in maritime law in cases of loss of the vessel or cargo.

The issue of financial caps is obviously important as well to judge the assurability of the environmental liability regime, as proposed in the white paper. The white paper itself mentions that capping liability for natural resource damages is likely to improve the chances of early development of the insurance market in this field. But it also holds that capping would erode the “polluter pays” principle. Also, the technical annex asks the question whether capping individual liability can be considered as an instrument to increase the predictability of the risk for insurance providers. At the same time, also, the technical annex correctly argues that caps are perceived to interfere with the polluter pays principle.

In this chapter we shall take a closer look at the phenomenon of financial caps, using the theoretical framework which has been provided in chapter 2. We shall address the question whether financial caps can be judged as necessary, in the absence of liability insurance, in case the potential magnitude of the harm would outweigh the individual wealth of a potentially responsible party. Of course, also the

515 White paper, p. 23.
516 Technical Annex, 3.
argument will be examined whether financial caps are to be considered a necessary instrument to increase the insurability of the liability regime as proposed in the white paper.

The effects of a limitation on liability have been addressed in relation to corporate liability by Hausmann/Kraakman, 1991\textsuperscript{517} and with respect to nuclear liability by Faure/Vandenbergh (1990) and Trebilcock/Winter (1997)\textsuperscript{518}. Boyd/Ingberman (1994) analyzed whether caps could remedy the underdeterrence under strict liability, caused by insolvency\textsuperscript{519}.

§ 2. Financial caps in the legal debate

Limitations on the amount to be paid by the injurer can be found in various legal systems and are defended on various grounds. Some legal systems explicitly give the power to the judge to limit the amount due to the victim on the basis of a hardship clause. In circumstances where it is considered to be unjust to hold the injurer to pay full compensation to the victim the judge can in an individual case decide to lower the amount due by the tortfeasor. This hardship clause\textsuperscript{520} only allows the judge in individual cases to reduce the compensation due to the victim for various reasons. This hardship rule can be applied in case a relatively poor injurer would have caused harm to a relatively wealthy victim; in that particular case the power of the judge to lower the amount of compensation is thus an instrument of redistribution. Usually, this power of the judge is, however, limited to certain specific cases prescribed by statute and controlled via case law\textsuperscript{521}.

Far more important are the cases where the amount of compensation due to the victim is limited in a more general way by statute and thus not left at the discretion of the judge in an individual case. These statutory limitations can also be found in cases which relate to major industrial accidents, such as nuclear accidents or marine oil pollution. The reasons given by the legislators (or drafters of the conventions) and some legal doctrine to justify these financial caps have already been mentioned in the introduction. It is mentioned that the magnitude of an accident may be that high that it would be unjust to hold the injurer to be fully liable for these high amounts. Sometimes financial caps are also defended as a compensation for the introduction of strict liability. It is indeed often mentioned in legal doctrine that whenever strict liability is introduced, this cannot be unlimited. Finally it is sometimes also argued that when the amount of a major accident will be that high that it will in any event exceed the injurers individual wealth the injurer will anyway be judgement proof. Hence, unlimited liability

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exceeding the injurers wealth would make no sense. This is then combined with the argument that the victim would be much better off with a regime that guarantees the solvency of the injurer, such as compulsory insurance. But in order to make the risk insurable the amount of compensation should then be limited.

Nevertheless, also in legal doctrine arguments are advanced against financial caps. Legal authors of course argue that a limitation would be contrary to the principle of full compensation of victims; also the economic argument is advanced that a limitation - specifically in case of professional liability - would lead to a reduction of the quality of the services. Finally it is also argued that granting a limitation to a specific group of professionals would violate the equality principle since there are no specific reasons to protect one group by financial caps whereas others would still be exposed to full liability. Therefore e.g. the Green Paper on environmental liability mentioned that limits on liability could reduce the incentives for prevention and transfer the burden of restoration costs (for environmental harm) above those limits to the taxpayer, thus interfering with the "polluter pays" principle.

§ 3. Financial caps in tort liability: the risk neutral case

Let us address the question how financial caps on the amount of compensation influence the deterrence of accidents which was considered the central goal of liability rules in the theoretical framework presented in chapter 2.

A. FINANCIAL CAPS AND THE DETERRENCE OF ACCIDENTS

In the literature it has been indicated that there may be good reasons to favour a strict liability rule for major industrial accidents, the main reason being that only a strict liability rule would lead to a full internalization of those highly risky activities. This strict liability rule is especially put forward in so called unilateral accident situation, this is where only one party influences the accident risk. Only with strict liability the potential injurer would also have an incentive to adopt an optimal activity level. This


525 See Faure, M. and Hartlief, T., "Gevolgen van de uitbreidende werkgeversaansprakelijkheid: beleidsconsequenties voor verzekeraren?", in Faure, M.G. and Hartlief, T. (eds.), Verzekering en de Groeiende Aansprakelijkheidslast, een juridisch, gezondheidskundig en economisch onderzoek naar ontwikkelingen met betrekking tot de Aansprakelijkheidslast en de consequenties voor verzekeraren naar aanleiding van de werkgeversaansprakelijkheid voor bedrijfsongevallen en beroepsziekten, Deventer, Kluwer, 1995, 313. The fact that the legislator nevertheless often introduces financial caps for one specific activity can be explained as a result of effective lobbying by the specific interest group representing that activity. We will discuss this in section 8.

526 Green paper, 10. It is also argued that if limits would be set at all, potential polluters might be required to contribute to a compensation fund to cover the portion of costs over the limits paid by liable parties.

full internalization is obviously only possible if the injurer is effectively exposed to the full costs of the activity he engages in and is therefore in principle held to provide full compensation to a victim. An obvious disadvantage of a system of financial caps is that this will seriously impair the victim’s rights to full compensation. But if the cap is indeed set at a much lower amount than the expected damage, this would not only violate the victim’s right on compensation, but the above mentioned full internalization of the externality would not take place either. From an economic point of view a limitation of compensation therefore poses a serious problem since there will be no internalization of the risky activity. Indeed, 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, he will spend on care to avoid that an accident will be caused with a magnitude equal to the limited amount and he will not spend the care necessary to reduce the total accident costs. Obviously, the amount of care spent by the potential injurer will be lower and a problem of underdeterrence arises. The amount of optimal care, reflected in the optimal standard, being the care necessary to reduce the total accident costs efficiently, will be higher than the amount the potential injurer will spend to avoid an accident equal to the statutory limited amount. Thus, as a result of the cap too little care is taken.

The conclusion is, however, different in case of bilateral accidents, where also the victim’s behaviour may affect the accident risk. The standard argument against providing full compensation to victims (also of non pecuniary losses) in case of bilateral accidents is that victims can take precautionary measures which are not always observable for judges and which can therefore not be fully accounted for in contributory or comparative negligence defenses. A limit on the compensation in case of bilateral accidents may therefore be useful in cases where victims should be given additional incentives to reduce the accident risk. Whether caps are efficient in specific bilateral accident cases will depend on the circumstances. The question arises - inter alia - whether exposing the victim to risk is indeed necessary to provide these additional incentives or whether the victim’s incentives can be optimally controlled via the contributory negligence defense. Also the amount of the cap remains important. If the cap were set too low this would give incentives to the victim but it could equally lead to serious underdeterrence of the injurer.

Several scholars have applied these insights to the domain of nuclear liability where tight limits on liability are in place both in international conventions and in national legislation. It has been argued that these caps inefficiently damper the operators incentives to take precautions.

529 The reason for the underdeterrence is obviously the same as for the underdeterrence which results from the insolvency of the injurer (see above chapter 2 § 4 B). Underdeterrence arises because the injurer is not exposed to full liability, either as a result of his insolvency or as a result of a cap.
B. Subsidization Effect

Another effect of protecting a certain industry through a statutory limitation is that this constitutes an indirect subsidization 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 would not be the case the nuclear energy would remain too cheap, since the energy price would not reflect the true costs of the nuclear risk. This corresponds with the traditional outcome that not exposing the injurer to the full costs of his activity will lead to a too high activity level. Of course this problem of 'over-consumption of nuclear power' would be reduced if other energy producers would enjoy 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 this benefit of the limitation of liability.

The magnitude of this subsidization effect has been estimated by Heyes/Liston-Heyes and is considered to be relative low, meaning that the price of e.g. nuclear power is not substantially lower as a result of the subsidy. However, the flipside of this is that if the financial cap were abolished (which is actually the case in some countries) the exposure to liability would apparently not endanger the entire industry.

In this respect we can once more point at the Technical Annex which points at related disadvantage of caps: if caps are set lower than the actual damage, the latter will have to be covered by public funds. This violates the principle of liability and the polluter pays principle since it are not the responsible parties that have provided these funds.

§ 4. Financial caps under risk aversion without liability insurance

We now leave the assumption of the traditional models of accident law that both victim and injurer are risk neutral and we assume risk aversion of the injurer in a state of the world whereby no liability insurance would be available.

We showed above that when an injurer is risk neutral the injurer has to pay damages which are equal to the amount of the victim’s loss. This will (in the absence of a judgement proof problem) lead to optimal incentives for optimal care. This is the case under both a negligence and a strict liability rule. When an injurer is risk averse full compensation under strict liability is no longer optimal, given risk

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534 A similar argument has been made in Germany. See Wagner, G., o.c., in *Umwelthaftung, Riskosteuerung und Versicherung*, 101-102.
536 Technical Annex, 2.
aversion. This might lead an injurer to take inefficiently high care or to avoid certain risky activities, even though they are socially beneficial: too much care and a too low activity level will follow.\textsuperscript{537}

Here a problem arises because the legal system cannot reach both the goal of optimal deterrence and of curing the problem of risk aversion. From the perspective of optimal deterrence the amount of damages to be paid by the injurer should be equal to the victim’s loss; from the perspective of avoiding risk aversion it might not be optimal to expose a risk averse injurer to full liability.\textsuperscript{538} If one addresses this problem merely from the perspective of optimal risk spreading one could even argue that the optimal amount of compensation to be paid by the injurer would be zero in order to avoid his exposure to risk. The obvious disadvantage of this solution would be that the injurer will follow a level of care which is equal to zero and therefore sub-optimal. A first best solution can therefore not be achieved in this situation of risk aversion by the injurer and no availability of insurance. In that case a second best solution might consist in a financial cap in the sense that the amount to be paid by the injurer to the victim would be fixed at a lower amount than the real loss of the victim.\textsuperscript{539} Thus both injurer and victim would carry a part of the risk and the injurer would still have incentives to take efficient care, although this solution is second best.

In sum, there may only be an economic argument in favour of financial caps in case of third-party liability when injurers are risk averse and no liability insurance is available.\textsuperscript{540}

Nowadays, with the availability of insurance, this hypothesis seems at first sight to have little practical relevance. However, this obviously depends upon the availability of full insurance coverage. Even if insurance coverage is available, usually the insurer does not provide full coverage so that the injurer is still exposed to risk. However, risk aversion of the injurer is not necessarily an argument for a cap. Indeed, one should stress that in many cases the injurer might not be more risk averse than the victim. In addition it should be reminded that the solution of a financial cap is at best "second best" since the negative influence on the incentives to take care still remain.\textsuperscript{541} We shall now turn to the situation where liability insurance is available and ask whether financial caps can play a role to increase insurability.

\textsuperscript{537} This has been demonstrated with a numerical example by Shavell, S., \textit{Economic Analysis of Accident Law}, Cambridge, Harvard University Press, 1987, 209.

\textsuperscript{538} See also Faure, M. and Van den Bergh, R., \textit{Objectieve aansprakelijkheid, verplichte verzekering en veiligheidsregulering}, 130-131.

\textsuperscript{539} This has been suggested by Shavell, S., \textit{Economic Analysis of Accident Law}, 210.

\textsuperscript{540} This argument in favour of caps in specific circumstances is also made by Boyd and Inberman, o.c., \textit{Journal of Legal Studies}, 1994, 895-910. They however, apply this specifically to the case where an injurer would be confronted with a set of possible losses rather than with one single loss. Moreover, their analysis does not include the effects on insurance.

\textsuperscript{541} Although risk aversion may also lead to higher care, as Shavell indicated.
§ 5. Financial caps to increase insurability?

A. Capacity as insurability problem

If we now turn to the situation where injurers are risk averse but liability insurance is available the question should be asked whether statutory caps on liability are a necessary tool to guarantee the insurability of risks. This argument is often advanced in the context of compulsory insurance. Often the legislator introduced compulsory insurance (as a result of international conventions) and consequently argued that the amount of compensation in tort liability should be limited to make the particular risk insurable.

Generally one can argue that within liability insurance it is usually not the amount of the expected damage that causes uninsurability of risks, but more often the unpredictability of certain risks. The insurability question is indeed analyzed by looking both at the probability and the magnitude of the risk. The amount is not necessarily the main problem since competitive insurance markets have worked out all kinds of devices to cope with large risks as well. Reinsurance, co-insurance, or pooling of risks are well-known phenomena that allow insurers to provide large amounts of insurance coverage. The high magnitude of the risk itself therefore does not make certain industrial accidents uninsurable per se. Moreover, as we shall discuss below, by adjusting the policy conditions the insurer can limit the amount for which he is willing to provide coverage.

Usually the problem of insurability of major industrial accidents refers to the "hard to predict" character of those risks which may make insurers both ambiguous and averse towards these risks. They might respond to insurer ambiguity by requiring an additional risk premium. The insured, however, may not be willing to pay the additional risk premium if they do not recognize the ambiguity an insurer is confronted with.

B. Limitation of the duty to insure

More principally, one can also argue that even in cases where there is a limited availability of insurance coverage (which is already hard to judge for the legislator, if possible at all) this should not necessarily lead to a limitation of the liability of the injurer. If it appears indeed that the possibilities to obtain liability insurance coverage are limited to a certain amount there is no reason to limit the liability itself to that same amount. A clear alternative would be to introduce a duty to insure up to the available amount of insurance coverage, but to keep the liability of the injurer unlimited. This will on the one hand have the advantage that the duty to insure is limited to realistic amounts, whereas on the


543 See chapter 5 § 3.


545 These problems have been discussed extensively in Faure, M., and Fenn, P., o.c.
other hand the incentives for care-taking by the injurer remain at least partially into existence because the injurer is still exposed to risk in case the magnitude of the harm would be higher than the insured amount.

In sum, from an economic point of view there are, in unilateral accident situations, very few convincing reasons to limit the amount of compensation due to the victim. If insurability problems exist they can be solved by limiting the duty to insure. Recent examples have also shown that with respect to the nuclear liability conventions some countries have introduced a duty to insure up to a limited amount, but have left the liability of the licensee of the nuclear power plant itself unlimited. This has been done for instance in Austria546, Germany, Japan, Switzerland and Sweden547. The advantage of this approach is that in those cases where injurers have assets at stake that outweigh the limited amount for which they had to purchase insurance coverage, they will still have incentives to further reduce the accident risk. A generalized limit on liability does not take into account the differing financial possibilities of injurers and their insurers.

C. CONTRACTUAL LIMITATIONS

Although there are, in sum, very few arguments in favour of a generalized statutory limitation of the liability, this does not mean that there may be no reasons for a contractual limitation in insurance policies. In many insurance policies these limitations already exist since an insurer will hardly ever provide unlimited coverage for the liability risk.

