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Environmental liability provisions in **Armenia**

Damage prevention and assessment



Action implemented by:



Environmental liability provisions in Armenia

Damage prevention and assessment

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Foreword

The main author of the report is Dr. Colin Mackie, Associate Professor in Business Law, School of Law, the University of Leeds, the United Kingdom. Ms. Olga Olson, Project Manager, OECD Environment Directorate, managed the preparation of the report under the overall supervision of Mr. Krzysztof Michalak, Acting Head of the Finance, Investment and Global Relations Division of the OECD Environment Directorate.

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Acronyms and abbreviations

AMD	Armenian Dram
CJEU	Court of Justice of the European Union
CVM	Contingent valuation method
DSAY	Discounted-service-acre-year
ECA	European Court of Auditors
EC	European Commission
ELD	Environmental Liability Directive
EP	European Parliament
EPA	Environment Protection Agency
EU	European Union
HEA	Habitat Equivalency Analysis
MPE	Maximum permissible emissions of harmful substances into the atmospheric air
MSFD	Marine Strategy Framework Directive
NGO	Non-governmental Organisation
OECD	Organisation for Economic Co-operation and Development
REA	Resource Equivalency Analysis
SFS	State Forestry Service
SI	Statutory Instrument
UK	United Kingdom
WFD	Water Framework Directive
Wm	Environmental Management Act (Wet Milieubeheer) (the Netherlands)
WRMPB	Water Resources Management and Protection Body
WTAC	Willingness to accept money as compensation
WTP	Willingness to pay

Executive Summary

This report assesses Armenia's legislation and methodologies relating to environmental liability and provides recommendations as to how they could be improved to better align with the requirements of the EU Environmental Liability Directive (the ELD). It also proposes the ways to implement the polluter-pays principle comprised therein, specifically as regards prevention and assessment of environmental damage. The review shows that the ELD and Armenia's environmental laws comprise very different conceptions of environmental liability. The former uses that phrase to reflect a party's legal responsibility, as determined by the relevant regulator and by scientific assessment, for the financial costs associated with the obligation to prevent or remediate damage actually (or threatened to be) caused to the environment. Under Armenian law, environmental liability is used to reflect a party's legal responsibility for payment, as determined by formulae and/or tariffs (i.e., indirectly), of compensation to the state for the unlawful use of, and/or causing adverse impacts to, natural resources. Economic calculations, reliant on the use of formulae and tariffs, are essentially deployed as a proxy for scientific determination of the level of damage to natural resources that is actually caused by the violator's activities.

The ELD is concerned with the prevention and remediation of damage to specific natural resources, i.e., protected species and natural habitats, water, and land. Even though considered as adopting an unduly narrow conception of environmental damage, it is widely considered an innovative legal development under EU environmental law. This is because it centres on the obligation of the state, with the relevant competent authority (i.e., the domestic regulator responsible for enforcing the law(s) that implement the Directive) acting on its behalf, to require operators to undertake preventive and remedial measures or take the measures itself and recover the costs from the responsible operator. Scientific assessment of the damage (or threat thereof) caused to the environment is a core feature of the ELD. The regime that it implements is not concerned with the payment of financial compensation to the state or third parties or punishing the polluter through the imposition of fines or other criminal sanction for breaches of it.

The examination of Armenian environmental laws establishes that they provide for four types of environmental liabilities: (i) use fees for natural resources, (ii) compensation, (iii) fines, and (iv) costs associated with performing preventive and/or remedial measures. The review shows that only the last type (iv) is reflected under the ELD.

In terms of the prevention of environmental damage, four approaches can be elicited from Armenia's environmental laws: (i) implementation of preventive measures, with and without being prompted by the regulator; (ii) use of Red Books; (iii) mandatory forecasting of catastrophic situations; and (iv) notification of the regulator about violations. Only (i) is reflected under the ELD.

The approach utilised for damage assessment differs markedly to that required under the ELD. Under Armenian law, there is reliance on indirect means to calculate the level of damage that has been deemed to have been caused to natural resources. Thus, rather than damage assessment being an assessment of actual damage to the environment, it is an assessment of the damages payable to the state. The Armenian regulations, with the exception of the Subsoil Code, do not require scientific assessment of the actual level of damage caused to these natural resources to be undertaken as per the ELD. The Subsoil Code is the only direct environmental liability law that mentions assessment of environmental damage. It

provides that, in case of accidents, the subsoil user must immediately provide the relevant regulator with an assessment of the amount of environmental damage caused. There is, however, no detail provided in relation to how exactly that assessment is to be undertaken and to which scientific criteria it must refer, evidencing important gaps in this current good practice of mandating a more scientific form of damage assessment.

Armenia's Tax Code plays a central role in assessing the level of damage deemed to have been caused by the violation of environmental laws. There are also a range of indirect liability laws which set out formulae and/or tariffs for calculating the level of compensation to be paid for damage caused to natural resources, specifically flora and fauna, water, the atmosphere and land, as a result of economic activities. Whilst the detail of these indirect liability laws differs, in most instances, merely knowing the degree to which emission limits were exceeded is sufficient to determine the level of damage (i.e., compensation payable to the state). Certain indirect liability laws, specifically Decision No. 1110 of 14 August 2003 on Approving the Procedure for Assessment of the Impact on Water Resources Resulting from Economic Activities and Decision No. 92 of 25 January 2005 on Approving the Procedure for Assessment of the Impact on Land Resources Resulting from Economic Activities, incorporate the predicted cost of remediating the damage (i.e., returning the natural resources to their pre-damaged state) caused into the damage assessment for the purpose of calculating damages, which is good practice.

