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**Task Force for the Implementation of the Environmental Action Programme for Central and Eastern Europe, Caucasus and Central Asia  
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**ENVIRONMENTAL LIABILITY FOR DAMAGE TO NATURAL RESOURCES IN OECD COUNTRIES: THE CONCEPT AND KEY APPROACHES**

Discussion paper

10-12 June 2009, Chisinau, Moldova

*This document, prepared by the EAP Task Force Secretariat, describes the concept of environmental liability in OECD countries and lays the groundwork for a comparative analysis between the existing regimes in OECD and EECCA countries. Its aim is to stimulate a discussion among EECCA government officials and experts on the priorities for the reform of liability provisions for environmental damage in their countries.*

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## 1. INTRODUCTION

1. Environmental liability is one of the means of making polluters pay for preventing, remediating, or compensating environmental damage they cause. In economic terms, this means imposing internalisation of pollution externalities. Therefore, environmental liability is an important instrument of implementation of the Polluter Pays Principle. A well-designed environmental liability regime is also a significant deterrence tool against non-compliance with regulatory environmental requirements. In OECD countries, it is not a penal regime designed to punish the operator who caused the damage but one that is focused on remediating the damage done. Environmental insurance is increasingly used to protect potentially responsible parties from extensive financial obligations to remediate or compensate the damage.

### 1.1 Environmental Liability in EECCA

2. In EECCA countries' legal systems, environmental liability is based on civil law and only applies if environmental regulations have been breached (the standard of fault). The environmental permitting and compliance assurance systems in the region reflect the concept of allowable pollution in exchange for payment of pollution fees (charges), with increased payments for exceeding the limits. A logical extension of this concept is that a polluter past or present who has complied with requirements by meeting emission, discharge or waste disposal limits and/or who has paid to exceed them through the pollution charge system has fulfilled his obligations associated with damages. This approach contradicts the Polluter Pays Principle and complicates the remediation of environmental damage. (It also affects the issue of transferring liability from one owner to another, particularly in case of privatisation of state industrial assets.)

3. In addition, the EECCA legal systems remain focused on assessing the resulting damage for purposes of monetary compensation (essentially serving as a penalty) rather than on correcting the damage, limiting its impacts, and preventing further damage. Liability under this system is triggered by the mere violation of environmental standards, even if there is no actual proof of damage to the environment. Competent authorities must rely on science-based methodologies for assessing damage that are largely theoretical in nature.

4. Where the environmental damage is real, and the government has the will and resources to address a particular liability situation, there is little regulatory guidance on how to assess the needs and costs of remediation. There are very few, if any, standards for site risk and impact assessment, technique selection, and clean-up levels. In addition, there is limited capacity and expertise in the region to undertake damage assessment: the circle of regional experts remains small while international consultants are too expensive to be relied on routinely.

5. In a few EECCA countries (e.g., Russia and Kazakhstan) that have introduced mandatory environmental insurance for hazardous industrial activities, insurance companies authorised by the government to cover environmental risks generally do not anticipate any claims and view the arbitrarily set premiums as a source of income. The core reason for the dysfunction in the environmental insurance systems in EECCA is the weakness of the liability provisions and the lack of damage compensation claims that would trigger the real need for insurance coverage.

## 1.2 Objectives and Structure of the Paper

6. This document was prepared by the EAP Task Force Secretariat in response to requests from environmental authorities in EECCA countries which are eager to improve their environmental liability systems, particularly to be able to tackle the need for huge investments to clean up past pollution. Its objectives are:

- 1) To describe the concept of environmental liability in OECD countries and lay the groundwork for a detailed comparative analysis between the existing regimes in OECD and EECCA countries; and
- 2) To stimulate a discussion among EECCA government officials and experts on the priorities for the reform of liability provisions for environmental damage in their countries. These priorities will be addressed through the development of a further analytical and/or guidance document.

7. The paper provides an overview of key approaches in OECD countries to environmental liability for damage to natural resources, based primarily on the analysis of the legal systems and practices in the United States and the European Union. It does not address in detail liability for damage to persons, property, or private economic interests, which is often referred to as 'traditional' liability, neither does it cover health and property damage valuation techniques.

8. Chapter 2 describes the scope, main legal characteristics, and limitations of the environmental liability regimes in the US and the EU. Chapter 3 addresses the issue of assessment of damage to natural resources and biodiversity for the purpose of its remediation or monetary compensation. Chapter 4 considers the design and constraints of environmental liability insurance as a tool to provide financial security for parties potentially liable for environmental damages and to encourage prevention of such damages. Finally, Chapter 5 summarises the main conclusions for decision-makers in EECCA and contains a number of discussion questions.