Thus an insurer could consider to lower the amount of liability coverage generally. This is, by the way what is done in most environmental liability policies in practice: almost no policy will provide coverage to a potential polluter without a financial limit.

D. UNLIMITED LIABILITY TO CONTROL MORAL HAZARD

There is, finally, one general argument related to insurance which can be put forward against financial caps introduced in legislation. Statutory limitations could be contrary to the insurer’s interests, since it eliminates one way of reducing the moral hazard problem, which is to expose the insured party to risk for the uninsured top slice of liability548. It should apparently be in the insurer’s interest to have a system of unlimited liability, where a partial exposure to risk may be used by the insurer as a device to control moral hazard and where on the other hand the insurer may put contractual limitations on the amount of coverage (in the absence of a duty to insure up to a certain amount) depending upon the demand for insurance of the particular injurer and the willingness to provide coverage of the insurer. Thus contractual limitations seem a better device which allow for an optimal differentiation of risk, thus providing optimal control of moral hazard.

547 See Trebilcock, M. and Winter, R.A., i.e., 221.
§ 6. Policy considerations

So far we have argued that financial caps introduced in legislation might cause efficiency problems since they dilute the deterrent effect of tort rules, especially in those unilateral accident cases where the expected amount of the loss exceeds the limited amount of the cap. Caps would only make sense in a bilateral setting if one would argue that the victim’s care can not be sufficiently controlled through a contributory negligence defense so that he should still be exposed to risk. That seems, however, doubtful, given risk aversion of victims. If the legislations which introduced financial caps were to pursue a public interest goal one would therefore in principle expect them to abstain from the introduction of those caps. Reality is, however, often very different. For instance in the area of the nuclear risk (which can most certainly be considered unilateral) some countries have seriously limited the liability of the licensee of a nuclear power plant. For instance in Belgium the limitations were that low that the victim’s right to compensation are reduced to less than 1% of the average costs of an accident\textsuperscript{549}.

The reason that these caps are often introduced can be found in interest group theories. Indeed, until now we adopted the relatively unrealistic assumption that politicians act in the public interest and will therefore promulgate legislation with respect to liability rules and safety regulations only if this is welfare maximizing. Reality, however, shows that financial caps are not in the public interest. Especially the victim-protection argument which is sometimes used to defend the financial caps is a very weak defense for the existing liability schemes, e.g. with respect to nuclear liability\textsuperscript{550}. Given the low limitations in some of the national implementation legislations one can conclude that in some cases the victims were better "protected" before the implementation of the nuclear liability legislation than after\textsuperscript{551}. These inefficiencies can be explained by public choice theory which regards regulation as the product of demand for regulation by interest groups and the supply by wealth maximizing politicians\textsuperscript{552}.

How did this lobbying take place for instance with respect to the nuclear liability conventions? In the 1950's the nuclear industry feared that the future of nuclear power could be endangered by unlimited liability. In the preparatory documents preceding the Paris Convention on Nuclear Liability it can clearly be read that the goal of the regulation of nuclear liability was not so much the protection of victims, but the protection of the nuclear industry itself. There is qualitative evidence of the influence of the nuclear industry both in drafting the international conventions and especially in the national

\textsuperscript{549} For estimates see Faure, M., "Economic Models of Compensation for Damage caused by Nuclear Accidents: Some Lessons for the Revision of the Paris and Vienna Conventions", \textit{European Journal of Law and Economics}, 1995, (21) 29-31. Note however, that the amounts have been increased as a result of a recent legislative change.


\textsuperscript{551} This point has been made by Faure, M. and Van den Bergh, R., "Liability for Nuclear Accidents in Belgium from an Interest Group Perspective", \textit{International Review of Law and Economics}, 1990, 241.

implementing legislation\textsuperscript{553}. Both insurers and the nuclear industry lobbied in a joint profit maximizing strategy, for the limitation of liability.

Indeed, some have argued that the object of these nuclear liability and oil pollution conventions was not so much to increase protection for the victim, but to limit the risks of, for example, a nuclear power plant operator\textsuperscript{554}.

One can obviously wonder why both insurers and nuclear power plant operators lobbied in favour of a limitation of the compensation. The interests of industry are clear: financial caps lower the exposure to liability and (in case of insurance) the insurance premiums. Obviously industry will lobby in favour of limiting its liability to the insured amount available. In that case the licensee of a nuclear power plant would bear no liability apart from the insured amount. At first glance it might seem strange that the insurance industry, for instance in Belgium, also favoured a reduction of the liability of the operator of a power plant. We already indicated that this may reduce the possibilities for the insurer to control moral hazard; in addition it also reduces the demand for insurance. However, one can clearly note in many national parliaments that the insurance industry lobbied for a limitation of the third-party liability of the operator to the "insurable" amount. One possible explanation is that, because of the unpredictability of the loss, premium calculation in a profit-maximizing manner is impossible, whereas premiums in other classes of insurance are profitable. Indeed, we have mentioned that the insurer of the nuclear risk prefers to cover property damage instead of third-party liability. One possible reason for this preference might be the fact that administrative costs can be much higher in a third-party nuclear insurance. This seems to be a plausible additional explanation for the lobbying in favour of a reduced third-party liability by the insurance industry.

Hence, the influence of industrial pressure groups in the process of drafting legislation explains to some extent why nevertheless financial caps have been introduced.

Notice, in the European context, that the European Product Liability directive had the optional possibility to put a financial ceiling on the liability of manufacturers in case of serial damage\textsuperscript{555}. However, only Germany, Spain and Portugal made use of this option\textsuperscript{556}. Now the Green paper opened the debate to increase the option for a ceiling to EUR 140 million\textsuperscript{557}, but the question is equally asked whether the existence of financial limits is strictly justified\textsuperscript{558}. Hence, apparently the limit in the product liability directive is now put on the agenda for reform.


\textsuperscript{554} See, for instance, Van Maanen, GE., "Pleidooi voor verbetering van de rechtspositie van slachtoffers van kernongevallen", \textit{Nederlands Juristenblad}, 1986, 1342; and Van Maanen, GE., "De civiellechtelijke aansprakelijkheid voor kerngevallen naar Nederlands recht", in Faure, M. (ed.), \textit{Aansprakelijkheid voor het nucleaire risico}, Antwerp, Maklu, 1993, 19. Note, however, that both with respect to oil pollution and nuclear accidents, there is a tendency to amend the existing conventions to increase the available amounts as a result of political pressure.

\textsuperscript{555} Article 16 of the Product Liability directive.

\textsuperscript{556} See the overview of the transposition in domestic law of the Product Liability directive, provided in the Green Paper on liability for defective products, 35-36.

\textsuperscript{557} It was set at 70 million ECU in article 16 of the directive for damage resulting from death or personal injury if it was caused by identical items with the same defect (serial damage).

\textsuperscript{558} Green paper on liability for defective products, 26.
§ 7. Policy recommendation

There seem to be relatively few reasons to introduce financial caps in the regime of environmental liability as proposed in the white paper. Caps would run counter to the principles of liability presented in chapter 2 since they would dilute the incentives for prevention.

This outcome is certainly true when the parties to be involved in an accident are risk neutral, but it also applies in case of risk aversion, at least when insurance is available. Even if liability insurance were not available, the appropriate policy answer hardly seems to be the introduction of a cap, given risk aversion of victims. The better option seems to be to agree on the optimal amount of compensation via contract, which is obviously only possible when transaction costs are low, e.g. when victim and injurer stand in a relationship to each other via the price mechanism.

The basic argument against financial caps assumes that the injurer has assets at stake which exceed the amount of the financial cap and that the expected amount of the damage will equally be higher than the cap. However, a judgement proof problem may arise. In that case the appropriate answer is not to limit liability to the amount the injurer has available, but to seek insurance coverage. Through diversified contractual arrangements between the insurer and the injurer an optimal amount of coverage can be determined in an individual case. The incentives can then be controlled via the risk differentiation in insurance and unlimited liability can apply for the excess, in case the expected loss would (ex post) be higher than the insured amount and the injurer would still have assets at stake. In some cases compulsory insurance might be an appropriate mechanism to control the judgement proof problem, but even compulsory insurance is no reason to introduce financial caps in legislation. The duty to purchase insurance coverage can be limited to a certain amount, but liability could remain unlimited.

We showed some of the disadvantages of financial caps by pointing at the example of nuclear liability where the national implementing legislations of international conventions have very often relied upon legislative caps. The analysis obviously applies to environmental damage as well. Of course, the disincentive effects of caps in these cases might to a large extent be undone by the safety regulation which governs e.g. the nuclear risk. But that would only be a valid point if beneficial effects of caps would be identified, which is doubtful.

At the normative level economic analysis therefore calls for caution with respect to the introduction of financial caps to regulate environmental damage, given their possible negative incentives on deterrency and the possible negative distributional consequences. Other mechanisms may be available (such as compulsory insurance) which might cure an insolvency problem without the afore mentioned disadvantages. How serious these disadvantages are will obviously depend upon the specific amount of the cap. Moreover, as far as environmental damage is concerned one should note that caps do not fully expose the potentially responsible parties to the damage they may cause. Hence caps violate the polluter pays principle on which the entire liability regime proposed in the white paper is based.

560 See also white paper, 23.
Finally, a policy conclusion may also be that lawyers analyzing these problems should take into account the fact that within the process of drafting legislation with respect to the consequences of major industrial accidents, a lot of industrial pressure groups might intervene. They will, as the nuclear liability example showed, obviously try to limit the extent of liability of the industry involved. Industry might therefore often argue that strict liability is an unsurmountable extension of their responsibility which can therefore only be accepted if the amount is statutorily limited. The examples of the convention on civil liability for oil pollution\textsuperscript{561} and the Paris and Vienna convention on the liability for nuclear accidents, which all introduced strict liability with serious financial caps, show that the pressure groups interventions have so far been relatively effective.

\textsuperscript{561} The 1969 Brussels convention on civil liability for oil pollution damage.
Chapter 8  Interdependencies between liability and insurance

§ 1. Introduction

In fact the whole issue of assurability of the liability regime proposed in the white paper is based upon the premise that the possibilities of assurance are an important factor to be taken into account when deciding upon the scope of liability. This corresponds with a tendency in some legal literature which holds that the limits of liability should be determined by the insurability of certain risks.

In this study we have to some extent already dealt with this assumption. On the one hand we have argued, more particularly with respect to strict liability, that insurability is indeed an argument to define the efficient liability rule, at least when it is related to the insolvency risk which may make a strict liability rule inefficient. On the other hand, we have equally argued that the insurability of a risk should not be an argument to put a financial limit on the liability via a cap.

There are a few other aspects of the relationship between insurance and liability which merit, as a brief intermezzo, some discussion. In this respect we can, once more, refer to the technical annex which also raises the question whether insufficient availability of environmental liability insurance has had an impact on the implementation of liability regimes. There are indeed a few issues concerning the interdependency between liability and insurance which merit a brief discussion, also as introduction to the next chapter which will discuss alternatives to liability insurance. The first concerns the difference between first party insurance and third party insurance (§ 2), the second is the related issue whether the ability to insure a certain risk (assurability) should determine the scope of liability. These questions merit a few remarks.

§ 2. First party versus third party insurance

In the context of the discussion concerning compulsory liability insurance we already addressed that other alternatives may exist which might be able to cure the insolvency problem at lower costs than compulsory liability insurance. An obvious alternative is in that respect first party insurance.

In fact, first party victim insurances exist in all kinds of ways in most western European countries. One can think of all the disability and health care insurances whether they are provided by the private

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insurance sector or through a social security system. A major advantage of first party insurance is that the insured victim can demand an insurance policy that perfectly aligns his individual wishes for insurance coverage. Hence, a narrow definition of risk groups is possible. The victim will indeed be able to pass on all the information on the individual risk he causes to his insurer (for instance age, profession, income, etc.). Thus, it has often been argued that first party insurance much easier allows for a control of the adverse selection problem since it better enables a narrowing of risk pools. A narrowing of risk pools is much more difficult with third party liability insurance. The word "third party insurance" itself already points at the problem. In that case the insurer does not cover the risk posed by his individual insured, but the risk that his insured will cause damage to a third party. The amount the insurer will have to pay can vary upon many circumstances to which nothing can be said ex ante. Indeed, the insured will of course not know whether he will hit a poor or rich victim. This leads at first sight to a preference for first party insurance. Of course this may not be idealized either since first party insurance can cause many inefficiencies and high administrative costs of bureaucracy if it is provided by government related social security bodies.

Nevertheless, it seems important to keep in mind in the whole discussion on the possible introduction of compulsory liability insurance that a first party victim insurance already exists to a large extent through the social security system. In many countries compulsory liability insurance will therefore add little to these already existing first party insurance schemes. In many cases only "pain and suffering" is not covered under first party insurance, but one can of course wonder whether only this component of the damage is enough a justification to introduce a highly costly system of compulsory liability insurance. One consequence of this cumulation of compulsory first party and third party insurances is that many tort claims in court are now fought between a first party insurer who is subrogated in the rights of the victim he compensated and exercises a right of redress against the liability insurer of the injurer, using all kinds of legal rules that were designed in the first place to protect the victims.

Although the existence of mandatory first party insurance (or social security schemes) is obviously mostly important in the context of compensation for personal injury (whereas the white paper focuses primarily on environmental damage) this distinction between first party insurance and liability insurance has its importance for the area of environmental liability as well. Indeed, as we shall discuss in chapter 9, some argue that also environmental harm can be compensated far more easily via first party than via third party liability insurance.

§ 3. Assurabilité oblige?

As we mentioned in the introduction to this chapter, the phenomenon of liability insurance has undoubtedly had a considerable influence on the evolution of tort law. Sometimes this influence goes as far to argue in legal doctrine or case law that one of the two parties (victim or injurer) would have been "the best insurer" and should therefore carry the accident risk. The question obviously arises

566 Following the basic article of Akerlof on adversely selection this point has especially been developed with respect to insurance markets by George Priest (Priest, G., "The Current Insurance Crisis and Modern Tort Law", Yale Law Journal, 1987, 1521-1590).

567 For a negative answer to this question see Adams, M., "Warum kein Ersatz für Nichtvermögenschaden?" in Schäfer, H.B. and Ott, K., (eds.), Allokationseffizienz in der Rechtsordnung, 1989, 210-217.
whether this specific influence of the insurability\textsuperscript{568}. On liability issues can be reconciled with the principles of liability as developed in chapter 2 and the principles of insurability as presented in chapter \textsuperscript{569}.