Based on the assessment, ten recommendations are proposed to improve Armenia's environmental liability regime to better align it with the requirements of the ELD and implement the polluter-pays principle.

Improving the prevention of environmental damage

Recommendation 1: Embed the polluter-pays principle explicitly and prominently within Armenia's environmental liability regime.

Recommendation 2: Deliver a more complete implementation of the polluter-pays principle through ensuring that resource users are responsible for preventing and remediating damage to the full spectrum of natural resources via a clear and legally robust definition of environmental damage.

Recommendation 3: Incorporate a rebuttable presumption of a causal link in respect of diffuse pollution as created by the jurisprudence of the Court of Justice of the European Union (CJEU).

Recommendation 4: Implement a legal duty for resource users to take necessary preventive measures to prevent damage or violations of law at their own expense.

Recommendation 5: Embed an explicit right under Armenian law for NGOs and other interested parties to request the pertinent environmental regulator to take action to prevent environmental damage.

Improving the assessment of environmental damage

Recommendation 6: Adopt a scientific approach to the assessment of environmental damage and publish a guidance document that provides technical detail on undertaking assessments.

Recommendation 7: Require resource users to undertake primary, complementary and/or compensatory remediation, as appropriate, and require the regulator to use equivalency analysis to determine the type and amount of: (i) natural resources and services lost over time as a result of the damage; and (ii) complementary and compensatory remediation needed to offset that loss.

Other key recommendations for aligning Armenia's environmental liability legislation with the ELD and the polluter-pays principle

Recommendation 8: Enact a new, standalone law that directly transposes the requirements of the ELD.

Recommendation 9: A clearer, more explicit connection between Armenia's direct and indirect liability laws is needed, making it obvious which of the latter is to apply in a given instance.

Recommendation 10: A mandatory financial security regime should be implemented to address the risk that a bankrupt or financially weakened resource user that has caused environmental damage or the imminent threat of it will be unable to bear their environmental liabilities.

1 Introduction

The term “environmental liability” is typically used in OECD countries to reflect a party’s legal responsibility for the costs associated with their environmental obligations. There are two broad categories of such costs. First, those associated with obligations mandated under a permit, licence or other regulatory authorisation (e.g., planning permission). These may be wide and varied and could flow from the obligation to restore the land following closure of a site or facility, such as a landfill or a mine. They could also relate to the maintenance and after-care of the site or facility post-closure, including the need to monitor its environmental integrity. Second, those associated with damage caused to the environment (or threat thereof) for which they are deemed legally responsible for under the applicable legal framework. This report is concerned solely with the latter category of costs.¹

The polluter-pays-principle – the principle that the person(s) responsible for pollution ought to pay for the costs of dealing with it, whether that be through reducing, preventing or eliminating that pollution – is firmly embedded in the environmental liability laws of many nations. It is, for instance, viewed as one of the pillars of the European Union’s environmental policy (de Sadeleer, 2014). Indeed, the primary framework of environmental liability under the law of the European Union, the EU Environmental Liability Directive (hereafter ELD), is based on this principle (article 1). This innovative administrative law seeks to make those who have caused environmental damage or created an imminent threat of it pay to prevent it or, if this is no longer possible, to remedy it.

The policy driving this particular articulation of the principle recognises that if these environmental costs are not allocated to the polluter through a liability regime, they will be incentivised to externalise them (i.e., transfer them to the environment and/or society). Indeed, those that fail to reflect (or internalise) the full environmental costs of their activities in the price of their product/service are at a competitive advantage to those that do; the former can offer a lower cost product or service than the latter. The principle – and theory of cost internalisation upon which it is built – seeks to address this market failure. An effective implementation of the principle does, however, necessitate a robust assessment of environmental damage (i.e., scientific determination of the level harm to the affected natural resource(s) and whether this meets the legal threshold for liability, e.g., significant). In the absence of such an assessment, the true extent of the damage caused may not be captured fully in the level of any environmental liability imposed.

The aim of this report is to assess Armenia’s legislation and methodologies relating to environmental liability and provide recommendations as to how they can be improved to better align with the requirements of the ELD and implement the polluter-pays principle, specifically as regards prevention and assessment of environmental damage.

The report is structured as follows: Section 2 sets out the main requirements of the ELD and outline its key features and concepts. It then details the ELD’s approach to the prevention and assessment of environmental damage. Section 3 sets out Armenia’s approach to environmental liability and the provisions in place, including for the prevention and assessment of environmental damage. Section 4 provides a series of recommendations for improving provisions for the prevention and assessment of environmental damage in Armenia. Examples of approaches taken in select countries, including Belgium, Germany, the Netherlands, Georgia and the United Kingdom are examined. These were the countries of most interest to the Armenian Ministry of Environment. Other key recommendations for aligning Armenia’s environmental

liability legislation with the ELD and the polluter-pays principle are also set out. Section 5 draws conclusions.