## 2. LEGAL APPROACHES TO ENVIRONMENTAL LIABILITY

9. Industrial and commercial activities generating environmental pollution are often associated with the risk of contaminating natural resources, causing human health problems, damaging property, and affecting biodiversity. From the standpoint of the owners and operators of such activities, in mature environmental regulatory systems this risk translates into the risk of incurring legal liability for the consequences of environmental pollution.

10. This section describes the possible scope and features of environmental liability regimes and draws on examples of practices in OECD countries.

### 2.1 Scope of Environmental Liability

11. The scope and nature of environmental liability are changing over time and may vary greatly from country to country. The most important categories of environmental liability are:

- Liability for bodily injury, property damages and economic losses caused by pollution to third parties;
- Liability for the costs of preventive and remediation measures, including the cost of cleaning up the polluted site; and
- Liability for environmental damage, including reduced biodiversity and other damage to natural resources such as land, groundwater and surface waters.

12. Environmental liability can be administrative or civil, depending on the legal regime that establishes it. Traditional liability usually implies recourse through civil law, commonly available to affected individuals and sometimes to groups via so-called “class action” private party suits, as in the US. Liability for damage to natural resources can be imposed by government authorities under administrative law (as in the case of the European Union’s Environmental Liability Directive, see Box 1) or by injured parties through the courts in a civil procedure, where the government may sometimes act as a plaintiff.

13. The main difference between a traditional (private law) liability regime relying on civil liability and a public law regime based on administrative liability is that, in the latter scheme, preventive and restorative measures (such as cleanup) are mandated by compulsory orders of the competent enforcement authority, without the prior need for court adjudication. In cases of public health or environmental emergency, non-compliance with cleanup orders, or uncertainty about responsible parties, public authorities in most OECD countries can directly proceed with remediation and then employ the civil liability mechanism in order to recover the remediation costs from the liable parties (some countries, such as Germany and Italy, allow cost recovery for off-site remediation only where undertaking on-site measures was impossible).

14. While environmental liability is primarily regulated by national laws, its transboundary dimension is also important. It concerns damage to health and property as well as to natural resources,

mostly from air and water pollution. For example, the UNECE Protocol “On civil liability and compensation for damage caused by the transboundary effects of industrial accidents on transboundary waters” (Kiev Liability Protocol, 2003) covers the costs of actually taken or planned measures of ‘reinstatement’ of impaired transboundary watercourses.

**Box 1. Administrative Liability: Example of the EU Environmental Liability Directive**

The Environmental Liability Directive (ELD, 2004/35/EC) imposes liability for damage to protected species and habitats, for contamination of land and for damage to surface waters, coastal waters, and groundwater. The Directive does not address nuclear energy-related damage and oil pollution damage caused by oil transporting ships which fall under a number of international conventions. The ELD is not retroactive: it does not apply to environmental damage caused by an emission or incident that occurred before 30 April 2007, the date by which it should have been transposed into national law (nine EU Member States, including France and the UK, failed to meet this deadline).

The ELD covers only serious environmental damage, defined as follows:

- Damage to protected species and natural habitats is only recoverable if the damage has “significant adverse effects on reaching or maintaining the favourable conservation status” (also defined in the Directive) of the habitats and species concerned.
- Damage to the waters is only recoverable if it “adversely affects the ecological, chemical and/or quantitative status and/or ecological potential” of these waters.
- Land contamination can only be claimed for if it creates a significant risk to human health.

According to the Directive, where environmental damage has not yet occurred but there is an imminent threat of such damage occurring, the competent authority should either require the operator to take the necessary preventive measures or shall itself take such measures. Where environmental damage has occurred, the competent authority should either require the operator to take the necessary restorative measures or should itself take such measures (e.g., when the responsible party cannot be identified or fails to act) and recover their costs from the operator (within five years of taking the remediation actions).

Under the ELD, only public authorities have the right to require the operator to take remediation measures or to recover the costs of taking such measures themselves. Persons or public interest groups representing them, that are adversely affected or likely to be adversely affected by environmental damage, are entitled to request that the competent authority take action. Provided the request for action and the accompanying information show in a “sufficiently plausible” manner that environmental damage has been caused, the public authority is under a duty to consider the requests and inform the petitioner of its decision. Public interest groups have the right to bring legal proceedings for review of the competent authority’s response to their request for action.

*Source* : Directive 2004/35/EC of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage.

15. An environmental liability regime may cover an extremely broad notion of responsible parties (as it is done in the US) or may be limited to operators of certain listed dangerous activities. An annex to the ELD includes in the latter category installations subject to integrated permitting, facilities that require a water abstraction, wastewater discharge, or a waste management permit, or a licence for handling dangerous substances and waste<sup>1</sup>. The main EU economic sectors involved in remediation processes are coal mining, the chemical industry, and road building and transport sector.

<sup>1</sup> The ELD does not explain why an operator is exempt from liability if the damage is caused by a non-listed activity, even if damage is caused to natural sites falling under the scope of the Directive.