A first way in which this influence of insurance on liability issues appears is that the judge could take into account the insurability of a certain risk. This could be indicated as "assurabilité oblige". The judge would thus examine which party can best purchase insurance coverage and should thus be held liable. This can also be referred to as "the cheapest insurer" - argument. What can be said with respect to this insurability argument from an economic point of view? Sometimes it is argued, for instance with respect to product liability, that the liability should rest with the manufacturer since he can purchase insurance coverage at lower costs than all the individual consumers who might be victimized\textsuperscript{570}. Firstly, one could mention that it will often be impossible for a judge in a specific accident situation to look for the party that could have insured at the lowest costs. One should indeed not forget that the first task of the judge in a tort case is to examine whether all the parties involved took efficient care and to hold them eventually liable when the due care standard was not met. The risk of just looking for "the cheapest insurer" would be that the judge would not focus any more on the actual level of care of the parties involved in the accident. Moreover, it will be impossible for a judge to examine which party could have better insured unless one does so in very general terms mentioning for instance that a producer will always better be able to get insurance coverage than a poor victim. This would then be an argument in favour of strict producer liability. The insurability argument in this context is, however, wrong. We mentioned above that in principle victims are "better insurers" than injurers. First party victim insurance does indeed better enable the narrowing of risk pools than third party liability insurance. If the insurability of the risk should therefore be an argument that should be taken into account in the liability case it would rather be an argument in favour of negligence than in favour of strict liability as is often heard. Negligence will indeed lead to a first party victim insurance whereas strict liability will lead to third party liability insurance by injurers. Indeed, since under negligence the injurer will in principle take due care to avoid to have to pay compensation to the victim, the victim receives no compensation. Hence, under negligence the risk averse victim will seek first party insurance coverage. The reverse is the case under strict liability; the victim will be compensated through the strict liability, but the risk averse injurer will seek third party insurance to cover his liability.

\textbf{§ 4. Policy}

This brief intermezzo on the interdependency between liability and insurance was in fact only meant to point at the dangers of relying too heavily on the insurance argument in the determination of the scope of civil liability. We believe that civil liability (and the scope of it) should be judged according

\textsuperscript{568} The term "assurabilité oblige" comes from Simoens, D., "Ongevallenrecht: grensgebieden van aansprakelijkheid, verzekering en sociale zekerheid", Tijdschrift voor Privatrecht, 1984, 417-460.

\textsuperscript{569} The role of insurance in liability issues has also been discussed by Trebilcock, M., "The role of insurance considerations in the choice of efficient civil liability rules", Journal of Law, Economics and Organisations, 1988, 243-265.

to the functions of deterrence and compensation as explained in chapter 2. Hence, from a theoretical perspective, the legislator should not necessarily be interested in the “insurability” of particular risks. This obviously rests upon the assumption that there is no insolvency. Otherwise strict liability without insurance coverage may, as was explained above, read to underdeterrence.

There may, indeed, be specific cases where this insurability becomes important since uninsurability could negatively affect the incentives. This is e.g. the case if a strict liability rule would be introduced and an insolvency risk would exist, as we have explained above. But otherwise it is difficult to draw any conclusions at the policy level from the insurability of particular risks for the scope of liability. In chapter 7 we argued that if no insurance would be available this should not necessarily be an argument against liability, although the attitude towards risk of the parties involved may have an influence on the liability regime. Moreover, we argued in this chapter that we have the impression that too easily the argument is accepted that injurers are “better insurers” than victims. That argument can be questioned on theoretical grounds if one accepts, with Priest, that an effective risk differentiation is more easy under first party insurance than under third party insurance. This shows that if one would consider this insurability as such as an argument for the choice of a liability rule (about which we have serious doubts) it would even be an argument in favour of fault and against strict liability. This shows, once more, that one has to be extremely careful at the policy level with general arguments concerning the insurability of specific liability regimes. Again, all too often, there is the risk that these arguments may be abused by interest groups who could argue that a certain liability (which may be efficient) is uninsurable and should thus not be introduced. Precisely to avoid those kind of reasoning we argue that the choice of a liability regime and the scope of liability should primarily be determined accordingly to the theoretical notions developed in chapter 2 and not accordingly to vague notions concerning insurability.
§ 1. Introduction

Within this study, which focuses on the assurability of the environmental liability regime as proposed in the white paper we have so far mainly discussed the applicability of traditional liability insurance as a means of compensating for environmental damage. However, as we will demonstrate, many of the general principles of insurability (chapter 5), the question whether financial guarantees should be made compulsory (chapter 6) and the question whether a cap should be put on liability (chapter 7) are relevant as well if it were not traditional insurance undertakings which would provide cover in the form of liability insurance, but if other compensation mechanisms would be sought. E.g. the general idea that, no matter what type of compensation system one looks for, it should always be organized in such a way that those who cause an accident should also bear the financial consequences of it to whatever extent possible, is crucial not only for liability insurance. This is true as well for the general idea that the financial contribution to the loss (through premium, contribution to a pool or the like) should preferably always be in proportion to the degree of contribution to the risk. Through this simple principle of risk differentiation one can optimally satisfy the idea of prevention of damage, which is so crucial for the white paper as well.

The technical annex itself makes clear that when discussing financial assurance issues, one should not only look at traditional insurance, but also at other forms of financial security, such as self insurance, bank guarantees and participation in funding pools571. One of the purposes of this study was indeed to provide a further analysis of other financial arrangements that could be advanced, other than traditional liability insurance.

Within this chapter we shall briefly have a look at some of these alternative mechanisms, not only from a theoretical point of view, but also looking at some actual compensation practice. This has to do with the fact that in some member states it is apparently believed that the problems inherent in the insurance of environmental liability, discussed in chapter 5 are that large that they can not be overcome and that therefore alternative mechanisms should be examined. In some cases they have already been worked out. We shall therefore first of all briefly discuss the notion of self insurance and pay attention to an alternative for liability insurance, being first party insurance. This seems important since in the Netherlands an alternative insurance mechanism, based on first party coverage has been worked out. This Dutch example of a first party coverage for clean-up costs of polluted sites is, moreover, explicitly mentioned in the white paper572. Then we will turn once more to the Flemish Interuniversity Commission which has proposed to work with ex ante guarantees and deposits. Their proposals were largely based on the belief that traditional liability insurance alone would not be able to optimally cover environmental damage. Finally we will examine whether risk sharing agreements (pooling) between operators could provide compensation or whether one should turn to compensation funds.

571 See Technical Annex, 1 footnote 1.
572 White paper, p. 23.
It is obviously, within the scope of this study not possible to discuss every potential alternative which could provide compensation for environmental damage. In this respect we can refer to the literature which has worked out other alternatives as well\textsuperscript{573}. Some economists, more particularly Tyran and Zweifel, have e.g. advocated the use of capital markets to provide coverage for environmental damage\textsuperscript{574}. They begin with the statement that the third-party liability as it exists fails to internalize the externality caused by the nuclear risk. They also criticize the argument of the uninsurability to the nuclear risk. They also criticize the argument of the uninsurability of the nuclear risk, noting that earthquakes are also not predictable even for large amounts\textsuperscript{575}. They also point to the disadvantages of the pooling system: the cartels charge excessive premiums. In addition they criticize the limitation of liability to a value that falls far short of a possible loss, since this constitutes a subsidization of nuclear power. They then produce an alternative that is the use of capital markets to provide additional coverage for liability. Rather than turning to nuclear insurance pools, Tyron and Zweifel suggest that plant operators should be permitted to take risk-participation shares on capital markets. Investors would have the opportunity of buying such a share against deposit of financial assets, creating a warrant in favour of the plant of their choice. This warrant can be exercised by the agency when liability claims are presented. Since operators must have sufficient coverage, they will compete for coverage capital and bad risks will not be able to get coverage. Hence Tyran and Zweifel argue that their ERICAM system can correct the market failure and provide for higher coverage of the nuclear risk and improved safety.

The idea of ERICAM is that the interest rate on the bonds issued reflects the accident rate. In so far as the care of operators is observable, it will be reflected in interest rates. But when the accidents are a rare experience, rating will be impossible and government regulation will still be necessary. The ERICAM system\textsuperscript{576} has certainly advantages compared to the current system of limited liability and non-competing insurance pools.

This idea of using capital markets to finance potential liabilities from environmental harm are, moreover, not merely theoretical. Several experiments take place with forms of so-called Alternative Risk Transfer (ATR) or securitization\textsuperscript{577}. Although it is apparently possible today to buy “catastrophe bonds” inter alia at the New York Stock Exchange\textsuperscript{578}, we will not focus in much detail on these alternatives since according to insurers they do not play a major role in Europe yet\textsuperscript{579}. Moreover it is


\textsuperscript{575} Tyran and Zweifel (1993, 433) report that the 1906 San Francisco earthquake caused insured damages of $ 39.5 billion (U.S.). This sum is 100 times greater than the maximum nuclear coverage granted by private insurers. Other examples can be given where the probabilities of an accident are unknown, the expected accident costs are large, but nevertheless large amounts of insurance coverage are provided.

\textsuperscript{576} The possibilities of financial markets to manage the uncovered liabilities of industrial catastrophes are further explored in Radetzki, M. and Radetzki, M., \textit{l.c.}, 188-193.


\textsuperscript{579} See Smith, R.E., Canelo, E.A. and Di Dio, A., \textit{l.c.}, 31.
argued that these “new” financing instruments, based on capital markets, will never totally replace traditional products⁵⁸⁰.

Since it is not possible to discuss all of these possible alternatives in detail within the scope of this paper, we have preferred to focus on some alternatives which can actually be found in practice yet, so that some empirical information on their working can be provided as well.

§ 2. Self insurance

A. RESERVES VERSUS INSURANCE

One can really question whether self insurance should at all be discussed within the scope of a chapter dealing with alternatives to liability insurance, since the question really arises whether it can honestly be considered as a realistic alternative. The reason we nevertheless want to mention self insurance is that also the technical annex refers to it as a form of financial security⁵⁸¹. The reason we are rather sceptical concerning this concept of “self insurance” is that it in fact constitutes a nice word, covering the situation where potentially responsible parties make reservations themselves for potential losses. However, these reserves made by the potential injurer himself can not be considered “insurance” in the traditional sense, for the simple reason that there is no risk spreading, risk distribution and consequently no loss spreading after an accident happens. Indeed, with self insurance the risk will not be transferred to either an insurer, a mutual, a bank or a pool, which is typically the feature of most insurance schemes. To be blunt: self insurance is not an insurance scheme, but a system whereby potentially responsible parties make reserves for future losses. Reserves can, however, be considered as tools to guarantee financial assurance; that is, however, different than insurance since reserves lack the element of risk spreading⁵⁸².

Although we argue that self insurance does not belong to the category of financial securities which can be considered as “insurance” allowing a potential responsible party to make reserves for future losses is obviously highly desirable within the central concern of this study, being to avoid hit and run strategies with the result of orphaned polluted sites. Also the white paper recognizes 'interval reserves' as one of the possible ways of having financial security⁵⁸³.

B. TAX DEDUCTIBLE RESERVES AND 'CAPTIVES'

One could therefore question why there is anyway often discussion concerning self insurance, if it constitutes nothing else than private reserves by the potentially responsible party for future losses. The reason is usually a fiscal one. If these reserves were made without any specific goal they could be

⁵⁸¹ Technical Annex, 1, footnote 1.
⁵⁸² Reserves, of course, allow for a risk spreading in time, but not between various parties exposed to risk.
⁵⁸³ White paper, 23.
considered as hidden profit by tax authorities and could thus be taxed\(^{584}\). If on the other hand the tax system allows these reserves (and could even encourage them by making them deductible) this self insurance becomes a way in which the potentially responsible parties could make reserves for future losses in a tax friendly way. Often these reserves are referred to as “captives”\(^{585}\). These captives, to which there is often reference in the literature, are in some cases again nothing else than reserves made by larger industries to cover future losses. A captive is, according to Ranson, a reinsurance which would be owned by the insured\(^{586}\). In some case, but not necessarily, various industries posing the same risk could join forces via mutuals. In those cases the self insurance would amount to pooling. In other cases the 'captives' are used for reinsurance. In that case a company would e.g. take first liability insurance with an insurance company, in that case we referred to as 'fronting company' which may reassure with a captive. These captives can be managed by banks or (re)insurance companies\(^{587}\).

C. RESERVES AS SECURED TRANSACTIONS

A positive aspect of these tax devices allowing to make reserves for future losses is obviously that there may be at least a minimum guarantee that these amounts will be used to cover future environmental damage. However, from a policy perspective the administrative authorities controlling e.g. whether minimum financial security may be at hand, will usually be rather cautious with accepting self insurance as proof of sufficient financial guarantee. The fact that these reserves are made today does indeed not necessarily mean that the amount will still be available on the moment that the loss occurs. This is obviously the case if it is only the potential responsible party himself who has the right to decide what will be the ultimate goal of these reserves made in the form of self insurance. Moreover, even if the reserve would still be available if e.g. environmental damage happens (and the potentially responsible party would hence not have decided to take the money with him to the Bahamas) the question will arise whether the reserve made can effectively be used to cover the environmental damage. In the absence of specific statutory provisions, protecting the reserve as a specific security, the reserve will simply be considered as one of the assets of the company and may hence be the subject of execution by all the creditors. If one therefore wishes that self insurance in the form of reserves and captives are allowed as financial security for environmental damage, additional statutory measures are necessary which provide a regulation of the goal of the money reserved by the potentially responsible party.

Self insurance may therefore certainly play a role, also as a guarantee of financial security, provided that the conditions set out above are met. This means that there needs to be a guarantee (via regulation) that the amounts set aside to this goal can not be reached by other creditors.

\(^{584}\) See Kerremans, H., *i.e.*, 575-577.
\(^{586}\) Again, the word ‘reinsurance’ is slightly misleading since it assumes that these is a basic insurance obligation which is reassured.
\(^{587}\) Rogge, J., *o.c.*, 38.
D. Self Insurance As Deductible

However, in many cases self insurance obviously already exists today, even without this regulatory protection. In practice, many potentially responsible parties decide to self insure for an important amount and only purchase “excess” insurance for when liability would exceed a specific ceiling. Therefore, in practice a combination between self insurance and liability insurance, whereby the self insurance can take the form of a deductible, can be found.

Self insurance, as described above, obviously has the advantage that it is probably a lot less costly than systems of risk distribution, especially if risks are shifted to an insurance undertaking. As we have explained above the amount paid (via a premium or a contribution) by the potentially responsible party might often be much higher than the actuarily fair value of the risk. Thus one can understand why potentially responsible parties might want to self insure and only purchase excess insurance for high amounts.

E. Evaluation

However, there are certain risks and disadvantages with self insurance as well. One obvious point is that victims still should have the guarantee that a potentially responsible party who is found liable will also have the possibility to be able to pay the compensation. Self insurance is not necessarily a waterproof guarantee against insolvency. This were only the case if regulation could guarantee that the money set aside for covering environmental damage is only to be used for that specific goal. In addition, risk spreading via systems such as (liability) insurance or pooling has the major advantage that indeed risk spreading on the basis of economies of scale is possible. A pool or insurer may bring together similar but unrelated risks and can thus increase the expected utility of all insured by reducing risk aversion. The major benefit of insurance or pooling, being risk spreading, is obviously lost with self insurance. Moreover, insurance or pooling systems may have the advantage that specialized insurance undertakings (or brokers) may acquire accurate information on the risk and could thus, via the insurance policy provisions, require specific preventive measures from the potentially responsible parties. In chapter 5 we have explained that efficient insurance policies may lead to a reduction of the environmental liability risk, if an adequate risk differentiation is performed. All these advantages are lost with self insurance. Finally, self insurance of a responsible party can potentially lead to redistribution problems. Assume that a potentially responsible party does not purchase liability insurance (or any other form of financial security). In that case he would simply run the risk of having to pay major amounts as a result of liabilities and would then as a result of his insolvency pass on the costs to the tax payer. This externalization of the risk is precisely the problem which will occur as a result of insolvency and which we identified in chapter 6 as one of the major arguments in favour of compulsory insurance.