2 Requirements of the EU Environmental Liability Directive (ELD)

The key features and concepts of the ELD

Overview

The ELD is focused upon the prevention and remediation of damage to *specific* natural resources: (i) protected species and natural habitats, (ii) water, and (iii) land. The regime centres around the obligation of the state, with the relevant competent authority (i.e., the domestic regulator responsible for enforcing the law(s) that implement the Directive) acting on its behalf, to require operators to undertake preventive and remedial measures or take the measures itself and recover the costs from the responsible operator. The channelling of legal responsibility for the costs associated with performing these measures to the operator (i.e., the natural or legal person who operates or controls the activity from which the damage or its imminent threat emanates) is a central feature of the regime.

The reach of the ELD is delimited in three main ways. First, it does not give private parties a right to compensation, monetary or otherwise, for environmental damage or for an imminent threat of such damage (article 3(3)). It is an administrative liability regime, not a civil liability one. Essentially, it empowers competent authorities to function as a 'sort of trustee' for natural resources (Brans, 2006^[1]). Only they have the authority to require the responsible operator to undertake the requisite preventive or remedial works.

Second, it does not apply to traditional damage (i.e., to cases of personal injury, to damage to private property or to any economic loss) (recital 14 of the ELD). This is despite the European Commission (2000^[2]) deeming that in order for the definition of environmental damage to be 'coherent', it was important to cover such damage. The European Commission believed that a failure to do this could lead to inequity where, for example, there was no compensation available for health damage resulting from an environmental incident (European Commission, 2000^[2]). It is, however, important to recall that civil actions, such as claims in negligence and/or nuisance can, of course, still be brought under domestic law for such damage, but this would occur outside of the ELD and could not encompass ELD-related liabilities.

Third, it does not apply to damage caused by an emission, event or incident that took place before 30 April 2007 or after 30 April 2007 when the activity took place and finished before then (article 17).

The meaning of 'environmental damage'

The definition of 'environmental damage' is central to the framework of liability implemented by the ELD and its approach to the prevention and assessment of that damage. Article 2(1) of the ELD asserts that 'environmental damage refers to damage to:

- protected species and natural habitats (as defined under article 2(4))
- water, and
- land

Section 2.3 shows that, for liability to attach for damage to each of these natural resources, certain reference concepts (e.g., risk of human health being adversely affected in respect of damage to land) must be met in addition to a significance threshold (e.g., ‘significantly adversely affects’ in respect of damage to water) being exceeded. Where this is not the case then the ELD does not apply.

Damage to water refers to damage that significantly adversely affects the ecological, chemical or quantitative status or the ecological potential (i.e., status of a heavily modified or artificial body of water) of the waters concerned, or the environmental status of the marine waters concerned (article 2(1)(b)).

Damage to land refers to land contamination that creates a significant risk of human health being adversely affected due to the direct or indirect introduction, in, on or under land, of substances, preparations (i.e., mixtures or solutions composed of two or more substances) or organisms/micro-organisms (article 2(1)(c)); actual harm to human health need not be proven. This means that damage to land that is *not* related to contamination (e.g., erosion), is beyond the scope of the ELD (article 2(1)(a)).

Damage to protected species and natural habitats refers to damage that has significant adverse effects on reaching or maintaining the favourable conservation status of protected species or habitats. Article 2(4) sets out when the conservation status of a species or natural habitat will be taken as favourable.

As set out in further detail below, damage is defined as a *measurable* (i.e., quantifiable or capable of estimation) adverse change in a natural resource or *measurable* impairment of a natural resource service (e.g., provision of food, shelter or nesting) (article 2(2)).

Impairment of air quality is not currently covered by the ELD and, in itself, air pollution does not constitute ‘environmental damage’ under it.

The polluter-pays principle

Article 1 of the ELD sets the tone for the directive as a whole by stating that it is based on the polluter-pays principle. As articulated under the ELD, the principle does not seek to punish the operator by way of a fine or criminal sanction. It requires that an operator causing environmental damage or creating an imminent threat of such damage should, in principle, bear the cost of the necessary preventive or remedial measures (recital 18 of the ELD). Operators should also be required to bear related administrative expenses, e.g., assessing environmental damage (recital 18 of the ELD).

Traditionally, articulations of the polluter-pays principle in law have been built on the economic idea of cost internalisation. This requires a polluter to ‘cover’ the costs which its activities impose on others in the ‘pricing’ of its goods or services (Ogus, 2004_[3]). When they are not required to bear these costs, not only can they ignore them in deciding how much to produce and at what price to sell, the unpriced costs – negative externalities – are transferred to the environment, local communities and wider society as the case may be (Ogus, 2004_[3]). This is a form of market failure. Through its allocation of environmental costs to the operator, such as those associated with taking necessary preventive and/or remedial measures pursuant to the ELD, the principle facilitates the internalisation of these costs by the operator. The principle also has a deterrent function. Indeed, according to recital 2 of the ELD, the fundamental principle of the ELD is that an operator whose activity has caused the environmental damage or the imminent threat of such damage is to be held financially liable. This is to induce operators to adopt measures and develop practices to minimise the risks of environmental damage so that their exposure to financial liabilities is reduced. As operators know they will be liable for the costs of preventing or remedying damage, they have an economic *incentive* – though not a legal obligation – to undertake their activities more carefully.