16. Liability for remediation of environmental damage is often referred to as “past environmental liability”. It can generally be defined as the residual cost that would ultimately be incurred for the removal, mitigation and/or containment of environmental, health or property risks caused by past economic activity. However, mechanisms for addressing “past environmental liability” are very similar to those applicable to risks of anticipated environmental damage.

## 2.2 Strict and Fault-Based Liability

17. In determining the features of a liability regime, the first choice that legislators face is between *strict liability* and a *fault-based* standard. Strict liability does not require proof of negligence or violation of regulatory requirements.

18. A fault-based standard provides appropriate incentives to potential responsible parties only with respect to the level of care (the diligence in performing a given activity) but not with respect to the nature and level of polluting activity. A strict liability standard forces the operator to consider both the level of care and the nature and level of activity, creating additional incentives for good corporate environmental management. Hence, strict liability proves to be more appropriate than a fault-based regime, at least with respect to hazardous activities.

19. Strict liability is most frequently applied in the OECD countries (see the US example in Box 2). It is also imposed by ELD in the EU, except with regard to damage to biodiversity, where a fault-based standard is applied. Some European countries (e.g., Italy and Poland) have historically used fault-based liability, but they had to change their systems to comply with the ELD. The preference for strict liability may stem from the fact that proving fault, which is a requirement under a fault-based liability regime, is often difficult. The Kiev Liability Protocol (see Section 2.1) provides for strict liability for industrial accidents within certain financial limits and for unlimited fault-based liability.

## 2.3 Individual or Joint Liability

20. Another dilemma in designing an environmental liability regime arises where multiple polluters are involved in the same environmental accident: should the liability be imposed on an individual basis (proportional liability) or should all the polluters be held responsible for entire damage (“joint and several” liability)? While joint and several liability offers clear advantages to the injured parties in terms of damage compensation, the deterrence goal requires that each polluter pay for the consequences of his or her own activity. If liability is not proportional, incentives for accident prevention may not work properly, preventing the potential polluter from performing a correct costs-benefits analysis.

21. In practice, most OECD countries opt for a system which combines elements of both options: even if joint and several liability is frequently adopted as a general rule, the polluter often has the possibility to limit his financial exposure by proving the extent of his contribution.

### **Box 2. Strict and Fault-based Liability: Example of the United States**

The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA, 1980) imposes on a wide range of “potentially responsible parties” (current owners and occupiers, past owners and occupiers, hazardous substance generators and transporters) strict, retroactive, joint and several liabilities for response costs, including cleanup costs and natural resource damages. CERCLA is a mixed system containing civil liability rules as well as rules granting authoritative powers that allow the US Environmental Protection Agency to issue compulsory cleanup orders, backed by the threat of severe fines for non-compliance. Notwithstanding detailed regulations on the assessment and valuation of lost or injured natural resources issued by the US Department of the Interior, CERCLA liability provisions for remediation costs have been widely litigated since the statute’s adoption.

CERCLA’s extremely stringent liability regime is combined with a collective funding mechanism in order to deal with the highest priority hazardous waste sites. The statute established a trust fund, better known as the Superfund, which is sustained by various fiscal impositions, such as a petroleum tax, an environmental income tax on major enterprises and a tax on producers of those chemicals that typically compose hazardous waste.

Similarly, the Oil Pollution Act (OPA, 1990) imposes strict liability for a comprehensive and expansive list of damages from an oil spill into the water from vessels or stationary facilities. A responsible party is liable for all removal costs incurred by the government at any administrative level or private individuals or organisations. In addition, OPA makes a responsible party liable for the damages to natural resources, real estate or personal property, subsistence use of natural resources, revenues, profits and earning capacity.

*Source* : Monti, Alberto, Environmental Risk and Insurance: A Comparative Analysis of the Role of Insurance in the Management of Environment-Related Risks, DAFFE/AS/WD(2002)27/REV1, OECD, Paris, 2003.

## **2.4 Limits of the Liability Regime**

22. The social allocation of pollution risks and costs via an environmental liability regime is not appropriate in certain situations. In particular, a liability regime is not well suited to cover past (residual) pollution for which a causal relationship to a responsible party cannot be established or the responsible party is insolvent. Liability is equally difficult to impose for a cumulative impact of authorised pollution releases, especially if the negligence standard is applied.

23. In these cases, other compensation mechanisms may be designed on the no-fault basis. The government, may be ultimately responsible for related costs, or some sort of remediation and compensation fund may be established and maintained. For example, Finland’s Environmental Damage Insurance Act of 1998 created a fund whose aim is to guarantee full compensation for environmental damage, including the costs of measures taken to prevent or limit the damage and to restore the environment to its previous state, in cases where those liable for compensation are insolvent, or the liable party cannot be identified. The scheme is financed by special premiums which are compulsory for operators of high risk-activities subject to environmental permits.