In sum: self insurance may be a low cost and useful instrument which may allow to set aside assets (make reserves) to cover future losses. However, in order to avoid the risk of externalization of harm (as a result of insolvency) self insurance can only be considered an effective financial security if
guarantees can be provided through regulation that the reserves set aside will effectively be used for the potential losses for which they are meant. Moreover, the basic problem remains that potentially responsible parties may cause losses which can largely outweigh even the assets which they might have set aside in reserve (under so-called self insurance). Hence, additional mechanisms will still have to be examined to provide coverage.

§ 3. First party and direct insurance

A. Theory

There is another alternative which may compensate victims of environmental damage, which is now sometimes advocated, being a first party insurance. The major differences between liability insurance and first party insurance have been explained above. Liability insurance is a third party insurance, whereby the insurer covers the risk that his insured (the potentially responsible party) will have to compensate a third party. A first party insurance is a system whereby the compensation is awarded directly by the insurer to the victim. Whether such a first party insurance can be considered as an efficient alternative for third party liability can not be answered in general terms. It depends to a large extent on the details of such a system and more particularly on the question whether the first party insurance is combined or not with the liability of the potentially responsible party.

The underlying principle in a first party insurance is that the insurance undertaking – in principle – pays as soon as damage occurs, provided that it can be proven that the particular damage has been caused by the insured risk. Payment by the insurance undertaking occurs irrespective of the fact whether there is liability. The arguments advanced in the literature in favour of first party insurance are that the transaction costs would be lower and that risk differentiation might be a lot easier. The reason is simply that with first party insurance the insurer covers directly the risk of damage with a particular victim or a particular site. The idea is that it is therefore much easier for the insured to signal particular circumstances which may influence the risk to the insurer. The problem with liability insurance is that the insurer is always insuring the risk that his insured (the potential injurer) will harm a victim (a third party) of which the properties are unknown ex ante to the insurer. Moreover, under liability insurance there are lots of uncertainties, e.g. how the judge will interpret this specific liability of the insured. In the ideal world of first party insurance the insurer directly covers the victim, e.g. the risk. He can therefore monitor directly the risk and in principle provide a much better risk differentiation.

Obviously lots of practical questions arise when it comes to the application of the ideal model of first party insurance to environmental harm, such as damage to bio-diversity or soil pollution. One question is under what kind of circumstances the insurance will be triggered, if liability is not required. Does damage suffice and if so, how shall damage be described? Moreover, also in a first party insurance scheme the question will have to be answered who finances the system. In an ideal theoretical world, it

would be the victim who finances a first party insurance. That would obviously constitute a major difference with a liability insurance. Immediately one can understand that there would be opposition against a first party insurance scheme since under this condition it might violate the polluter pays principle. However, one could also imagine a first party insurance scheme whereby it is e.g. the one who possesses the particular site (which could be the polluter, but that should not be necessarily the case) who pays the premium. In that hypothesis one usually refers to it as 'direct' insurance instead of first party insurance.

Finally, also under a first party insurance scheme, the relationship to liability law will have to be cleared. One question is whether a first party insurance system would replace the liability system. That would obviously be a far reaching solution whereby the liability system would be totally left. It would mean that the victim would receive a compensation simply by proving that a certain damage has been caused, directly from the insurer. But then inevitably the question would arise how potentially responsible parties would still have incentives for prevention without a liability system. Therefore one can assume that a first party insurance system would not replace liability law. But that then raises the question whether there would be a cumulation of liability and first party insurance and whether that can be considered as efficient.

Moreover, the question arises what amounts would be paid under first party coverage. Usually the amounts paid in first party insurance are lower than the full compensation which is in principle awarded under tort law.\(^{589}\)

This shows that although first party insurance might seem very attractive at first sight at the theoretical level, since it might better enable a narrowing of risk pools, still a lot of questions arise. It is probably best to examine these questions by looking at a practical example where a first party insurance of polluted sites has been implemented.

Before doing so it is probably important to stress that this exposé on first party insurance is not merely theoretical, but does indeed have a certain practical relevance. Indeed, the general liability committee of the Commit Européen des Assurances (CEA) has executed a study on first party legal obligations for clean-ups and corresponding insurance covers in European countries.\(^{590}\) This study shows that although the insurance situation between the European countries still differs to a large extent, first party insurance coverage seems to be available in several member states.\(^{591}\) In one country, more particularly in the Netherlands, the insurers have deliberately chosen to provide coverage of polluted sites on a first party basis. The idea is that the first party coverage should replace the traditional environmental liability insurance. Hence, it seems interesting to take a closer look at the insurance situation in the Netherlands.

\(^{589}\) Note, however, that under liability insurance the coverage provided will be linked to certain limits as well.

\(^{590}\) CEA, Study on first party legal obligations for clean-ups and corresponding insurance covers in European Countries, Paris, CEA, 21 October 1998.

\(^{591}\) See the summary tables in the CEA study, 32.
B. FIRST PARTY INSURANCE FOR POLLUTED SITES IN THE NETHERLANDS

1. Dissatisfaction with existing coverages

Starting point for the concern of the Dutch insurers constituted the fact that all the theoretical problems we discussed in chapter 4 concerning the insurability of environmental liability had also played a major role in the Dutch environmental practice. This had to do with the fact that the environmental risk is the example of a “long-tail risk” whereby the insurer today could be confronted with events which occurred in a distant past and would lead to liability of the insured now. Insurers held that this generally endangered the predictability of the risk.

Most of these problems were hence related to the fact that environmental harm does not constitute a sudden event, as is the case with most “traditional” accidents which are insured in liability insurance.

The Dutch insurance market therefore used to have the environmental risk covered through a variety of insurance policies, of which the most important were:

- the liability insurance policy for the sudden risks and for occupational health risks which were related to the environment;
- the environmental liability insurance (MAS) for risks of a more gradual nature, non-including personal injury;
- fire insurance for clean-up costs after fires (although the precise coverage of that policy was debated).

This environmental liability insurance was provided by an environmental pool, referred to as MAS. In this MAS (re)insurers work together to cover the environmental liability risk. The MAS was hence constructed as an environmental pool, although the individual insurers which were connected to the MAS contracted individually the MAS policy under their own label.

There was, however, a lot of critique on that system, which can be summarized as follows.

- First of all the whole division of coverage between the AVB and the MAS was based on the idea that the AVB would cover the sudden risks and the MAS would cover the risks of a more gradual nature. As is well-known, in practice it was not always possible to make a clear distinction between sudden and gradual risks, which lead to uncertainties concerning the scope of the coverages of both policies. This was obviously the result of the fact that the Dutch

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592 Aansprakelijkheidsverzekeringen bedrijven.
594 Milieu-aansprakelijkheidsverzekering Samenwerkingsverband.
595 We are grateful to Mr. P.A.J. Kamp of Nationale Nederlanden who provided us some further insights for the reasons behind the changes towards first party insurance in the Netherlands.
insurers did not decide to exclude the environmental risk all together from the traditional liability insurance of companies (AVB)\textsuperscript{596}.

- The environmental liability policy (MAS) was considered to be rather complicated and had a vary complicated procedure towards accepting insured. The policy was in addition rather expensive and hence difficult to sell.

- A further problem was that neither the general environmental liability policy (AVB) nor the environmental liability insurance policy (MAS) provided any coverage for damage caused to the own site of the insured. This caused a problem for insured since according to the case law of the Dutch Supreme Court companies could be held liable as well for a pollution of their own site. In addition the fact that pollution caused to the site of the insured was not covered inevitably caused again uncertainty concerning the scope of coverage. One could imagine cases whereby e.g. polluted groundwater went from the site of the insured to a neighbouring site. This caused problems since the pollution to the site of the neighbour was insured whereas the pollution to the own site was not.

- Furthermore there were more uncertainties concerning the question whether clean-up costs were covered under the fire insurance policy. The fire insurance covers under the clean-up costs after fire also environmental damage that would have occurred, but only on the condition that there was a prior fire. In the fire insurance policy no account was taken of the fact that after a fire also serious soil and water pollution could occur. It was not always clear whether also the soil clean-up costs, resulting from the fire, were also covered under the fire insurance.

- Finally there were obviously all the traditional problems related to environmental liability, such as the question whether a specific damage was indeed caused as a result of an insured risk. Also the case law concerning environmental liability extended in such a way in the Netherlands that this has not been foreseen by insurers. Hence, the liability risk was increasingly considered unpredictable and hence uninsurable as far as environmental harm was concerned.

2. Environmental Damage Insurance: main features

This lead the Dutch insurers association to present in 1998 a new product, being the environmental damage insurance (MSV)\textsuperscript{597}. This policy is available now since the 1 January 1998 and it takes a revolutionary different approach than the traditional environmental liability insurance\textsuperscript{598}.

\textsuperscript{596} For further details on these difficulties see Wansink, J.H., “Hoe plotseling en onzeker is de verzekeringdekking voor milieuaansprakelijkheidsrisico’s?” in Miscellanea Juris Consulto vero dedicata, Essays offered to Prof.Mr. J.M. van Dunne, Deventer, Kluwer, 1997, 451-460.

\textsuperscript{597} Milieuschadeverzekering.

This new environmental damage policy provides for various new elements. First of all it provides an integrated coverage of all the environmental damage which occurs on or from the insured site. Prerequisite is that it concerns pollution of the soil or of the water. The integrated coverage means that the new environmental damage insurance replaces the traditional pollution insurance (for sudden pollution) in the AVB and the liability insurance of the MAS (for gradual pollution).

The whole idea is that this coverage constitutes a direct insurance. In other words, the insured site is insured, even when clean-up costs have to be made on the site of a third party. Coverage takes place, as soon as the site of a third party is polluted as the result of the insured risk, irrespective of the fact that the insured could be held liable for the damage or not. The third party (the victim) moreover receives a direct action on compensation on the basis of the environmental damage insurance policy. The trigger for compensation under this policy is therefore no longer tort law, but the insurance policy as it has been concluded between the insured and the insurance company. This therefore typically is a first party insurance or, as it is called in the Netherlands, a direct insurance. It is indeed not the victim who purchases liability insurance (although the insured may be the victim), but someone who has responsibility for a site on or from which water or soil pollution may occur. The policy hence benefits third parties as well.

Obviously the environmental damage insurance can not set aside tort law, but the main advantage according to Dutch insurers is that the coverage is not triggered on the basis of liability. The advantage from the victim’s point of view is obviously that coverage can be provided more rapidly and probably at lower transaction costs than through the court cases which are necessary as a result of liability law.

The environmental damage insurance as provided by the Dutch Insurers Association constitutes of several categories with different policies. The insured can opt for various insurance policies. Most importantly is the choice between damage on the insured location and damage to third parties. But the policy contains many more variations and categories. This obviously shows that indeed first party insurance better enables an optimal risk differentiation since every insured will be able to purchase insurance coverage according to his own preferences. The damage on the insured location itself is insured. This at least provides coverage for clean-up costs and this is rather broadly defined. Also costs for the repair of damage are included. Hence, one could imagine that also costs to bio-diversity, as defined in the white paper could be included, as long as it constitutes soil or water pollution. Soil pollution, which is also envisaged obviously falls within the environmental damage insurance. Remember, however, that under this policy it are only the costs of “clean-up” which are covered599. This is not necessarily the same as the broad concept of biodiversity, discussed above600. The insured could also opt to take a coverage for damage suffered by third parties, which is obviously larger.

The insured remains in principle fully liable, although the third party (beneficiary) who would be protected under the new MSV policy could claim directly on the policy and would hence in principle

599 Article II.1.1. defines as the scope of coverage: “Insured are the costs of remediation of the insured site. This remediation must apply to a pollution which is the direct and exclusive result of an emission, caused by one of the insured risks...”.

600 See chapter 5 C 1.
not have an interest in using liability law. However, it might be that the insured has taken too limited coverage and that in that particular case the third party would still (have to) use liability law. In that case the liability itself is not covered (and an insolvency risk remains), but the MSV policy provides for legal aid assistance in a couple of specific cases. This is e.g. the case if the sum which is insured under the MSV coverage would not be sufficient e.g. to pay for the clean-up costs incurred by the government. Or in case a third party would chose the liability law instead of direct action under the MSV policy.

The main feature of the new environmental damage insurance provided in the Netherlands is obviously that it is no longer a liability insurance, but only a first party (or direct) insurance. The advantage for the insurer (and for the insured) is that the difficult road of liability law is excluded. Whether liability law still will be used is uncertain. Third parties could still use liability law, although it is obviously easier for victims to use the direct action provided under the MSV policy. There is, however, one important weakness which unavoidably remains, being the fact that the environmental damage insurance is not compulsory. Hence, there may remain situations where companies in the Netherlands have purchased no insurance coverage at all or situations where only a basic coverage was taken for damage on the particular site, but not for damage to third parties. In those cases third parties claiming against the responsible party might still be confronted with an insolvent polluter. Moreover, the new MSV regime is exclusive, meaning that the coverage for (sudden) soil and/or water pollution has now been removed from the liability insurance policy. This means that if an insured would e.g. only have taken an MSV coverage for the insured site and a loss would occur to a third party on another site, this third party would probably use liability law against the polluter. In that particular case the polluter can not call on his general liability insurance (AVB) since the environmental risks have now been completely removed from that policy as a result of the entering into force of the MSV.

But that can obviously hardly be considered a weakness of the system of first party insurance: the insured obviously does not get more than what he pays for. Since the MSV is a general policy with a lot of options for the insured, premiums and amount of coverage can vary. The type of costs which are insured are, however, identified in the general policy and accordingly to the CEA study on first party insurance the total amount of coverage available under this new environmental damage insurance in the Netherlands would be 25 million Dutch guilders.

3. Evaluation

According to information provided by the Dutch Insurance Association this new product would work remarkably well. They claim that the interest of enterprises in this new environmental damage insurance is much larger than in the traditional environmental liability insurance. Whether this new product is actually a success yet is more difficult to judge. There is, however, undoubtedly an increasing interest of industry for this new environmental damage insurance. The fact that hence a

601 This legal aid coverage, however, is not applicable if the insured took a low amount of coverage.
602 See Wansink, J.H., o.c., Tijdschrift voor Milieuaansprakelijkheid, 1999, 81.
603 Wansink, J.H., o.c., Tijdschrift voor Milieuaansprakelijkheid, 1999, 81-82.
wider financial security for environmental damage is provided in the Netherlands as a result of this product should definitely be considered as positive. Moreover from the victim’s (mostly the government) perspective the fact that the environmental damage insurance provides for a direct action for victims should be considered as positive as well. It also shows that it seems possible to provide financial security for environmental damage without many of the insecurities and dangers inherent in an environmental liability insurance system.