The ELD exhibits some limitations which are problematic from the perspective of the polluter-pays principle and the theory of cost internalisation it derives from. First, it limits interpretation of the term environment to protected habitats and species, land and water and, to some extent, humans (where there is a significant risk to their health as a result of damage to land). It, thus, exhibits a 'narrow identification' of 'damage' and the environment (Lee, 2009^[4]). And, it does not cover traditional damage (e.g., damage caused to personal property, bodily injury and/or economic loss), a common side-effect of accidents inflicting pure ecological damage.

The narrow construction of damage under the ELD is further evidenced by the fact that the polluter need only pay for damage to land (or imminent threat of it) where a significant risk to *human health* is created. Thus, the nexus relevant to establishing the liability of the polluter is between the (potential) damage to land and humans, not the environment itself (e.g., the health of flora or fauna), an outcome that is most readily explainable through the political compromise that was necessary to ensure the enactment of the ELD. For damage to land, or its imminent threat, to be actionable by a competent authority it is likely that there must be human activity in the vicinity of the damage. This means that it may not be possible to impose liability for preventive measures within areas of wetlands and forests where there is no human activity, a troubling gap. (Winter et al., 2008^[5]) find it 'perplexing' that damage to land that is not related to contamination, such as land erosion, is not covered by the ELD; protected species, habitats and waters are protected under the ELD even when damage to them does not create a risk to human health. Soil is certainly no lesser an environmental component than species and may even be viewed as a more important environmental resource (Winter et al., 2008^[5]).

Second, it does not apply to damage that fails to reach the requisite degree of seriousness (i.e., 'significant') or is unrelated to the relevant reference concept(s), more on which will be said below. In such circumstances, there is considered to be no environmental damage under the ELD. A nation's domestic law could, however, provide a gap filling function where there were relevant and applicable laws to deal with the incident, which is not always the case. However, uncertainty over the meaning of 'significant' has proven to be one of the main barriers to an effective and uniform application of the ELD (European Parliament, 2017^[6]). The thresholds for liability are also perceived to be too high. For instance, the European Commission (2016^[7]) found that the threshold for damage to a protected species or natural habitat will not be exceeded in many instances of damage. It sought to clarify some of the difficulties relating to these issues, with a view to rendering the ELD of greater operational use. It published extensive guidelines in 2021 to facilitate a common understanding of the term 'environmental damage', with these examined in section 2.3 below. The ELD requires the European Commission to carry out an evaluation before 30 April 2023 (and every five years thereafter) which should detail whether this has been achieved. As of the date of writing, the evaluation has not yet been published by the European Commission.

Third, article 14 of the ELD merely requires Member States to take measures to *encourage* the development of financial security instruments and markets to enable operators to use financial guarantees to cover their responsibilities under the Directive, including in insolvency. Thus, there is no requirement for operators to provide financial security (e.g., insurance) to cover their potential liabilities, an omission that was particularly contentious given that the regime is based on the polluter-pays principle (Mullerat, 2005^[8]). The ultimate rejection of a mandatory regime was driven largely by industry, the insurance sectors and by certain Member States who wished to avoid imposing new burdens on industry at a time of economic crisis (Bocken, 2006^[9]). The concern is that the absence of a mandatory regime means that taxpayers may end up paying for the requisite preventive or remedial measures to be carried out should the responsible operator become insolvent or otherwise unable to bear their liability. Whilst the majority of Member States do not provide for mandatory financial security in their domestic legislation transposing the ELD, several do (European Parliament, 2021^[10]). The European Parliament asserts that 'where implemented, these instruments seem to have proved their worth and demonstrated the need to assess the introduction of a mandatory financial security system' (European Parliament, 2021^[10]). The European Parliament is clearly receptive to reassessing the financial security question. Whilst research conducted for the European

Commission found that the ELD cannot be implemented effectively unless insurance is available for liabilities arising under it (European Commission, 2020^[11]), there are no indications from the European Commission that it will introduce a mandatory regime any time soon.

Liability regimes

The ELD comprises two liability regimes, each of which is equally relevant to the prospect of operators incurring liability for the costs associated with damage prevention:

1. Strict liability (i.e., liability not dependent on establishing fault) for environmental damage to protected species and natural habitats, water, and land caused by any of the occupational activities listed in Annex III of the ELD (e.g., waste management, landfill sites, discharges into inland surface water, discharge or injection of pollutants into surface water or groundwater, water abstraction and impoundment, transport by road, rail, inland waterways, sea or air of dangerous goods or polluting goods, activities relating to genetically modified organisms and chemical production), and to any imminent threat of such damage occurring as a result of those activities (article 3(1)(a)).
2. Fault-based liability (i.e., liability for conduct that is negligent) for damage to protected species and natural habitats caused by any occupational activities not listed in Annex III, and to any imminent threat of such damage, whenever the operator has been at fault or negligent (article 3(1)(b)). Fault-based liability does not apply to damage to land or water.

The prevention of environmental damage under the ELD

The purpose of the ELD is to establish a framework of environmental liability based on the polluter-pays principle, to prevent and remedy environmental damage (article 1). This section focuses on the preventive actions required by it and liability for the costs associated with them.