24. The ELD regime in the EU does not cover environmental damage or imminent threats of such damage caused by pollution of a widespread, diffuse character, where it is impossible to establish a causal link between the damage and the activities of certain individual operators. Moreover, under the ELD, operators are not liable for the cost of preventive or restorative measures taken when the environmental damage or imminent threat of such damage occurring is the result of compliance with a compulsory order, instruction or other legally binding or compulsory measure emanating from a public authority. In all of these cases which lie outside the scope of the liability regime, the government must ensure that the necessary preventive or restorative measures are taken.

### 3. ASSESSMENT OF ENVIRONMENTAL DAMAGE

25. Imposing the obligation to compensate for natural resources damages and cleanup costs has the clear advantage to force the polluter to internalise the negative externalities of his activity to the full extent. However, it introduces the challenge of quantification of environmental damage. In particular, the issue of quantification is extremely controversial with respect to the value of natural resources or other environmental services that cannot be fully restored or replaced after the occurrence of a polluting event.

26. Importantly, compensation of damage to natural resources in most OECD countries is understood not as a monetary penalty payable by the responsible party to the government but either as remediation measures undertaken by the responsible party or as the reimbursement by the responsible party of cleanup costs borne by the government. Generally, two approaches can be used to calculate the amount of required compensation:

- 1) Determining the monetary value of the damages; and
- 2) Assessment of the adequate scale of natural resource remediation needed to compensate (in real rather than monetary terms) for the harm.

27. Estimating environmental damages in OECD countries (and according to the ELD in the EU) is based on the latter approach – the assessment of the needs to restore affected resources (e.g., area of habitats, number of species, etc.) or the services they provide (e.g., water supply, recreation)<sup>2</sup>. The measurement of values placed by humans on resources under the first approach is used much less frequently. The principal reason for this is that the monetary valuation of natural resources damages may be subjective and unpredictable, while technical cleanup requirements could well be determined by the competent authorities with a sufficient level of clarity, stability and predictability. This section gives an overview of specific methods under both approaches.

#### 3.1 Monetary Valuation of Environmental Damages

28. There are several methods to measure the economic value of natural assets<sup>3</sup>:

- **Replacement cost method:** The technique looks at the costs of replacing a damaged asset, e.g., treatment of polluted water to meet a water quality standard it met in its original state. Costs are not estimated by means of measuring the foregone benefits but by the costs of remediation as a proxy. This is the prevailing method in OECD countries.
- **Hedonic pricing:** The method is used to estimate economic values for ecosystem or environmental services that directly affect market prices. It is most commonly applied to

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<sup>2</sup> The risk of liability for environmental cleanup and remediation costs is also much easier to absorb for the insurance sector.

<sup>3</sup> *Cost-Benefit Analysis and the Environment: Recent Developments*, OECD, Paris, 2006.

variations in housing prices that reflect the value of local environmental conditions. For example, all other factors being equal, a home near a contaminated site costs less than one some distance away, so the difference in housing costs provides an estimate of the loss in value because of the contamination.

- **Travel cost method:** The travel cost method estimates economic values associated with ecosystems or sites that are used for recreation by assuming that the value of a site is reflected in how much people are willing to pay to travel to visit the site. People's willingness to pay to visit the site can be estimated based on the number of trips that they make at different travel costs.
- **Stated preference techniques:** Contingent valuation and choice modelling techniques are survey-based methods for the valuation of non-market resources, where questionnaires are designed to elicit the respondents' willingness to pay for the provision/conservation of a given environmental asset directly, or willingness to accept compensation for the loss of an environmental asset.

29. Some of the proposed monetary evaluation criteria, such as the contingent valuation method and the travel cost method, can be extremely subjective and they may lead to almost unpredictable results. Moreover, the common feature of all these methods is that they are not well suited to measure non-use values<sup>4</sup>. Because of dissatisfaction with the difficulties of these valuation approaches, resource equivalency methods were developed in the 1990s.

### 3.2 Assessment of Remediation Needs and Costs

30. The significance of the damage has to be assessed with reference to the *baseline condition* of the natural resources concerned. The baseline condition is defined in the ELD as "the condition that would have existed had the environmental damage not occurred, estimated on the basis of the best information available".

31. Environmental damage can be assessed with regard to primary, complementary and compensatory remediation. *Primary remediation* entails actions to reduce or remediate site-specific damage, usually through removal of released polluting substances or actions to reduce their ongoing discharge. Following primary remediation, the damaged natural resources may not return to the pre-incident, or baseline, condition. *Complementary remediation* may have to be done either at the site of the incident by improving or creating alternative (to the damaged ones) resources or services or at an alternative site by improving natural resources/services of the same or comparable kind.