Moreover, the advantage for the insured is that under this environmental damage insurance also damage caused to his proper site is covered, which was obviously not the case under liability insurance. If, at a policy level, one would therefore conclude that a strict liability system should be combined with some form of guarantee that financial security is available one should at least leave the option open to industry to provide this financial security via environmental damage insurance. The Dutch example shows that this first party type coverage seems able to meet that end. Moreover, the example seems to be followed in other countries as well. However, some company lawyers have been critical of this new insurance product. They argue that in practice insurers are so critical in providing coverage that effectively only the very good risks would be able to receive coverage. Hence, they claim that one can not blindly argue that the environmental damage insurance would be a remedy for all insurability problems concerning the environmental risks.

4. Compatibility with competition policy

A point which inevitably needs to be addressed in the context of these changes in the insurance structure is to what extent these standard policy models are compatible with European competition policy. We already noticed that e.g. concerning the liability insurance for companies in the Netherlands (AVB) a new model policy came into being in 1996 which has been offered to the market. This AVB model policy suggested the change from a loss occurrence coverage to a claims-made coverage. Also, as has just been indicated, the Dutch insurers association decided to change the coverage of environmental risks from liability insurance to first party insurance.

The question which inevitably arises is whether it is compatible with competition policy to formulate an advice via a standard policy which is de facto followed by the whole market. Again, this issue is covered by the exemption regulation 3932/92 of 21 December 1992. Article 6 of the exemption regulation provides that the exemption shall apply to standard policy conditions on the condition that it

604 Cousy, H., _l.c._, 240.
605 Ranson reports that also in Belgium a 'direct' environmental insurance would be offered which would also cover gradual pollution (but would exclude ecological damage). See Ranson, D., _l.c._, 68. The new policy would cover, like the Dutch example, also remediation costs.
is made clear that these policy conditions are purely illustrative and that they expressly mention the possibility that different conditions may be agreed upon. In addition, the standard policy conditions must be accessible to any interested person and provided simply on request. The standard policy conditions used by the Dutch insurers in environmental insurance certainly can meet this test. Both the new insurance policy for liability of companies (AVB) and the environmental damage insurance (MSV) mention explicitly that they are merely illustrative and that it stands free to any individual insurer to deviate from the text or the contents of the policy model.  

Formally the standard policy conditions provided by the Dutch Insurers Association are hence compatible with the exemption regulation. Nevertheless, one can not deny that the use of standard form policies will inevitably have a effect of restricting competition. Indeed, although these standard policy models all indicate that they are merely illustrative and that any insurer can deviate from them, it is today in the Netherlands almost impossible de facto to get any other liability insurance for the environmental risk. However, these concerns will probably not be a great worry to Dutch insurers, since the used standard policy forms can easily pass the test of the exemption regulation.  

The only practice which is clearly prohibited by the exemption regulation is the agreement on excluding certain risks from coverage. In this respect the Dutch insurers have encountered a small problem since they had decided to prevent insurers from offering cover for flood risks. Under pressure of the European Commission the Dutch Insurers Association brought its binding decision in that respect in line with the exemption regulation by simply converting it into a non binding recommendation, leaving each insurer free to extend cover to flood risks. Indeed, article 7-1 of the exemption regulation stipulates that standard policy conditions may not exclude generally certain losses from cover without indicating explicitly that each insurer remains free to extend the cover to such events. Again, the Dutch Insurers Association has not formally forced all insurers not to provide any environmental cover any longer under the general liability insurance (AVB) and also the AVB stipulates that every insurer is free not to follow the recommendations made in the standard policy. Hence, also in this respect Dutch practice seems to be compatible with the requirements of European competition policy.  

§ 4. Ex ante guarantees and deposits: the Flemish example  

Many member states provide in their legislation possibilities for operators of classified activities to provide financial security via other means than through liability insurance. The same is true for international conventions which impose on licensees an obligation to secure financial security. To illustrate the wide possibility of financial guarantees we propose to have once more a look at the Flemish example and more particularly at the proposals of the Interuniversity Commission for the revision of environmental law in the Flemish region, which has provided for elaborate provisions concerning financial guarantees.

609 See also Haazen, O.A. and Spier, J., a.c., NJB, 1996, 45.
610 See the report to the European Parliament and to the Council on the operation of commission regulation number 3932/92 (Com. 1999), 192 final of 12 May 1999, 18.
A. OBLIGATION OF FINANCIAL SECURITY: A BALANCED APPROACH

The obligation to provide financial guarantees has been provided for in part 9, dealing with the compensation of damage caused by pollution. The main provisions concerning environmental liability, as proposed by this commission have been set out above. Chapter 3 of this part 9 specifies in section 1 that the Flemish government shall designate those categories of classified installations and activities for which the permit holder or the holder of a notification certificate is bound to provide financial guarantees for the purpose of guaranteeing the liability for the damage or for the impairment of the environment which may be caused by the installations or activities. The advantage of this system is obviously that there is no general duty for all operators of classified installations to constitute a financial security. It will be the government or the administrative authorities who decide in which cases financial security is required. However, article 9.1.14 § 3 of the draft decree on environmental policy provides that there shall be an obligation to provide financial guarantees in relation to the carrying out of a soil clean-up activity.

It is interesting that as far as the nature of the financial guarantees is concerned article 9.1.16 of the draft decree on environmental policy does not only rely on liability insurance, but stipulates that the financial guarantee in question may assume any of the following forms:

- Insurance policy;
- Guarantee provided by a financial institution;
- Any other form of personal or collateral security;
- A deposit paid by way of security on a separate account with the environmental guarantee account.

The amount of the financial guarantee shall be fixed by the Flemish government by means of general, sectoral and integral conditions, in the light of the dangers presented to man and to the environment by various categories of installations and activities. In addition, article 9.1.17 § 1 stipulates that for each category separate guarantees are provided for a. damage caused by death or by personal injury and b. any other type of damage or impairment to the environment.

The Interuniversity Commission clearly assumed that the amount can not be mentioned in general terms but will have to depend upon the type of installation. Apparently the Interuniversity Commission also judged it important to provide for specific amounts on the one hand for personal injury and on the other hand for environmental damage (as the type which is defined in the white paper).

Obviously article 9.1.22 of the draft decree on environmental policy also stipulates that the money available under financial guarantee may only be claimed for the purpose of restoring damage or impairment of the environment. This is necessary, as was mentioned above, to avoid that the guarantee which might have been set aside to cover environmental damage would be used by other creditors.

611 See the proposed article 9.1.14 of the draft decree on environmental policy.
B. OPTIONAL FINANCIAL CAPS

The liability in the draft decree on environmental policy is in principle an unlimited liability. Hence, the provisions concerning the amounts only concern the amount of financial security. However, the draft decree on environmental policy introduces the possibility of a system of financial caps, which should not be judged immediately as inefficient\(^{612}\).

Part 9 of the draft decree of the Interuniversity Commission provides for rules concerning compensation of damage caused by pollution. Title 1 of this Part 9 provides for rules concerning liability and financial guarantees. Within this Title 1, Chapter 4 deals with "Limitation of liability by establishing a voluntary guarantee-fund".

Article 9.1.24 of the draft decree provides in § 1 that the operator may limit any liability which he may incur pursuant to the provisions of this title for any damage to the environment to the amount which he is bound to provide by way of financial guarantee where he is able to prove that a guarantee-fund guarantees the compensation of any damage or impairment of the environment exceeding this amount within the limits and subject to specific conditions. The limit only applies when the guarantee-fund provided by the operator guarantees the compensation over and above the amount for which the operator is anyway liable to provide a financial guarantee and should reach specific amounts to be determined by implementing regulations. In addition the possibility of limitation of liability only applies when the guarantee fund proposed by the operator has been recognized by the Flemish government. When the guarantee-fund proves to be inadequate for the purpose of paying compensation within the limits, the operator shall have unlimited liability in respect of these amounts. This does not mean that there is unlimited liability, but liability up to the amount established by implementing regulations\(^{613}\). Where there occurs an intentional fault on the part of the operator the operator shall continue to have unlimited liability\(^{614}\).

The explanatory memorandum\(^{615}\) makes clear that the general rule in the environmental liability regime proposed by the Commission still is the unlimited liability. The draft article 9.1.24 only provides for an optional mechanism which in fact trades a limitation of the liability of the operator against the guarantee of the availability of additional capital for the compensation of victims. Operators already have to provide a minimum financial guarantee for their liability. The proposed article only offers them the possibility of limiting their personal liability by providing a second, substantially higher amount of guarantees to a compensation fund. (The word compensation fund, which is used in the Flemish text is somewhat misleading, since it concerns a fund which only serves to compensate the damage caused by this particular injurer).

Although the text of the Flemish proposal is not clear in every respect, this proposal may well correspond to the principles of the theoretical model. A basic financial guarantee will always have to

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612 As we did in chapter 7.
613 See article 9.1.24, § 5.
614 Article 9.1.24, § 6.
be provided on a mandatory basis by the operator. The draft only concerns the payment of a substantial higher amount as a second layer which constitutes an "optional limitation fund". This additional guarantee may be covered by insurance, which gives the insurer incentives to exercise additional control. The efficiency of the regime will obviously depend upon the expected amount of the damage. But the administrative authority (Flemish government) can apparently control the amount in every specific case. Thus the government makes a trade-off and accepts the optional limitation fund (for an amount which should in principle be sufficient to cover every loss) which provides a higher certainty of compensation for victims on the one hand and certainty for risk averse injurers on the other hand. That is the main difference with generalized statutory caps, discussed above. These generalized caps were judged inefficient because they do not take into account the individual financial situation of the polluter, nor the damage he may cause. That is different with the individualized optional caps proposed by the Flemish Interuniversity Commission. The advantage for operators in engaging in this regime is obviously that they can \textit{ex ante} limit their exposure to liability by providing a guarantee for an amount which in principle guarantees to cover all losses. Thus the system also allows for a differentiation of risks and injurers. Moreover, the injurer's incentives will remain unaffected since unlimited liability still applies in case of an international fault (article 9.1.24 §6).

C. DEPOSITS

In addition to these interesting provisions concerning the voluntary guarantee fund the draft decree on environmental policy also contains provisions concerning the obligation to provide deposits. In some cases, the permit holder may be required to pay a deposit into an environmental guarantee account. Interestingly enough these deposits are held in a separate account for the benefit of the depositor and can only be used to cover expenses related to the treatment they are intended to cover. When all the obligations have been fulfilled by the permit holder, the deposit and the interests relating thereto have to be repaid to the permit holder. This means that effectively the deposit is an amount of a guarantee that stays at the disposition of the authorities who run the environmental guarantee account and provides proceeds in the form of interest which are returned, for example, when an operation is terminated in no damage has occurred. Title 4 of part 9 deals in more detail with the environmental guarantee account.

D. A FLEXIBLE SOLUTION

In sum, this Flemish example shows that there are many more financial techniques available to guarantee financial security concerning the repair of harm to bio-diversity or to the soil than merely liability insurance. The draft decree not only refers to guarantees provided by a financial institution, personal or collateral security, but even to deposits paid to an environmental guarantee account. In all of these cases the goal is to make sure that when environmental damage would occur sufficient coverage is available to compensate the damage the potential responsible party could cause. All these

616 See chapter 7.
instruments are, in other words, meant to cure the insolvency problem with the related risks of undercompensation and underdeterrence.

At the policy level the Flemish example is important since the proposals of the Interuniversity Commission for the revision of environmental law in the Flemish region came to existence after long consultations both with the insurance industry and with financial institutions and the industrial world. Especially the idea of providing for deposits into an environmental guarantee account, which could lead to interest payments to the benefit of the industrial operator seemed very attractive to industry, especially if the payments were made tax deductible. The major advantage is that the payments of deposits to a guarantee account are not lost in case an activity is exercised without any damage (hence, it provides excellent incentives for prevention), whereas the premiums paid to an insurance undertaking are obviously lost for industry, even if never any damage occurred during the operation of a plant.

The Flemish example shows that mandatory financial security can be required on a flexible basis, without the need to jump necessarily to liability insurance. The Flemish example shows that it is better to work with flexible solutions where the form and amount of the financial security required is tailored according to the needs of the specific case. This calls for a regulation either on a sector base or via permit conditions set by administrative agencies, instead of general rules which would lack the flexibility required.

§ 5. Risk sharing agreements

A. Risk sharing by operators: principles

Above we have discussed the possibility of pooling as a means to increase the capacity of insurance. In that respect we discussed the pooling of insurers as a tool to provide higher amounts of coverage. We mentioned in that respect possible negative consequences of pooling in the long run, by using the example of the nuclear pools. If pools act like monopolistic insurers, premiums might be relatively high and unattractive for specific operators. Pooling of insurance resources was also used with environmental insurance, as the example of the Dutch environmental pool showed.

An alternative is to think about risk pooling by plant operators. Faure and Skogh have proposed a risk sharing agreement as an alternative compensation scheme which could provide higher amounts of coverage to deal with the nuclear risk. Their reasoning, which can also apply to increase capacity for environmental risks, is as follows:

Although large risks may be uninsurable on the traditional insurance market, these large risks might be shared by ex ante agreements. Those ex ante agreements are often used in cases where the risk is

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618 Chapter 5, § 3 B-C.
619 See § 3 B 1 of this chapter.
The risk sharing could be realized through an international convention in order to get as many plant owners involved as possible. It could, however, also function within the existing conventions on a voluntary basis. The risk sharing agreement would function according to the following points:

1. the owner of a nuclear power plant is strictly liable for losses caused by an accident, including third party liability.

2. in principle, as was mentioned above, strict liability should be unlimited. It may, however, be necessary to limit initially the liability to e.g. US$ 100 billion, which would already be substantially larger than the size of the liability today. This would also allow for compensation for medium size accidents.

3. every plant owner should contribute to a mutual guarantee fund. This mutual pool covers the liability in case of an accident. If there are 100 nuclear power plants involved in the pool, and thus 100 members, each plant owner than has to contribute one billion US$ in case of an accident with costs rising to US$ 100 billion.

4. the maximum potential claim on each plant is therefore one billion US$. This makes reinsurance necessary. A fraction of the desired coverage can be provided by the international insurance market; another part can be obtained through reinsurance from the states.

A major difference with the existing system is that, in the proposed risk sharing agreement, all plants share the costs of accidents where ever they occur in signatory states. This makes nuclear safety a collective economic responsibility for the industry. The liability is to a large part transferred from the single plant owner to the collective guarantee fund mutually owned by the nuclear industry in the contracting states. The mutual fund will face moral hazard problems caused by the individual members. It will therefore be in the interest of the fund to control its members and to reduce risks, for instance by imposing requirements before being accepted as a member. Hence, the industry will be forced to take preventive measures by the mutual fund as a condition of being accepted as a member.

Thus an important effect of this risk sharing agreement would be that accident prevention would gain a new economic dimension. Unlimited liability of plant owners in combination with a mutual guarantee fund will create a collective interest of the industry in reducing risks and controlling pool members.