Preventive action

Where environmental damage has not yet occurred but there is an imminent threat of it occurring, the operator must take the necessary preventive measures without delay (article 5(1)). According to article 2(9), there is an imminent threat of damage when there is 'a sufficient likelihood that environmental damage will occur in the near future'. Under article 2(1), 'preventive measures' is defined as 'any measures *taken in response* to an event, act or omission that has created an imminent threat of environmental damage, with a view to *preventing or minimising* that damage'. By way of illustrative example, this would cover the need for an operator to address a situation where pipes carrying a pollutant had begun to deteriorate to a marked extent, creating the imminent risk of a leakage and the ensuing risk of damage to land and to water. Another example is when an operator that possesses a water abstraction license could be required to reduce the volume of water that it abstracts to prevent (further) damage to a population of freshwater fish. Preventive measures may also need to be deployed to minimise the magnitude of the ensuing environmental damage (i.e., implementing spill containment measures after the pipes burst), even though the prospect of damage may no longer be preventable. The ELD provides no detail on when, in specific terms, the sufficient likelihood threshold will be reached nor on what time horizon 'near' is intended to capture. This will be left to the courts to decide and clarify.

Under the ELD, the competent authority, a term which is not actually defined under the Directive, is the relevant domestic environmental regulator in charge of specific tasks entailing appropriate administrative discretion, such as the duty to assess the significance of the damage and to determine which remedial measures should be taken. It does, however, possess no discretion to determine whether the operator is to be required to perform the preventive measures. According to article 5(4) of the ELD, the competent

authority ‘*shall* require’ that the operator takes them and can give them instructions on the measures to be undertaken if it deems appropriate (article 5(3)(b)-(c)). Indeed, the competent authority is subject to a ‘duty’ to require the operator to carry out the necessary preventive measures (Fogleman, 2020^[12]). If the operator fails to take the necessary preventive measures on its own accord or following instructions by the competent authority, cannot be identified or is not required to bear the costs, the competent authority may take these measures itself (article 5(5)). Note that preventive measures taken by the competent authority are without prejudice to the liability of the relevant operator under the ELD (article 8(5)). This means that whilst the competent authority may choose to perform the works, this does not absolve the operator from legal liability for the associated costs and these may be recovered via legal charge (article 8(2)).

It is to be observed that the competent authority is not legally bound to perform the works where the liable party cannot or does not act: the competent authority *may* take these measures itself. Mullerat (2005^[8]) notes that this was one of the most controversial aspects of the debate around the drafting of the ELD. Betlem and Brans (2006^[13]) view the ultimate outcome, i.e., the competent authority is under no ‘subsidiary responsibility’ to undertake the necessary preventive measures, as ‘*not an entirely unexpected outcome of a political bargain*’. For many Member States, the existence of such a duty would amount to ‘saddling’ competent authorities with an ‘inflexible’ and potentially ‘expensive’ obligation (Clarke C, 2003^[14]). The obvious risk, however, is that environmental damage that was entirely preventable through timely performance of preventive measures could, ultimately, arise if those measures were not undertaken by either the operator or the competent authority. Krämer (2005^[15]) notes the argument that if a competent authority was obligated to bear the costs of preventive measures, it would be more attentive to the content of the permit, the conditions attached to it and the operator’s capacity to pay for restoration costs. There would be a far greater incentive for it to monitor whether the permit conditions were actually adhered to by the operator (Krämer, 2005^[15]). The obvious drawback would be that the regulatory burden and associated cost would increase for competent authorities.

It appears that operators are not required to inform the competent authority of the imminent threat where that threat is dispelled as a result of the preventive measures taken. In their transposition of the ELD under domestic law, Member States are to provide that ‘in any case whenever an imminent threat of environmental damage is *not* dispelled despite the preventive measures taken by the operator, operators are to inform the competent authority of all relevant aspects of the situation, as soon as possible’ (article 5(2)). The competent authority does possess the power, at any time, to ‘require the operator to provide information on any imminent threat of environmental damage or in suspected cases of such an imminent threat’ (article 5(3)(a)). Competent authorities may not, however, be aware of the threat. They might, however, become so aware during a routine site inspection or during a visit to the site for an entirely separate purpose. Equally, they may need to rely on a strong working relationship with an operator to increase the prospect of them voluntarily disclosing details of an imminent threat.

Whilst the ELD requires operators to prevent an imminent threat of damage from unauthorised activities (i.e., those not allowed under the terms of their permit, license for other authorisation), its application to *authorised* activities is less well defined (Fogleman, 2020^[12]). Indeed, Fogleman argues that the ELD requires an operator to ‘decline to carry out authorised activities that the operator knows will cause an imminent threat of, or actual, environmental damage or to modify those activities so that they do not cause environmental damage.’ As operators may be required to cease or modify actions permitted under a permit, this injects significant regulatory potential to reduce and, indeed, prevent environmental damage caused by their day-to-day activities. Rather than being able to claim that such damage is acceptable according to the terms of their permit, operators may, in fact, be required to cease or modify those activities to prevent that damage from arising in the first place.