32. Because it takes time to remediate the impacted natural resources and services to the baseline condition, *compensatory remediation* is needed to compensate for losses from the time when the damage occurred until recovery to baseline conditions ("interim losses"). There is no requirement in EU member countries, except Denmark, to compensate for interim losses incurred between the time at which the environmental damage was caused and the completion of remediation measures. In Germany, procedures for measuring interim losses with economic methods exist, but have not to date been applied in practice. Nevertheless, this is often done implicitly by the experts when defining adequate compensation measures.

33. The operator can also be held liable for the costs of assessing the environmental damage, as well as the administrative costs of enforcement and oversight, the costs of data collection and monitoring, and the legal costs.

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<sup>4</sup> For a discussion of the determination of monetary value of biodiversity, see *Handbook of Biodiversity Valuation: A Guide for Policy Makers*, OECD, Paris, 2002.

34. To determine the type and amount of remediation needed to compensate the public for past, current, and anticipated future losses related to an incident, both the US natural resource damage assessment regulations and the ELD (for current and future losses) stipulate the use of **resource equivalency analysis (REA)**. *Its fundamental philosophy is trying to equate the size or value of the environmental damage to the size or value of the environmental benefits generated through remediation projects.* Basically, the logic of REA is similar to that of the replacement cost method of monetary valuation, but REA can be applied to evaluate the damage and remediation of natural resources that do not have a specific use value.

35. The resource equivalency methods of assessing remediation needs include:

- **Resource-to-resource method:** This method refers to remediation which tries to match the actual lost resources with new ones. For this method to work, one must discern which organisms are lost to a particular impact and which are gained by a particular remediation. The comparison of gains and losses can also be made on the basis of the amount of habitat lost (e.g., hectares), in which case it is referred to as “habitat equivalency analysis”<sup>5</sup>.
- **Service-to-service method:** This method focuses on “natural resource services” – functions performed by a natural resource for the benefit of ecosystems (such as purification of water or maintenance of biodiversity) or the public (for example, flood control or recreational opportunities such as fishing, hiking, bird watching, and simply enjoyment of a healthy natural environment). Since the amount of services per unit of resource is not necessarily the same across a remediation site, the physical size of the remediation could be more or less than the physical size of damage.
- **Value-to-value and value-to-cost methods:** These approaches can be applied to situations that are not well-suited for resource-to-resource or service-to-service equivalency. This can happen if, for example, proposed remediation projects provide different natural resources, habitats or services, or if the resources or services cannot be accurately measured in a particular damage/remediation case. The value-to-cost method involves estimating the ‘value’ of environmental damage and selecting remediation options that have a monetary equivalent to this value.

36. Conducting an equivalency analysis involves three main steps:

- 1) Quantify the effects of environmental damage in terms of the extent and degree of lost resources or services (whether ex-ante or ex-post<sup>6</sup>);
- 2) Identify and evaluate remediation options in terms of quantity and quality of service or resource replacement anticipated to be provided; and
- 3) Adjust the degree and timeline of the remediation to compensate for the lost resources or services over time.

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<sup>5</sup> The habitat equivalency analysis was formalised in environmental regulations issued in 1996 by the US National Oceanic and Atmospheric Administration.

<sup>6</sup> *Ex ante* damage refers to damage that occurs with prior knowledge, mostly due to human activities that are known to cause such damages. *Ex post* damages are accidental damages that were not foreseen, and hence the damage can only be assessed after taking place.

37. The *quantification of damage* (or benefit) can be expressed in monetary units, area of required remediation, number of individual organisms that must be replaced (such as fish or birds), or units of recreational use, such as user-days that must be replaced to compensate for the loss of recreational use. The key to equivalency methods is determining a unit of measure of damage that can describe losses over time and can be matched to the benefits of remediation over time. An example of the use of REA in the US is provided in Box 3. In Europe, REA is used only in a few countries (e.g., in Germany and Sweden).<sup>7</sup>

**Box 3. Example of Resource Equivalency Analysis: Trout Remediation, Coeur d'Alene Basin, Idaho, USA**

The Coeur d'Alene River Basin was the site of more than a century of releases of cadmium, lead, zinc, and other heavy metals from mine waste rock and tailings. Aquatic resources there have been degraded by releases of hazardous substances from mining and mineral processing operations.

Damage calculations for aquatic biota habitat (surface water, fish, and other aquatic organisms) were based on the cost of replacing the ecological services that should have been provided by the degraded surface water over time. Remediation actions to replace the habitat for fish provided a means of calculating replacement costs for both surface water and aquatic biota. Remediation alternatives considered included physical habitat enhancements in nearby streams that would enable fish spawning, rearing and survival.

Losses from contamination and gains from habitat enhancement were evaluated using trout population density as the metric. Trout population response to water quality improvement was modelled based on empirical data from a range of water streams of different water quality in order to predict the effect of planned cleanup actions on future population trends in the impacted area.