The working of this *ex ante* agreement can be illustrated by one example. Assume, for instance, that there is an accident in France that causes US$ 60 billion damages in France, Belgium and Germany. Each of the 100 plant owners will then contribute 600 million US$. The 12 plants in Sweden would have to cover 7.2 billion US$ of losses. A large part of these costs would be insured by the insurance market (and maybe by the existing nuclear insurance pools) and there would be reinsurance by the states and to some extent by the international insurance market. The possibility of reinsurance by the state is already covered under the Paris Convention. For instance in the Netherlands the Dutch state
provides for a guarantee of 5 billion Dutch guilders (almost 3 billion US$). This illustrates that although it might be impossible to receive insurance coverage up to 1 billion US$ for each plant, an \textit{ex ante} commitment by each power plant to intervene in the costs of a nuclear accident up to a maximum amount of 1 billion US$ might well be given if it is supported by insurance, reinsurance and a state guarantee.

B. \textsc{Practicability of Pools: The Nuclear Example}

The statements made above that the existing limitations on liability neither provide for adequate compensation of losses nor for full internalization of the nuclear risk are of course not new. Also within the IAEA and the Nuclear Energy Agency of the OECD an increase of the amounts available is seen as a necessary change to the conventions, especially in the light of the Chernobyl accident. We also have reason to believe that it is in the interest of the nuclear industry today not to oppose these increases. With the current limitations property damages will to a large extent be uncovered by insurance and the international conventions. A nuclear accident in e.g. Central Europe may destroy land or property in surrounding nations with serious diplomatic controversies as a consequence. An accident that makes an abandonment of the area around a plant necessary may also cause immense losses of land and property. The effects of these losses on the financial system are often overlooked. Since most credits are guaranteed by real estate a lot of creditors will not recover their loans. The consequence can be the bankruptcy of many financial institutions, which may disturb the international financial system. The impact on public budgets may therefore be large. Since not all the losses will be compensated the distribution of the available compensation will be a political matter. In general, the undercompensation will lead to a general distrust in nuclear power which will cause a considerable pressure on politicians to reduce the use of nuclear power to an even greater extent. This can only be avoided if the nuclear industry can come up with an arrangement that provides at least for adequate compensation if an accident happens. The classic systems of individual liability of a nuclear power plant operator with individual insurance by the national pools has not proven able to generate sufficient amounts. As we have demonstrated, an \textit{ex ante} risk sharing agreement on an international level might provide more adequate victim compensation. In a way the \textit{ex ante} agreement is simply a decision on how to distribute the costs of a potential accident \textit{ex ante}. An accident today could lead to random victimization, political conflicts and large economic disturbances. An \textit{ex ante} regulation is therefore in the public interest, but also in the interest of the industry. Such a risk sharing agreement will reduce the public's disutility of risk aversion and thus the fear of nuclear power in general. The \textit{ex ante} agreement will also reduce the risk for the nuclear industry of political failures due to sudden opinions, poorly informed politicians etc.

An opinion in favour of an \textit{ex ante} risk sharing agreement may be established. First, countries without nuclear powers will only benefit from the system. Second, countries with nuclear power may have very large losses. It is therefore in the interest of these countries to clarify the liability and the sharing of the potential costs \textit{ex ante}. Third, pressure groups which are very strong economically have much to gain from this \textit{ex ante} risk sharing agreement, especially creditors and insurance with a lot of real estate in their portfolio or as surety.
C. RISK SHARING AGREEMENTS: EXAMPLES

1. Price-Anderson Act

The implementation of such a risk sharing agreement should not be considered as impossible at all for several reasons. In this respect we can point to the fact that a comparable, although not completely the same, system has been introduced by the most recent amendment to the American Price-Anderson Act. The principal in American law is still individual liability of the operator of the power plant up to an amount of US$ 200 million\textsuperscript{621}, for which the operator will seek insurance coverage with the classic nuclear insurance pools. If the damage is higher than US$ 200 million all nuclear power plants in the United States will share on a pro rata basis up to a total amount for the 114 American power plants of US$ 7.2 billion\textsuperscript{622}. The amounts would meanwhile have been raised so that the total now comes close to US$ 9 billion\textsuperscript{623}. This American example shows that through a risk spreading between all nuclear power plants considerably higher amounts can be made available than with a liability limit which is set on the basis of the insurability of the risk by a national insurance pool\textsuperscript{624}.

2. P&I Clubs

Also in other fields of liability risk sharing agreements are well-known. For instance marine oil pollution is insured by the so-called Protection and Indemnity Clubs (P&I Clubs). The members of these clubs are the tanker owners. They provide insurance on a non-profit basis for the members. At the beginning of each year a "call" is made which should cover the claims and administrative costs\textsuperscript{625}. These P&I Clubs function as a mutual insurance company. Profits and losses are shared amongst the members. If the receipts of a year were insufficient to cover the losses an additional call can be asked from the members.

Obviously a co-operation between commercial undertakings could again be viewed as endangering competition, also when it takes place to cover risks. One should note that as far as insurance undertakings are concerned the exemption regulation 393/92 applies. In this respect we can refer to the

\textsuperscript{623} So Radetzki, M. and Radetzki, M., \textit{I.e.}, 188.
discussion above concerning the conditions under which a co-operation of insurers in the framework of pooling falls under the exemption\textsuperscript{626}.

The pooling by P&I Clubs had already been exempted previously from the application of the old article 85, 1 EEC Treaty by a Commission decision of 16 December 1985. This individual exemption was criticized in the literature since it was held that the conditions to exempt P&I Clubs from competition law were not met\textsuperscript{627}. These voices have apparently not convinced the Commission since in the recent report of 12 May 1999 on the exemption regulation the Commission holds once more that this co-operation between P&I Clubs is necessary to offer an adequate coverage (although the companies involved together have a market share of 89%!)\textsuperscript{628}.

Anyway this shows that based on this recent report at least P&I Clubs should not worry that their anti-competitive pooling strategies would be considered a violation of European competition law.

3. Nuclear liability: recent developments\textsuperscript{629}

Also within the revision of the Paris and Vienna Convention, the drafting committees have discussed several alternatives to produce higher amounts of coverage. In this respect a proposal by the delegations of the United Kingdom and France is worth mentioning. They proposed a 4-tier system whereby the compensation would be provided as follows:

\begin{itemize}
  \item[a.] up to the amount provided under the legislation of a contracting party, by insurance or other financial security of the operator liable in accordance with the Vienna or the Paris convention;
  \item[b.] between that amount and (A) million Special Drawing Rights, art of funds provided by the operator liable which, subject to §4 of this article, the operator shall have secured through his membership of a risk pool established by free association of operators;
  \item[c.] between (A) and (B) million Special Drawing Rights, out of public funds to be made available by the contracting party in whose territory the nuclear installation of the operator liable is situated;
  \item[d.] between (B) and (C) million Special Drawing Rights, out of public funds to be made available by the contracting parties according to the formula for contributions specified in article 5”.
\end{itemize}

The proposal moreover stipulated that the risk pool shall secure the availability of the funds through contracts binding upon all participants and shall allow for the accession of new participants on agreed terms which may take account, inter alia, of risk.

\textsuperscript{626} See above chapter 5 § 3 C.
\textsuperscript{628} Commission report, nr. 29.
\textsuperscript{629} For these recent evolutions see also Conruyt-Angenent, H., "L'évolution en droit belge de la réponsion des dommages nucléaires à la lumière des conventions internationales", in Rogge, J. (ed.), Liber Amicorum René van Gompel, Études en assurances, Deurne, Kluwer, 1998, 75-108.
Unfortunately, however, these proposals have not been taken over, neither in the protocol to amend the
Vienna Convention nor in the convention on Supplementary Funding, both of 12 September 1997. The
idea remains that if the damage exceeds the liability of the operator the state will have to intervene
with public funds.

D. RISK SHARING VERSUS INSURANCE FOR ENVIRONMENTAL DAMAGE

A pooling of resources by operators might obviously be a good solution as well to provide coverage
for environmental (liability) risks. In that respect the examples of the nuclear area are totally
applicable to the environmental risk as well. The crucial question is obviously whether the operators
themselves are better able to follow the fundamental goals of an efficient system of prevention and
compensation of environmental damage. Since we explained that such a system can only work
efficiently to the amount that a risk differentiation can be applied, the crucial question is whether the
operators of the pool can estimate the costs of liability claims and can judge, on the basis of actuarial
expertise, which potentially responsible parties pose the higher liability risks than others. Also the
technical annex made clear that pooling can only be considered an efficient funding system if the
managers of the pool will be able to identify the potentially responsible parties who are higher liability
risks than others and if they can hence adjust their contributions to the pooled funding scheme
accordingly.\textsuperscript{630} If, therefore, there are situations where one can assume that the risk is so technical and
complicated that only the operators themselves can be judged able to monitor the risk and to require
preventive measures accordingly, a pooling system run by operators might create more efficient results
than insurance.

There is, moreover, one other important advantage of mutual risk sharing via pooling. Skogh has
shown that insurance requires that pricing is undertaken before the occurrence of the insured event. An
agreement to mutually share each other’s losses does not necessarily require the \textit{ex ante} payment of a
premium. Mutual risk sharing can be based on an agreement to share losses \textit{ex post}, after the accident
occurs and does not require actuarial information \textit{ex ante}.\textsuperscript{631}

Mutual risk sharing seems therefore as an ideal solution if the probability of an accident is statistically
unpredictable. It is however, also necessary that moral hazard is controlled via mutual monitoring, e.g.
by individuals in the same business. This explains why originally risk distribution started via mutual
risk sharing. Insurance can only develop when actuarial information is available. Hence, mutual risk
sharing e.g. via pools of operators seems warranted when precise actuarial information on the
predictability of the risk is lacking, such as in case of damage to biodiversity.

\textsuperscript{630} Technical Annex, 3-4.
\textsuperscript{631} See Skogh, G., "Development Risks, Strict Liability and the Insurability of Industrial Hazards", \textit{The Geneva
of insurance", in Bouckaert, B. and De Geest, G. (eds.), \textit{Encyclopedia of Law and Economics. II, Civil Law
and Economics}, Cheltenham, Edward Elgar, 2000, 521-537.
However, one should realize that this is not always necessarily the case. Indeed, insurers are specialized in dealing with risk and hence, have also a good knowledge of risk differentiation. Moreover, the costs of running a pooling system might be high as well. In sum, the question whether a pooling system is more efficient than an insurance scheme will not only depend upon the ability of either the insurers or the managers of a pooling system to monitor the risks involved, but also upon the transaction costs of both schemes. In any event, a pooling system should not be excluded as a tool of providing financial security to cover the liabilities as described in the white paper on environmental liability. However, if pooling systems are used, the administrative agency should obviously receive sufficient guarantees that at the end of the day the pool can meet the obligations of the operators involved. As was shown in the nuclear example, some reinsurance by the pool may be necessary to cope with that issue.

§ 6. Compensation funds

A. INTRODUCTION

A question that inevitably arises when issues of environmental damage are discussed is whether traditional liability law, combined with insurance is at all able to provide for compensation of the type environmental damage, covered in the white paper. Issues of fault or negligence have been avoided in many legal systems by a trend towards strict liability. However, we already indicated that strict liability alone will of course not guarantee a compensation for environmental damage, given the insolvency problem. This will create a demand for insurance. However, it is well-known that many problems may arise with the insurance of environmental damage632. Therefore in many legal systems the question has been asked whether compensation for environmental damage should be provided through compensation funds. Well-known in this respect is of course the United States Superfund, introduced through CERCLA, which has led to a lot of criticism633. 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 literature634. In addition the idea is now increasingly introduced in policy documents in the various member states formulating proposals for the reform of environmental law. In this respect we can once more point at the Interuniversitary Commission for the Reform of Environmental Law that recently proposed the introduction of a compensation fund in the Flemish Region635, but also at a Dutch study performed on behalf of the Ministry of the Environment proposing the introduction of an environmental compensation fund in the Netherlands636. Finally we

636 Gilhuis, and Verschuuren, J., Een Milieuschadefonds in Nederland; een Onderzoek naar de Mogelijkheden, Publicatieerks Milieubeheer, 1994/3. For comments see Hulst, E., "De werkelijkheid rondom een algemeen milieuschadefonds, een
can also point at the Green Paper on remedying environmental damage that pays attention to the role of compensation funds as well. Hence, there are ample reasons to take a closer look at the phenomenon of compensation funds in a study on environmental damage, especially comparing funds with traditional insurance.

B. THE VARIOUS FUNDS

One cannot escape the impression that often - especially at the political level - funds are advocated as miracle solution for all problems of environmental damage whereby no clear definition is given of the specific funds. This can be misleading since the term fund is often used for a variety of private or public financial arrangements – some of which have been discussed previously in this chapter - that may be quite different. We will briefly sketch the kind of funds that might play a role when environmental damage is discussed. This short overview will make clear that usually very different goals are achieved by these various funds.

1. Limitation Fund

In American literature the idea of a fund is sometimes used to refer to the situation whereby mass damage is caused by similar products or services. The problem that usually arises in these cases of serial damage (e.g. with toxic torts) is that the liable enterprise may be willing to agree to a settlement with the victims on the condition that he can offer a certain sum to all the victims whereby he can reach a final settlement for the damage caused by the specific tort. In a certain sense the manufacturer then raises a fund that will have to be used to compensate all victims. It could be called a limitation fund since the enterprise agreeing to such a settlement usually wishes to limit its liability to the amount brought into the fund. In this case no risk spreading with other (potential) manufacturers takes place, since only the liable manufacturer finances the fund. Examples of such a limitation fund can be found in the area of civil liability for oil pollution damage. Article V of the Convention of Brussels on Civil Liability for Oil Pollution Damage provides for the possibility for the liable tanker owner to provide for a limitation fund that should compensate victims.637 As reward for the payment of a particular sum the duty to compensate is usually limited to the amount made available: a limitation fund. Recently it has also been argued in the Netherlands that such a fund solution would make compensation of health damage caused by exposure to toxic substances a lot easier638. A problem that will, however, inevitably arise with environmental damage is latency. It is essential in a limitation fund solution that latecomers are excluded. Therefore this might not be the ideal solution in case of environmental damage. The goal of a limitation fund in these cases is not so much to provide a remedy against e.g. disappearing perpetrators, but to have an adequate instrument to divide the available proceeds among the victims in case of serial damage639.

637 But in that particular case the liability itself has also been limited. 638 See the inauguration address of Dommering-Van Rongen, L., Schade Vergoeden door Fondsvermogen, Deventer, Kluwer, 1996.
639 This was the reason that the European Directive on Product Liability also incorporated the idea of a limitation fund in art. 16 which gave member states the option to limit liability in case of serial damage to an amount which may not be less than 70 million ECU. However, only few member states have used this option.
There could however be one role for such a limitation fund. If one fears that a certain activity may cause harm in the future, at the start of the operation the enterprise involved in the activity could be asked to pay a substantial amount *ex ante* which should become available in case environmental damage occurs. If the damage occurs the liability would then be limited to the amount the injurer had to pay. As we have just explained in the previous section, this regime has been proposed in the Flemish Decree on Environmental Policy. The advantage of such a regime for the enterprise is obvious. It will have certainty with respect to the amount to be paid, which is never the case when it is subjected to full unlimited liability. In addition the amount reserved for compensating environmental damage (through either insurance, a payment in cash, a bank guarantee or any other financial guarantee to be approved by the agency) can be paid back after the operations if no environmental damage occurred. Hence, the money is not lost as is the case with insurance premiums paid. From society’s point of view the advantage is that there is at least certainty that an amount of money deemed adequate to compensate environmental damage will be available in case an accident happens.