The costs of preventive action

Operators are to bear the costs of preventive actions taken to comply with the ELD (article 8(1)). Under article 2(16), 'costs' means 'costs which are justified by the need to ensure the proper and effective implementation of [the ELD]'. They include those associated with: assessing environmental damage and/or an imminent threat of it; alternatives for action; administration, legal action, and enforcement; data collection; monitoring and supervision; and other general costs (article 2(16)). The competent authority is required to recover 'inter alia, via security over property or other appropriate guarantees from the operator who has caused...the imminent threat of damage, the costs it has incurred in relation to the preventive actions taken under [the ELD]' (article 8(2)). Essentially, this enables the competent authority to place a charge over the operator's property (e.g., real estate). This empowers it to sell the asset to recover the outstanding sum if the operator is unable or unwilling to pay. The competent authority possesses discretion not to recover the full costs where the expenditure required to do so would be greater than the recoverable sum or where the operator cannot be identified (article 8(2)).

Operators benefit from certain mandatory defences (i.e., in the sense that Member States *must* implement them) under the ELD. An operator cannot be required to bear the cost of preventive actions when it can prove that the imminent threat of environmental damage (article 8(3)):

- was caused by a third party and occurred despite appropriate safety measures existing; or
- resulted from compliance with a compulsory order/instruction from a public authority (other than an order or instruction consequent upon an emission or incident caused by the operator's own activities).

Member States are required to take appropriate measures to enable the operator to recover the costs incurred (article 8(3)). Betlem (2006_[16]) warns that these defences are 'of little practical value to operators: insofar as they apply at all they do not provide a shield from liability but only offer a right to seek contribution.' The operator remains liable, nonetheless. Betlem observes that 'the exceptions of article 8(3) do not concern the operator's liability but its being bearer of costs' (Betlem, 2006_[16]). He observes that the third-party defence is limited further by the fact that where the third party cannot be identified or is insolvent, the operator will, in fact, bear the costs (Betlem, 2006_[16]). This may be seen to degrade the credibility of manner in which the polluter-pays principle is implemented under the ELD given that someone other than the polluter is, ultimately, responsible for bearing the prevention costs.

The duty to establish which operator caused the imminent threat of damage and assess the significance of the damage rests with the competent authority (article 11(2)). It is, however, entitled to require the relevant operator to carry out its own assessment and to supply any information and data necessary (article 11(2)). Finally, the ELD does not prevent Member States from maintaining or adopting more stringent provisions in relation to the prevention of environmental damage (article 16(1)).

Request for action

According to article 12(1), natural or legal persons affected or likely to be affected by environmental damage; having a sufficient interest in environmental decision making relating to the damage; or alleging the impairment of a right, shall be entitled to submit to the competent authority any observations relating to instances of imminent threat of environmental damage of which they are aware and shall be entitled to request the competent authority to take action under the ELD.

Assessment of environmental damage under the ELD

Assessment is central to the ELD in two respects. First, there is a need to undertake an assessment to determine whether the ‘significant’ threshold of damage has been reached, meaning that environmental damage has been caused or there is the imminent threat of it being caused. Second, an assessment is needed to determine the extent to which complementary and/or compensatory remediation is required to be performed. Whilst this section deals with the former, the latter is covered in section 4.

The overriding purpose of assessing the significance of adverse effects is to establish whether preventive measures, immediate management of damage factors, and/or remedial measures are required. The ELD is clear that if a damage assessment indicates that damage has been caused, or there is a threat of it, operators must take certain measures:

- Where environmental damage *has not yet* occurred but there is deemed to be an imminent threat of it occurring, operators must take the necessary preventive measures without delay (article 5(1)).
- Where environmental damage *has* occurred, operators are required to:
 - take ‘all practicable steps to immediately control, contain, remove or otherwise manage the relevant contaminants and/or any other damage factors in order to limit or to prevent further environmental damage and adverse effects on human health or further impairment of services’ (article 6(1)(a)) (‘immediate management of damage factors’); and
 - take appropriate remedial measures (article 6(1)(b) and Annex II of the ELD).

In situations of imminent threat of damage, the sole purpose of the assessment is to prevent damage from occurring (European Commission, 2021^[17]). The duty to assess the significance of the damage and determine which remedial measures should be taken rests with the competent authority (article 11(2)). However, the competent authority may require the relevant operator to carry out its own assessment and to supply any necessary information and data (article 11(2)). Any decision taken by the competent authority which imposes preventive or remedial measures must state the exact grounds on which it is based (article 11(4)).

Key terms

The following key terms underpin assessment of environmental damage under the ELD:

- **‘Damage’** means ‘measurable adverse change in a natural resource or measurable impairment of a natural resource service which may occur directly or indirectly’ (article 2(2)).
- **‘Natural resource’** means ‘protected species and natural habitats, water and land’ (article 12(2)).
- **‘Services’** and **‘natural resource services’** mean ‘the functions performed by a natural resource for the benefit of another natural resource [e.g., surface water may support protected species of wild bird] or the public’ [e.g., land for food production] (article 2(13)).
- **‘Baseline condition’** means the ‘condition at the time of the damage of the natural resources and services that would have existed had the environmental damage not occurred, estimated on the basis of the best information available’ (article 2(14)).