A range of remediation projects was investigated, and the costs of implementing the alternatives were calculated and equated to the quantity of damage. The calculation accounted both for the loss relative to baseline conditions and for compensatory remediation necessary to replace the habitat services until the attainment of the baseline conditions. Depending on the remediation project and the implementation period assumed, the remediation costs ranged from USD 64.4 million to USD 177.9 million.

*Source : Review Report on Resource Equivalency Methods and Applications, Deliverable No. 6A, Resource Equivalency Methods for Assessing Environmental Damage in the EU (REMEDE), July 2007.*

38. The biggest challenge of the resource equivalency methods is the estimation of the degree of loss associated with the environmental harm (and, similarly, of the benefit from remediation). Common practice includes using a single attribute of service or function of the natural resource. Examples of single-attribute metrics include measures of vegetation or organism density, biomass, counts of individuals lost. The metric used should be the same attribute on the loss and gain sides of the equation.

39. There is no single objective standard for determining which metric should be used. Considerations taken into account in selecting the measurement unit of the damage include the type of damage (e.g., physical or chemical), the scale of the damage (e.g., area, timing, anticipated duration), and, most importantly, the nature of the remediation available for compensation, since the same metric must be used to estimate the scope of the remediation. The selection of an appropriate metric is usually done in close consultation with biologists, ecologists, or other relevant environmental scientists.

40. The resource equivalency analysis is only one input into the process of deciding how remediation should most fairly and feasibly proceed. Other considerations may also be taken into account by competent authorities, operators or other stakeholders at a given damage site.

<sup>7</sup> *Assessment of Current Practice Regarding Environmental Liability in Member States, Deliverable No. 7, Resource Equivalency Methods for Assessing Environmental Damage in the EU (REMEDE), August 2007.*

41. To *scope out the remediation*, several alternatives should be developed, each of them consisting of a single action or a combination of actions that could potentially restore, rehabilitate, or replace the equivalent of the damaged natural resources or services. The preferred alternative is then selected based on a set of criteria (e.g., technical feasibility, effectiveness, acceptability to the public, and cost efficiency) and fully described in terms of timing and degree of anticipated gains, and implementation cost (including capital, operation, maintenance, and monitoring costs).

42. For example, the ELD (Annex II) establishes the following criteria for the selection of appropriate damage remediation measures:

- The effect of each option on public health and safety;
- The cost of implementing each option;
- The likelihood of success of each option;
- The extent to which each option will prevent future damage and avoid collateral damage as a result of implementing the option;
- The extent to which each option takes account of relevant social, economic and cultural concerns, and other locally-specific factors;
- The length of time it will take for the restoration of the environmental damage to be effective, etc.

43. The final step in the assessment of remediation needs is *determining the scale of the remediation projects* to implement so that, over time, the discounted value of resources or services resulting from these projects is equal to those lost due to the environmental damage.

44. The result of a REA can be presented in terms of the amount and type of required remediation or in terms of the cost of implementing the required remediation. The total costs include implementation, administration, operation, maintenance, and monitoring expenditures required to ensure that the project provides the benefits incorporated in the equivalency analysis.

45. REA does not account for the value of irreversibly lost and non-recoverable natural resources and services (such as endangered species and habitats). Although the ELD requires assessments of such damages, this has so far not been the case in the EU countries.

#### 4. INSURANCE OF ENVIRONMENTAL LIABILITY

46. The effectiveness of any liability mechanism may be impaired by the potential insolvency of the responsible parties. If after the environmental accident the polluter has no assets to compensate for the damage caused, the whole system of environmental liability would collapse and the overall result would be an additional waste of resources invested in litigation. In light of the above, insurance may be called upon to play a crucial role in the effective management of environmental pollution risks.

47. In many OECD countries, owners and operators of economic activities subject to environmental liability are allowed to buy insurance against potential damage compensation claims. By forcing the *ex ante* internalisation of environmental costs through the payment of premiums, environmental insurance is fully compatible with the deterrence goal of any liability regime as well as with the Polluter Pays Principle.

##### 4.1 Challenges of Insurance of Environmental Liability

48. The essential precondition for any risk to be insurable is that the insurer must be able to make a realistically reliable estimate of the potential claim amounts to be paid out over a specific and reasonably long period. However, environmental pollution risk and respective liability regimes involve both factual and legal uncertainty.

49. The *factual uncertainty* refers in particular to gradual pollution events (such as leakage of toxic substances) which develop slowly over a long period of time and whose damaging effects may become apparent only after several years, or even decades. It may be extremely difficult to establish the exact moment in which the release began, how long it lasted, and when the consequent environmental harm occurred. The latency and the long-term effects characterising gradual pollution phenomena, therefore, raise questions as to the adequacy of traditional insurance trigger-of-coverage clauses, such as the “act committed” or the “loss occurrence” triggers.