2. **Advancement Fund**

A second arrangement referred to as fund is the advancement fund. The prepayment or advancement construction is a remedy for long-lasting civil procedures concerning liability- and insurance coverage issues, that can last much longer than the life of the victim. Especially in case of asbestos victims it has been argued that it is highly unfair that (relatives of) victims only receive compensation post mortem because of the relatively short time between the discovery of the illness and their death. Therefore an advancement fund has been advanced in the Netherlands as remedy for asbestos victims.

Examples of these advancement funds can also be found in environmental legislation. In Belgium the Act of 10 January 1977 installed an advancement fund for damage caused by groundwater extraction. Again it is uncertain whether this advancement fund can play a large role in case of environmental damage. The reason why compensation funds are sometimes defended with respect to environmental damage is not so much related to long-lasting procedures, but more to the uninsurability of certain environmental risks or to the fact that no individual injurer can be identified. If these are the problems to be solved, an advancement fund is no adequate remedy.

3. **Guarantee Fund**

Guarantee funds are well-known as instruments to protect victims against the possible insolvency of a liable injurer or his insurer. The advantage of a guarantee fund is that it only intervenes for the so-

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642 See for a detailed discussion Bocken, H., "Van Fout naar Risico", *Tijdschrift voor Privaatrecht*, 1984, 368 and following.
called excess risk, being the risk for which in the specific case for various reasons no insurance coverage is available.

However, it is essential that a guarantee fund only intervenes if other compensation mechanisms, such as insurance have failed. The possible role of a guarantee fund for compensating environmental damage will be discussed below.

4. A General Environmental Fund

A fourth alternative could be the environmental fund that would generally operate as a substitute for liability and insurance. Although it is often not very specified, one has the impression that it is usually in that sense that the term compensation fund is used. However, if these compensation funds were to be used as alternative for the liability system inevitably the question will arise how they can be financed in an adequate way. Therefore we shall now focus on basic differences between compensation funds on the one hand and liability combined with insurance on the other hand as devices to provide compensation for damage.

C. General Principles of Fair and Efficient Compensation

No matter how a compensation system is organized, the incentives for prevention of environmental damage should always remain untouched. We already referred to these principles when discussing the question whether liability should be retroactive. They are, however, important as well when it comes to judging the effectiveness of alternative compensation mechanisms. In chapter 2 it has often been stressed that liability rules do not just have a compensating, but also a preventive effect. Liability rules can only have a preventive effect if the duty to compensate is put on the one who actually contributed to the risk. This means that a duty to compensate should in principle only rest upon the one who actually contributed to the risk.

A second, related principle is that this duty to contribute should also be related to the amount in which the specific activity or entrepreneur contributed to the risk. This principle is usually automatically respected in liability law. The duty to compensate under tort law is indeed usually limited to the damage that the specific tortfeasor caused himself. However, also if a collectivization of the compensation takes place it remains important to guarantee that the tortfeasor only contributes financially in relation to the amount in which he contributed to the risk as well. This is reflected in insurance policies in the idea of risk differentiation. This principle should also be applied if a compensation fund is installed.


644 Discussed in chapter 2 § 7.

645 Unless there would be joint & several or channeling of liability. See chapter 5 § 8.

646 This idea has been elaborated in chapter 5 § 6.
meaning that bad risks should contribute more to the compensation system than good risks. This remains important since it will give incentives for prevention to the contributors to the fund. Bad risks will be punished and good risks should be rewarded.

These principles are not only important from an efficiency point of view (providing optimal incentives for prevention), but also include a fairness element. Indeed, if these principles would not be followed, it would mean that good risks would have to pay for the bad risks as well and would therefore in fact subsidize bad risks. This negative redistribution should be avoided and therefore the compensation mechanism, fund or insurance, should be financed principally by the ones who really contributed to the damage.

In sum, the compensation mechanism should aim at a differentiation of the contributions due. This differentiation is only possible if the insurance company or agency administering the fund also possesses information on the amount in which the specific activity contributed to the risk. One key element to determine the choice between insurance or funds is therefore who possesses the best information to control the risk.  

D. FUNDS VERSUS INSURANCE

1. Risk Differentiation

Applying the principles discussed above, there are not many reasons why, if both are – in theory – available - a compensation fund would provide better protection against insolvency than the private insurance markets. One could assume that an insurer is better able to differentiate risks since an insurer is specialized in risk differentiation and risk spreading. Insurers therefore possess techniques to determine in what way their insured contribute to the risk. Obviously this assumes that the insurance markets are competitive. In the absence of competition on insurance markets, either the supply of insurance coverage could be too limited or premiums could be excessively high, which could justify a preference for a compensation fund. But if insurance markets are competitive, insurers can be assumed to be better able to deal with classic insurance problems such as moral hazard and adverse selection than the administrators of a compensation fund. One can not see as a matter of principle why a government agency that would run a compensation fund would have better information on risks than an insurer. This might, however, be different if highly technical risks are involved where operators of certain facilities are in a much better position than the insurance company to monitor each other. Some examples have been given above. This point has been made for instance concerning the compensation for nuclear damage. One could argue that a risk sharing agreement between nuclear plant operators could lead to an optimal monitoring between the operators since they possess much better information on prevention, good and bad risks than an insurance company would. Also in the maritime

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647 See in this respect the discussion on the choice between risk sharing agreements and insurance discussed in § 5 D of this chapter.
insurance the Protection and Indemnity Clubs, which we already discussed, which are based on a mutual risk sharing between tanker owners play a crucial role. With respect to these highly specialized matters one could therefore argue that the operators themselves might in some cases be better suited than an insurance company to control moral hazard since they are better able to process information on the particular risk. However, the given examples show that with these risk sharing agreements no use is made of a government run compensation fund.

In sum, if both insurance and compensation funds are available there are no clear reasons why a fund would be the preferred solution. There may, however, be reasons why insurance may not provide coverage for certain risks. In that case funds can not be compared with insurance since insurance is no alternative. However, as we have shown in chapter 5 one should not too soon conclude to an uninsurability of the environmental risk.

2. Costs

Comparing insurance with compensation funds one should also address the comparative costs of both instruments. Insurance will generally be cheaper because liability insurance policies are not concluded for one activity, but for a whole set of risks. There is hence one insurance policy with transaction costs that are incurred once and an administrative structure within an insurance company that will be forced to an adequate cost reduction by competitive pressures. The costs of risk spreading might also be lower with an insurance company than with a compensation fund. Insurers are indeed specialized 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 agree on a distribution of risks and losses in case of an incident. The comparison will obviously also depend upon the type of compensation fund under discussion. In most cases one immediately thinks of a compensation fund run by a regulatory authority. If that is the case one can of course refer to the literature on the negative effects of bureaucracies to argue that such a publicly operated compensation fund should not necessarily provide compensation at lower costs than the private insurance market. This can be reduced if the fund is administered privately, but in that case a competition with other funds has to be organized to provide incentives for cost reduction.

One could only think of cost advantages of a fund if one would not refer to a fund as one that would replace the liability and insurance system, but would be a limitation fund, such as the one proposed by

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651 These 'joint compensation systems' are also discussed in the Green Paper on Remedy Environmental Damage.


the Interuniversity Commission, whereby potential injurers make an *ex ante* reservation for potential future losses.

### E. A COMPENSATION FUND FOR ENVIRONMENTAL DAMAGE

So far we have sketched that in general there are very few reasons to expect that a compensation fund would provide better compensation than a private insurance market. This is especially the case for the liability considered under the white paper. The liability regime of the white paper can only be effective if one or more identifiable polluters can be found\(^654\). Since the white paper focuses on the situation where environmental damage can be remedied though liability it is unclear why, in this hypothesis, funds would have advantages compared to insurance. This does, however, not mean that there may be no role for compensation funds with respect to environmental damage at all. However, most fund solutions therefore typically refer to the situation that a polluter can not be identified or is insolvent\(^655\), which is not the situation addressed in the white paper.

#### 1. Guarantee Fund

A compensation fund may well be used to guarantee compensation in case of insolvency of the injurer or his insurer. In that case a fund does not replace the liability and insurance system, but only intervenes in a particular case when the injurer or his insurer was found insolvent. This combined use of the liability system, insurance and a guarantee fund for the insolvency risk has the advantage that the incentives of the liability system will remain untouched and that the fund will only have to intervene in the event of insolvency\(^656\).

However, the question arises whether such a fund could at all be used separately from compulsory insurance (in the broadest sense). Indeed, if insolvency of the injurer is the problem one fears it seems more logical to discuss the introduction of a duty to insure instead of immediately advancing a fund-solution. If one looks at the use of guarantee funds now, one can note that they are usually used to provide for the cases that an insurance company goes bankrupt. This merits the question whether it is at all useful to provide for a duty to insure for environmental damage\(^657\). This has been elaborated in chapter 6. As we have noticed there are so far only few countries have introduced compulsory environmental liability insurance\(^658\) and the white paper itself also seems reluctant to impose a duty to insure for environmental damage (as was the case for the Green Paper as well). However, it is important to stress that if one wishes to provide a protection against the insolvency of the injurer it is more appropriate to focus on a variety of financial mechanisms, we have discussed in this chapter, that

654 White paper, 13.
656 This combined approach is also proposed by Monti, A., *I.c.*
657 As has been suggested in the literature, among others by Hulst, E., *Grondslagen van Milieuaansprakelijkheid*, 518.
force a potential polluter *ex ante* to provide for compensation for future losses instead of focusing on an *ex post* fund solution. Generally, one can doubt whether it is useful to focus on a guarantee fund that should e.g. intervene in case of insolvency of an insurer instead of focusing on other *ex ante* compensation mechanisms to provide coverage.

2. *Restoration Fund*

There is one other situation where insurance can not intervene and a compensation fund could prove to be useful. This relates to the situation where no individual enterprise can be identified as liable for the harm caused\(^{659}\). Since there is no individual injurer who is liable there is logically also no insurer who will be bound to compensate. This is hence not typically the situation viewed in the white paper. One can think of a deterioration of a specific habitat through acid rain. These are typically the cases where the white paper argues that liability is not a suitable instrument\(^{660}\). One could consider a compensation fund for these specific cases where no individual injurer can be found. However, the compensation fund should then be limited to those situations, so that liability rules and insurance can still exercise their preventive effects in all other cases where an injurer can be found.

Still the question will have to be answered who shall contribute to such a fund. Ideally this would be funded by all contributors to the risk. However, different than in case of e.g. traffic accidents, it is not easy to identify *ex ante* what kind of activities contributed to the loss. If it is generally possible to argue that e.g. sulphur dioxide emissions caused the loss economists would obviously advocate a pigovian tax on sulphur dioxide emissions to finance the fund. One reason, however, why environmental taxes are still relatively scarce in practice is that it will often be hard to determine to what proportion this specific activity contributed to the risk and hence to determine the optimal marginal tax rate. If this is not possible the only alternative is that the government will pay for the restoration of the specific site, either directly or by financing a compensation fund that has to finance the clean up activity. However, since it is in both cases the tax payer who will have to provide the financial means one can question whether the installment of a compensation fund has any added value, apart from the fact that one is certain that specific public funds will be reserved for compensation of environmental damage.

F. *Summary*

Many phenomena that include a private or public compensation scheme for environmental damage are referred to as "Fund" solutions. We took a brief look at some of these solutions, comparing them to traditional liability and insurance. Most discussed is a compensation fund that would totally replace traditional insurance. For the cases envisaged in the white paper, this is where an identifiable polluter can be found and held liable, we doubt whether a compensation fund can play the important role it is expected to do. Generally insurance seems better able to control risks and can be provided at lower costs.

\(^{659}\) Other causes of failure of traditional liability and insurance are discussed by Bocken, H., “Deficiencies of the system of liability and liability insurance as a mechanism for the indemnification of environmental damage suffered by individual victims”, in Bocken, H. and Ryckbost, D. (eds.), *Insurance of Environmental Damage*, 133-145.

\(^{660}\) The examples provided in the white paper (p.13) are ‘effects brought about by CO\(_2\) and other emissions, forests dying as a result of acid rain and air pollution caused by traffic’.
costs. In addition some problems such as the long-tail risk can be cured through adequate insurance policies.661

It seems therefore more appropriate to use traditional liability and insurance as far as possible and to use funds only in cases where insurance markets fail and there is reason to believe that funds would be able to provide adequate compensation. In that respect a guarantee fund comes to mind to provide coverage if an insurance company would go out of business. However, it does not seem useful to introduce a guarantee fund without a corresponding duty to insure.

It might be more interesting to focus on various other legal instruments that aim to provide protection against the insolvency of the injurer, also discussed in this report. Also the Convention of Lugano on civil liability for damage resulting from activities dangerous to the environment provides for such a flexibility by prescribing in art. 12 that operators are required to participate in a financial security scheme or to have to maintain a financial guarantee up to a certain limit. This should not necessarily be insurance. More flexible than a duty to insure is also the already often mentioned proposal of the Flemish Commission, discussed previously, to force a potential polluter ex ante to provide any kind of compensation, bank guarantee, or other kind of payment ex ante as guarantee of compensation in the event environmental damage occurs. The advantage of this solution is that it does not replace liability and insurance, nor does it force the potential polluter to take out insurance coverage. It provides for a flexible system whereby the potential polluter can choose any market solution, provided that it will be able to adequately compensate environmental damage ex post.

Still this may not solve environmental damage that has a variety of causes where no individual injurer can be indicated. For these kinds of situations a fund might be warranted, although it is still unclear how this should be financed. If the polluters can be adequately identified as well as the amount in which they contributed to the risk, the fund could be financed through a tax on the polluting activities. Otherwise the general tax system should intervene, but then the necessity of a fund disappears as well. But again, this should not be our concern in this study, which focussed on the assurance of environmental liability and hence assumed that a liable injurer can be identified.662

Generally, it seems important to carefully analyze the joint use of liability rules, insurance and funds.663 This may lead to a combined use of these systems whereby the incentives provided through liability rules can remain unaffected and a fund might provide a useful contribution for the specific case in which the environmental damage cannot be chased down to one particular polluter.

661 See chapter 5 § 9 D.
662 See white paper, p.13 which makes clear that environmental damage can only be remedied through liability if there is an identifiable polluter, if the damage is concrete and identifiable and if a causal link can be established.
663 So correctly Monti, A., I.c.
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White Paper on environmental liability.


Annex 1: Technical Annex

Technical Annex to

“A General Analysis of the Financial Assurance Issues of Environmental Liability”

Policy Context

The European Commission has just approved a White Paper on Environmental Liability (WP) whereby it commits itself to launching further studies on the economic impact of environmental liability. The findings of these studies, it is said in the White Paper, will be profoundly assessed and given due weight in the preparation of the Commission’s future initiatives in this field. The Commission is considering proposing a Framework Directive on Environmental Liability.

Environmental liability implements the polluter pays principle and is perceived to give economic operators incentives to adopt more effective levels of prevention and thus avoid environmental damage. It is also viewed as an effective tool to ensure that environmental damage, when it happens, is restored or compensated for. The interest of the European Commission in liability as a tool of environmental policy stems, among other things, from these perceived effects of liability.