Key concepts

The presence of environmental damage or the imminent threat of it is determined by two thresholds: (i) certain reference concepts being met; and (ii) the significance threshold being breached.

Reference concepts

Reference concepts are crucial to deciding whether environmental damage falls within the scope of the ELD. The role of reference concepts is to provide: (i) parameters and criteria to examine the *relevance* of adverse effects; and (ii) elements in respect of which effects are to be *measured*. The ELD will not apply where the reference concepts specified in the ELD do not cover an adverse effect (or effects) that has been or may be caused by an activity or where the effects of an activity do *not reach* the relevant threshold (i.e., there is land contamination but no risk to human health) as specified in the ELD. In each of these situations, the matter would be left to the domestic law of the Member State, if it exists and is applicable under the circumstances.

The definition of environmental damage in article 2(2) uses the following reference concepts:

- **Protected species and natural habitats:** ‘reaching or maintaining the favourable conservation status’ of these habitats or species,
- **Water:** the ‘ecological, chemical or quantitative status or the ecological potential’ of waters under the Water Framework Directive (WFD) and ‘environmental status’ of marine waters under the Marine Strategy Framework Directive (MSFD), and
- **Land:** risks to ‘human health’.

‘Significant’ and ‘significantly’

The ELD only requires preventive or remedial measures to be carried out if the adverse effects to natural resources are assessed as significant in terms of the relevant reference concept(s) (article 2(1)). Whilst the final determination of significance is for the relevant competent authority, Annex I of the ELD provides guidance for assessing damage to protected species and natural habitats (but not damage to water and land). More on Annex I is said below. The interpretation of ‘significant’ has varied dramatically between Member States, meaning an event that triggered application of the ELD in one Member State may not trigger it in another (European Court of Auditors, 2021^[18]). Indeed, the European Parliament found that differing interpretations and application of its criteria ‘*are one of the reasons for the inconsistent application of the directive*’ (European Parliament, 2021^[10]).

Damage² can only occur where the adverse change and impairment is measurable (article 2(2)). The damage must be ‘capable of quantification or estimation’ and the position *before* and *after* a damaging occurrence ‘must be capable of being meaningfully compared’ (European Commission, 2021^[17]). Scientific assessment will be critical (Fogleman, 2006^[19]). In relation to establishing the situation before the incident, the concept of baseline condition³ in article 2(14) comes into play. While this could be constant, it is more likely that it may vary over time (e.g., as may be the case with a seasonal lake). Whilst determination of baseline condition after damage has occurred may be challenging, the definition of baseline condition provides that it is to be estimated, conferring scope to cater for this uncertainty. Where the assessment is time-critical, i.e., a decision must be made quickly on how best to respond in order to avoid the damage worsening, the assessment must be undertaken with rapid judgment, drawing upon ‘existing and immediately accessible information’ (European Commission, 2021^[17]). Where remedial measures will be required, a more detailed assessment is needed. This may be less time critical.

Box 2.1. Assessment of Environmental Damage

Environmental damage or its imminent threat present if two legal thresholds met:

(i) *Reference concepts*

The ELD uses the following reference concepts:

- **Protected species and natural habitats:** reaching or maintaining favourable conservation status of the habitats or species,
- **Water:** ecological, chemical or quantitative status or ecological potential of waters under WFD and environmental status of marine waters under MSFD, and
- **Land:** risks to human health.

(ii) *‘Significant’ & ‘significantly’*

ELD only requires preventive or remedial measures to be carried out if effects are significant in terms of reference concept(s). Further detail on the assessment of significance set out below.

Assessment of ‘significance’ of environmental damage

Damage to protected species and natural habitats

For protected species and natural habitats, damage must have ‘*significant* adverse effects on reaching or maintaining...*favourable conservation status*’ (as defined in article 2(4)).

Assessment of significance

According to Annex I of the ELD, significant adverse changes to the baseline condition should be determined by *measurable data*, including:

- the number of individuals, their density or the area covered,
- the role of the particular individuals or of the damaged area in relation to the species or to the habitat conservation, the rarity of the species or habitat,
- the species’ capacity for propagation, its viability/the habitat’s capacity for natural regeneration,
- the species’ or habitat’s capacity to recover within a short time, without any intervention other than increased protection measures, to a condition equivalent or superior to the baseline.

Damage with a proven effect on human health *must* be classified as significant damage.

Annex I of the ELD provides examples of adverse effects that do *not* have to be classified as significant damage (thus to which the ELD will not apply). This includes negative variations that are smaller than natural fluctuations regarded as normal for the species or habitat in question.

For the purpose of **preventive measures and measures to immediately manage damage factors**, a determination of significance should be made if the assessment results, or ought to result, in a reasonable belief that, without such measures, adverse changes and impairments of the kind mentioned below will occur (European Commission, 2021^[17]).

Whilst for the purpose of **remedial measures in respect of natural habitats**, adverse changes will be significant and impairments will arise if, in respect of the area of natural habitat affected, they result in one or more of the following:

- a measurable permanent or interim loss of the area covered by the habitat,

- a measurable deterioration in respect of the structure or functioning of the habitat,
- a measurable permanent or interim reduction of the range of the habitat,
- a measurable permanent or interim loss of typical species, or a reduction in their range or available habitats,
- a measurable permanent or interim impairment of natural services linked to the area, structure, and functions of the natural habitat and its typical species, and
- a measurable gap between the time when the adverse effects occur and the time when, for the area, structure, functions and typical species concerned, the baseline condition is restored.