50. Since the triggering events cannot be assigned to a particular point in time, determining the existence and validity of insurance coverage under the traditional formulas becomes quite problematic. Furthermore, it may well be the case that the limits of coverage stipulated when the liability policy was issued have become inadequate due to inflation.

51. The *legal uncertainty* may be caused by the following features of the environmental liability regime:

- Retroactive liability regimes are incompatible both with the basic idea that environmental liabilities should be aimed at providing appropriate incentive to potential polluters and with the very nature of the insurance mechanism.
- With respect to the criteria for allocating liabilities among multiple polluters, a joint and several standard may create excessive uncertainty. The insurer would have to compute not only the risk created by the prospective insured, but also the risks generated by all the other actors whose conduct may eventually combine with the one of the insured in causing a polluting event.

- Environmental liability regimes that allow for recovery of monetary compensation for damage to natural resources and/or biodiversity, the level of legal uncertainty is also negatively affected by the controversial monetary valuation techniques described above. As already mentioned, the resulting damage values may be highly subjective and difficult to determine. On the other hand, the cost assessment of remediation measures is much more predictable since it depends on established technical standards and methodologies.
- Finally, the fault-based standard rather than strict liability could be interpreted by the insurance industry as punitive and incompatible with the transfer of liability to the insurer.

52. As long as the scope and economic consequences of environmental liabilities, be they civil or administrative, are highly unpredictable *ex ante*, the insurance industry will not be capable of assessing and managing environmental pollution risks and, therefore, will not be willing and able to offer reasonably priced coverage. This is why, at present, these risks are almost everywhere excluded from general liability insurance, and gradual pollution coverage is provided only under very specific policies and according to limited terms and conditions.

53. There are also *disincentives for industry* to buy insurance coverage of environmental risks. As a general rule, the prospective insured has to bear considerable costs of site inspections and technical analyses by the insurance company, costs that could be considerable if the insured has several premises. Moreover, many companies are very sensitive about providing insurance companies with access to their sites, since many regulations require immediate notification of competent authorities should a site inspection reveal any pollution control violations on the insured's premises.

54. It is quite common that after an industrial facility has passed the insurability inspection performed by the insurance company's engineers, the owner refuses to purchase coverage because he or she feels that the industrial activity in question is safe enough. However, the fact that a facility is insurable only indicates that the risk posed by that particular installation is predictable enough to be insured but not that an accident will never occur. Many firms would not buy pollution coverage unless they are obliged to do so<sup>8</sup>.

55. Finally, there are *moral issues* with respect to insurance of environmental pollution risks: owners and operators of high-risk installation could erroneously perceive the insurance coverage as a sort of "licence to pollute", bought in exchange for payment of an insurance premium.

56. In order to encourage and stimulate the development and growth of the pollution insurance market, the environmental liability regime should be designed and formulated in the legislation in a way that provides a sufficient level of clarity and predictability of the related financial risks.

#### 4.2 Modern Approaches to Environmental Liability Insurance

57. In response to the outlined problematic factual features of environmental pollution risk, the insurance industry has developed new techniques to cope with this peculiar phenomenon.

58. At present, pollution risk coverage is almost completely excluded from general liability policies and it is provided under separate contracts on a site-specific basis. Insurance companies conduct an extremely careful evaluation and classification of the risk to be covered. Detailed historical information and technical data concerning the prospective insured's site and operations are collected, usually via a

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<sup>8</sup> Monti, Alberto, *Environmental Risk and Insurance: A Comparative Analysis of the Role of Insurance in the Management of Environment-Related Risks*, DAFNE/AS/WD(2002)27/REV1, OECD, Paris, 2003.

questionnaire. A comprehensive inspection of the industrial installation is then performed on behalf of the insurance company by a team of qualified engineers.

59. In addition to the evaluation of the adequacy of safety measures, protection systems and emergency plans, certain features of the surrounding area are also assessed. In this respect, several elements are taken into account, including: the density and size of population in the vicinity, the type of buildings, facilities and installations, the conditions related to emission carriers, including soil permeability, groundwater levels, the direction of winds and, in general, all the geological, hydrological and atmospheric conditions of the area.

60. As soon as the risk is properly assessed, the insurance company would engage the facility's owner or operator in measures to reduce the risk and to enhance loss prevention strategies. During the entire period of the insurance contract, the insurance company would closely monitor the insured's activity in order to prevent complacent behaviour stemming from the fact that the risk are 'transferred' from the facility to the insurer. Moreover, additional investments in preventive measures may be rewarded by the insurer with a reduction in the annual premium and/or with a broader coverage.

61. Such preventive measures undertaken in cooperation between the industry and the insurance sector are the essence of a flexible mechanism of *private surrogate regulation* which can be an important instrument of environmental compliance assurance.