However whether liability will reach its policy goals depends on the financial assurance of the liability regime. This is especially critical as regards liability for damage to bio-diversity and natural resources, as opposed to damage to private property and personal injury. Damage to private property and personal injury is already covered in Member States' liability laws. These laws often impose liability for the costs of cleaning up contaminated sites. However, liability for damage to bio-diversity and natural resources is essentially non-existent in the EU.

Therefore, with a view to preparing further initiatives in the field of environmental liability in the European Union, the European Commission intends to launch a study that will

- identify the factors expected to affect the degree of financial assurance of environmental liability for damage to bio-diversity and natural resources
- with reference to the approach proposed in the White Paper, suggest features of the future EU framework directive on environmental liability likely to facilitate the financial assurance of the EU liability regime, namely through insurance.

General background for the study

For the purposes of this study, insurance includes other forms of financial security, such as self-insurance, bank guarantees and participation in funding pools.
Environmental liability is increasingly seen as an attractive way to address environmental damages, because liability obliges the responsible parties to compensate for the damages they caused, often by paying for their remediation. An important element of an environmental liability regime then is financial assurance, a guarantee that the damages will indeed be compensated once the responsible parties have been identified.

If an environmental liability regime does not have a financial assurance provision, damage may go uncompensated for a variety of reasons. The responsible parties may have underestimated the reserves necessary to cover their potential liabilities and thus be forced to declare insolvency once found liable for the damage they caused. Or the responsible parties may have shielded their assets from liability by delegating activities that cause environmental damage to smaller entities with few assets, which in turn would be insolvent if found liable for damage. Or responsible parties may have divested themselves of assets or ceased to exist as legal entities. In all of these cases, the damage in question has been “orphaned.”

Environmental liability regimes may address threats to their financial assurance by two means: regimes may use public funds to cover the costs of compensating for orphaned damage, or they may rely on potentially responsible parties’ participation in some form of insurance scheme to ensure that the damage they cause will not be orphaned in the first place. Strictly speaking, the use of public funds to address environmental damage may complement a liability regime, but does not conform to the principles of liability, because the responsible parties have not provided these funds. Therefore, insurance is the only means of securing the financial assurance of an environmental liability regime without breaking the principles of liability.

The availability of insurance plays a key role in the financial assurance of a liability regime, but a number of factors may undermine its effectiveness to play that role. These factors include

- the inability of the insurance provider to predict the costs of liability
- weaknesses inherent to insurance schemes such as risk estimation bias, adverse selection and moral hazard
- decisions by potentially responsible parties not to insure, and
- economic efficiency and equity considerations may also have impacts on the financial assurance of an environmental liability regime.

A better understanding of how such factors influence the financial assurance and other goals of an environmental liability regime, and the capacity of an insurance scheme to counter these factors, may be critical as the European Commission considers the introduction of a EC environmental liability regime.

The ability of insurance providers to predict the costs of liability claims

Potentially responsible parties, both public and private, may meet an insurance requirement in a number of ways. Such a requirement may be satisfied through self-insurance – if the parties have adequate resources – or participation in pooled funding schemes. Pooled funding schemes may be
managed by the participants themselves, by commercial insurers who have a profit motive, or by other third parties, which may include public authorities.

Depending on their design, these approaches may generate different transaction costs and necessitate different monitoring mechanisms. Further, while the self-insured generally must cover the full costs of their liabilities, participants in pooled funding schemes share the costs of liability with other parties, so that they generally will not have to pay the full costs of their liabilities, but may at the same time be obliged to partially cover the liabilities of other parties. Thus these approaches satisfy the polluter pays principle to varying degrees – with the implication that potentially responsible parties may thereby internalize the costs of liability to varying degrees.

However, all of these approaches are premised on the ability of the insurance provider to accurately estimate the total costs of the liability claims that the insurance funds must cover. If these costs cannot be estimated accurately, there is a risk that the funds will be exhausted before all the claims have been settled. In the event, the self-insured would declare insolvency before all the claims against them could be settled. Deep-pocketed, but rational, commercial insurance firms might price their policies so conservatively high there might be no demand for them, or simply decline to offer liability insurance policies if there was a significant risk that other funds would have to be tapped in order to cover their clients’ liabilities.

The more ambiguous the liability laws, the more difficult it may be for an insurance provider to predict the costs of liability claims. Clearly, any insurance scheme is only as sound as its predictive capacity, but environmental liability insurance is particularly vulnerable to predictive weaknesses. The market is not very good at costing environmental damage, which are generally external to the market, and alternative costing methods often require significant resources, such that employing these methods might divert significant resources away from the pool of resources available to cover liabilities. Thus a liability regime might make it easier for insurance providers to estimate the costs of liability by making its liability laws very clear and capping individual liabilities.

However, caps are perceived to interfere with the polluter pays principle and cannot be tailored to the situation of each potential responsible party. Therefore, regulators may be reluctant to impose caps on individual liabilities. Another approach would be to establish cleanup requirements that are very clear, so that the costs of remediating the damages in question are easier to estimate. However, little is known about the determinants of the costs of remediating damages. In any case, the ability of insurance providers to estimate the cost of environmental damage will be an important consideration in the design of an environmental liability insurance scheme. If insurance is priced beyond the reach of most potentially responsible parties, or is not available, an even more important consideration will be whether a financial assurance provision, and perhaps the environmental liability regime itself, is feasible at all. And if insurance is an absolute condition for operation, the lack of insurance may have significant economic impacts if firms cannot operate.

The study is expected to discuss specifically what the problems of insuring liability for damage to bio-diversity and natural resources are and whether, and if so, how, caps on individual liabilities could
facilitate insurance. It would be useful to illustrate the points made with examples of environmental liability systems.

The study is also expected to discuss specifically and from a practical viewpoint the legal clarity requirements above mentioned.

*Risk estimation bias, adverse selection and moral hazard*

Compounding the predictive weaknesses of environmental liability insurance are the inherent weaknesses of any insurance scheme. One weakness is the problem of risk estimation bias. Empirical evidence exists that most potentially responsible parties greatly underestimate the costs of the environmental damage they may cause, and the probability that they will be held liable for this damage. Therefore, when the potentially responsible parties are allowed to manage their own insurance funds, they are prone to reserving too few resources to cover their potential liabilities.

Further, pooled funding schemes are always vulnerable to adverse selection risks. That is to say, the managers of pooled funding schemes may not be able to identify the potentially responsible parties who are higher liability risks than other parties, and adjust their contributions to the pooled funding schemes accordingly. Generally speaking, adverse selection risks exist because potentially responsible parties fail to properly disclose their true risk profile (example: smokers who claim to be non-smokers so that they do not have to pay higher premiums for health insurance). However, in the case of environmental damages, data may not be available to indicate which parties are more or less likely to cause environmental damages.

Finally, all insurance schemes are vulnerable to moral hazard, the risk that, once insured, parties will view insurance as a safety net that allows them to increase their risky behaviors and activities with impunity. Thus, the implication is that the availability of insurance may lead to greater environmental damages than if insurance were not available.

While such weaknesses are inherent to insurance schemes, they can be countered, at least in part. If sufficient information is available concerning the costs of environmental damage, the problem of risk estimation bias can be addressed by regulating the amount of insurance a potentially responsible party needs to satisfy the financial assurance provision of an environmental liability regime. However, it is unlikely that such regulation could currently be done at EU level.

Insurance providers can also take measures to address the problems of adverse selection and moral hazard. Assuming that reliable statistics concerning environmental damage exist, fund managers should be able to use their actuarial expertise to determine the appropriate contribution from each participant as a way of addressing adverse selection. Information asymmetries may still exist, but presumably they can be overcome by the quid pro quo nature of insurance. That is, as a condition for coverage, managers can demand that participants disclose their risk profile. In such a way, insurance providers may also serve as more effective monitors of potentially responsible parties than regulators, thus addressing the problem of moral hazard.
From the view of potentially responsible parties, the disclosure of information to regulators may bring with it the risk of further regulation. Insurance providers, on the other hand, are not regulators. And while insurance providers cannot impose punishments as regulators can, insurance providers can deny coverage if their conditions are not met. Further, insurance providers can require as a condition of coverage that firms invest in a prescribed level of preventive measures. Thus the availability of insurance may in fact lead to greater prevention than would occur if insurance were not available. Whether it does or does not depends on whether insurance providers are able to motivate potentially responsible parties to internalize at least part of the costs of liability. How well insurance premiums are priced to reflect the liability risks of the insured may have a significant impact on such cost internalization. And the fact that most participants in pooled funding schemes are required to pay a deductible before the insurance provider will cover their liabilities may further serve as an incentive for potentially responsible parties to internalize the costs of their liabilities.

The study is expected to analyze specifically the impact of the discussed factors on the effectiveness of a liability regime.

*Decisions of potentially responsible parties not to insure*

Finally, if insurance is not obligatory for all potentially responsible parties, at least some potentially responsible parties may choose not to voluntarily insure themselves. Those who can afford to self-insure may decide not to – setting aside funds to cover potential liabilities may interfere with other investment opportunities. And the availability of pooled funding schemes does not necessarily mean that there will be a demand to participate in these schemes. If the price of participation in pooled funding schemes is too high, a number of potentially responsible parties may not be able to afford to participate, and self-insurance might be more attractive to those who could. Or, for the same reasons that most underestimate their risk of liability, potentially responsible parties may calculate that their risk of liability does not justify the cost of insurance. The study should empirically assess the significance of decisions by potentially responsible parties not to insure with reference to existing environmental liability regimes imposing liability for natural resource damage.

If enough potentially responsible parties decline to participate in insurance schemes, the financial assurance of a liability regime may be compromised. Thus regulators may have to make clear which parties need to comply with an insurance requirement, and how they must demonstrate their compliance. The study is expected to discuss specifically, preferably with reference to existing environmental liability schemes, the feasibility and effectiveness of such provisions by regulators.

*Economic efficiency and equity considerations*

As a final point, there may be reasons to sacrifice some financial assurance from some categories of potentially responsible parties or for some types of environmental damages to better meet other goals of environmental liability. An obvious goal of environmental liability should be economic efficiency.
If the costs generated by insuring some categories of potentially responsible parties or some types of environmental damage are not in proportion to the amount of compensation that results, it is economically inefficient to pursue financial assurance, and perhaps liability, in these cases. For example, it is known that the transaction costs involved in liability cases increase strongly with the number of potentially responsible parties involved which has prompted a proposal to release from Superfund liability certain co-disposal waste sites.

Equity as well as economic efficiency may also need to be taken into account by a liability regime. For any number of reasons, it may not be considered fair to hold certain categories of responsible parties liable for the damages they have caused. In all of these cases public funds might be well spent to compensate for orphaned damages. While such considerations as economic efficiency and equity may be independent of financial assurance considerations, the impact they have on the financial assurance of a liability regime cannot be ignored.

The study is expected to identify whether the considerations above on economic efficiency and equity are especially relevant to any of the sectors or activities that the White Paper proposes to cover under an EC liability regime.

**Study Objective**

This study will present arguments to elaborate the discussion above. The arguments will be generally illustrated on the basis of experience with existing legal environmental liability systems. However, the environmental legal liability regimes of the Netherlands and the Flemish region will be more closely analyzed and empirical evidence on these two regimes will be provided. The financial assurance provisions of these two environmental liability regimes will be identified, characterized and the insights they provide will be discussed. In particular, it has been assumed that the availability of insurance schemes is critical to the financial assurance of a regime, so a focus on this assumption would be very useful. It would be of interest to better understand whether, and if so, how, uncertainties associated with environmental liability have affected the availability of environmental liability insurance. And further, whether insufficient availability of, or demand for, environmental liability insurance has had any impacts on the implementation of liability regimes or other economic impacts and if so, what are these impacts, and what measures could be taken to address supply and demand issues.

The focus of this study is insurance of liability for damage to bio-diversity or natural resources, as defined in the White Paper. It should be clearly understood that the main driver behind the study is to assess whether, and if so how, the regime proposed in the White Paper can have financial assurance. Therefore the consultants will need to pay close attention to the type of liability proposed in the White Paper. This would be a regime with strict liability for damage caused by dangerous activities and fault-based liability for non-dangerous activities, with alleviation of the burden of proof (to be defined at a later stage). As far as defenses are concerned, the study is expected to evaluate how far insurance is or would be available for strict liability under which no defense would be available for damage caused by
releases authorized through EC regulations, for state of the art and/or for development risk, and this especially in the field of genetically modified organisms (GMOs)\(^{665}\).

The study will discuss how the described environmental liability regimes have been designed so that their financial assurance needs are met, how these designs differ and to what effect. A description of the mechanisms that need to be in place, and the conditions that need to hold for those mechanisms to work would be useful. Of particular interest is whether liability caps and cleanup standards have been included in these mechanisms, and to what effect. Once it is understood what mechanisms work, the study will discuss, with reference to the described liability regimes, how effectively these mechanisms have addressed financial assurance concerns.

Finally, while these mechanisms may have been necessary to guarantee the financial assurance of the liability regime, they may have had impacts on other goals of the regime and on the economy generally, and more insights into this possibility based on empirical evidence would be of interest. For example, requiring mandatory insurance of certain economic activities may prevent operators from engaging in these activities if insurers do not provide liability cover. Vice versa, it would be of interest to understand how the need to address other economic concerns generally and to meet other goals of the environmental liability regimes specifically has affected the financial assurance of the regimes. For example, exempting from mandatory insurance small and medium companies may significantly affect the financial assurance of liability regimes if companies react by outsourcing their risky activities to smaller firms.

It is understood that sufficient data may not exist to provide a complete picture of financial assurance issues. Nevertheless, it is expected that the consultant will provide as much insight into the subject as possible, and document any information gaps that should be addressed in future studies. Since there is a strong case that retroactive liability interferes with the availability of environmental liability insurance, it is expected that the design of the study will take this into account and isolate the effects of retroactive liability on financial assurance. The EC liability regime is expected not to be retrospective.

The anticipated audience of the study will include those with a general interest in liability, as well as subject experts, so that the main report of the study should be written for a general audience, with technical notes attached.

The contractor of this study is expected to cooperate with other consultants, to be identified by the European Commission, that will execute more empirically-oriented research in this field. The contractor may be required to exchange reports and other information with the other consultants and to participate in meetings with them.

\(^{665}\) One useful benchmark could be the Product Liability Directive (Council Directive 85/374/EEC; OJ 85, L 210, p 29, as amended by Directive 99/34/EC; OJ 99, L 141, p. 20), which covers GMOs and contains an optional provision to allow the development risk defense. This directive applies to damage caused by defective products (e.g. GMOs) to persons or goods, whereas the environmental liability regime will cover damage caused by such defective products to the environment.
Annex 2: White paper liability regime

Proposed EU regime

Possible scope of an EC environmental liability regime

- Dangerous and potentially dangerous activities regulated by EC environment related law
  - Traditional damage (damage to persons and goods) 
    - Contaminated sites
      - Non-dangerous activities
        - Damage to biodiversity (EC protected natural resources in natura 2000 areas)
  - Strict liability
  - Fault-based liability