#### **4.3 Mandatory Environmental Liability Insurance**

62. A system of mandatory pollution insurance – at least for those activities that are particularly dangerous for the environment – might seem to be an appropriate solution to address industry's reluctance to buy insurance against environmental risks.

63. A system of compulsory insurance can be bilateral or unilateral. In a *bilateral* mandatory insurance scheme, the company has an obligation to buy coverage in order to be allowed to operate and the insurance industry has an obligation to provide coverage at pre-determined conditions, approved by the competent authority, to each and every applicant. Bilateral mandatory pollution insurance, however, is incompatible with the very nature of modern environmental insurance techniques. As already mentioned, environmental policies are tailor-made and site-specific, and not every plant necessarily has all those characteristics that make it insurable. Moreover, standard conditions set in a regulation and applicable to every insured would make pollution insurance similar to general liability insurance schemes, which, as described above, are poorly suited to the level of uncertainty inherent in environmental liability.

64. Under *unilateral* mandatory insurance, the purchase of environmental liability coverage would still be a condition to operate for the firms, but insurers do not have any obligation and they may, therefore, refuse coverage to anyone at their own discretion. In this case, the incentive mechanism provided by modern environmental insurance would be able to work properly, but the insurance industry would be placed in the uncomfortable and inappropriate position of environmental policeman. In fact, the insurer would be entrusted with the power to decide which firms can continue their activity and which should be forced out of the market, illegally substituting for enforcement authorities and leading to different kinds of abuse.

65. A strict environmental liability regime without any requirement of financial security of industrial firms may lead to an increase in litigation and transaction costs. However, it is ultimately the enforcement of liability by administrative and judicial means, not a regulatory mandate, that drives the demand for environmental liability insurance.

#### 4.4 Alternatives to Environmental Liability Insurance

66. Insurance is not the only way to provide adequate financial guarantee with respect to the environmental pollution risk. There are several other financial instruments that could be employed, including:

- A guarantee issued by a bank or another financial institution;
- Personal or collateral security; or
- A deposit paid in advance on an environmental account.

67. For example, certain categories of regulated installations in France (high-risk facilities subject to permits with siting restrictions, waste management installations, and quarries) are required to provide a bank guarantee covering routine operations, potential accidents, as well as decommissioning and site remediation. A required amount is fixed in a permit based on the operator's estimate (in accordance with the ministerial instructions for its calculation) submitted as part of a permit application and is re-evaluated periodically.

68. The introduction of an obligation to provide financial security in any form approved by the competent authority may turn out to be a better way to overcome the insolvency problems potentially undermining an environmental liability regime than establishing a compulsory environmental insurance regime.

## 5. CONCLUSIONS FOR DECISION-MAKERS

69. The following are the main aspects of the environmental liability practices in OECD countries that may be useful in designing the reform of the current systems in EECCA:

- In OECD countries, environmental liability is not a penal regime designed to punish the party responsible for the damage but a system that is focused on remediating the damage done. Consequently, compensation of damage to natural resources is understood not as a monetary penalty payable by the responsible party to the government but either as remediation measures undertaken by the responsible party or as the reimbursement by the responsible party of cleanup costs borne by the government.
- Environmental liability can be administrative or civil, depending on the legal regime that establishes it. Under administrative liability, the competent enforcement authority can order preventive and restorative measures or undertake the remediation itself and then recover the remediation costs from the liable parties under civil law.
- Strict liability is most frequently applied in the OECD countries. A strict liability standard is more appropriate for hazardous activities than a fault-based regime because it forces the operator to consider both the level of care and the nature and level of activity, creating incentives for good corporate environmental management.
- The assessment of environmental damage in OECD countries is predominantly based on the estimate of the needs to restore affected resources or the services they provide rather than on the monetary valuation of the impaired resources. The main reason for this is that cleanup requirements can be determined by the competent authorities with a much higher level of clarity, stability and predictability compared to that of the existing methods to measure the economic value of natural assets.
- Insurance of environmental pollution risks involves both factual and legal uncertainty for insurance companies and a number of disincentives for potentially liable parties to buy coverage. This is why environmental risks are generally excluded from common insurance policies, and coverage is provided after an extremely careful evaluation and classification of the risk by insurance companies on a site-specific basis. The effective administrative and judicial enforcement of liability rather than a regulatory requirement to buy and provide environmental liability insurance drives the demand for coverage and stimulates prevention of pollution risks.

70. Based on the above conclusions from the OECD experience, the following questions are suggested for discussion by EECCA environmental officials and experts in order to define priorities for reform of the region's systems of environmental liability for damage to natural resources:

- Which of the described approaches to environmental liability are feasible to implement in EECCA countries?
- How can the EAP Task Force support the environmental liability reform in EECCA?