For **remedial measures for protected species**, adverse changes will be significant and impairments will arise if, in respect of the population affected, they result in one or more of the following:

- a measurable permanent or interim population loss (including the loss of a specimen or specimens) or deterioration in the health of a population which affects population dynamics in the area where the adverse effects occur,
- a measurable permanent or interim reduction in the range of species concerned,
- a measurable permanent or interim reduction in habitats available to the species concerned for its long-term maintenance,
- a measurable permanent or interim impairment of natural services linked to the population loss, range reduction or reduction in available habitats, and
- a measurable gap between the time when the adverse effects occur and the time when, for the population, extent of its range (i.e., area where the species can be found), and availability of habitats, the baseline condition is restored.

Box 2.2. “Significance” for damage to protected species & natural habitats

For preventive measures and measures to immediately manage damage factors: significant if assessment results, or ought to result, in a reasonable belief that, without such measures, specified adverse changes and impairments will occur (e.g., a measurable deterioration in respect of the structure or functioning of the habitat).

For remedial measures to natural habitats: significant if, in respect of area affected, adverse changes result in a specified range of changes (e.g a measurable deterioration in respect of the structure or functioning of the habitat).

For remedial measures to protected species: significant if, in respect of population affected, adverse changes result in a range of specified changes (e.g., a measurable permanent or interim reduction in the range of species concerned).

Water Damage

The term ‘water damage’ refers to two categories of waters:

- those concerned under the WFD (i.e., inland surface waters, transitional waters, coastal waters and groundwater); and
- marine waters under the MSFD.

The assessment of significance should relate to the *specific* area(s) of waters affected.

Waters Concerned under the WFD

It is important for certain sub-classes of waters to be distinguished for the purposes of assessing damage. These are as follows: groundwaters, rivers, lakes, transitional waters (i.e., a body of surface water near the mouth of a river that is partly saline in character but substantially influenced by freshwater flows), coastal waters; territorial waters, and artificial and heavily modified water bodies. They are to be distinguished as different reference concepts are used for each of them. It should be recalled that for waters under the WFD, 'water damage' is defined as 'any damage that significantly adversely affects: the ecological, chemical or quantitative status or the ecological potential, as defined in Directive 2000/60/EC, of the waters concerned, with the exception of adverse effects where Article 4(7) of that Directive applies'.

The different referent concepts are as follows:

- **ecological:** surface waters,
- **chemical:** surface waters and groundwaters,
- **quantitative status:** groundwater, and
- **ecological potential:** heavily and artificially modified water bodies

Given the array of reference concepts, a range of techniques and methodologies may be used to estimate and measure both the baseline condition and adverse changes and impairments, including chemical analyses, habitat evaluation, toxicity measurements and bio-indices (European Commission, 2021^[17]).

The determination of significance

For the purposes of **preventive measures and measures to immediately manage damage factors**, a determination of significance should be made if the assessment results – or ought to result – in a *reasonable belief* that, without such measures being implemented, adverse changes of the kind mentioned below in relation to remedial measures will occur (European Commission, 2021^[17]).

The European Commission (2021^[17]) made clear that for the purposes of **remedial measures**, adverse changes are significant if, in relation to the affected area(s), the changes result in a *measurable*:

- permanent or interim loss in respect of a status element (components of the definitions of the status of water, as detailed in Annex V of the WFD) such that, for that status element, the area of water affected no longer shows the characteristics that would have been present in that area before the adverse change or impairment,
- deterioration in respect of a status element such that, for that status element, the area of water affected no longer shows the status element characteristics that would have been present in that area before the adverse change or impairment took effect,
- impairment of natural services linked to the status elements that have suffered loss or deterioration, and
- gap between the time when the adverse effects occur and the time when, for the status elements concerned, the baseline condition is restored.

Whilst the adverse effect need not result in a change of classification under the WFD (e.g., movement from good to moderate ecological status for rivers) a change to a lower status classification would be an example of a significant adverse effect (and, in turn, the operationalisation of the ELD). There are no criteria, as provided in Annex I of the ELD for assessing and determining the significance (or non-significance) of 'damage to protected species and natural habitats', for water damage.

Marine Waters Concerned under the Marine Strategy Framework Directive (MSFD)

The reference concept for 'marine waters' is their 'environmental status'⁴, as defined in the MSFD.

The determination of significance

Just as for waters concerned under the WFD, for the purposes of **preventive measures and measures to immediately manage damage factors**, a determination of significance for marine waters under MSFD should be made if the assessment results – or ought to result – in a *reasonable belief* that, without such measures being implemented, adverse changes of the kind mentioned below in relation to remedial measures will occur (European Commission, 2021^[17]).

For the purposes of **remedial measures**, adverse changes will be significant if they result in a measurable permanent or interim loss in respect of the status of a qualitative descriptor in conjunction with the indicative list of characteristics, pressures and impacts, by taking account of 'criteria elements' and 'threshold value' such that the area affected no longer conforms to the environmental status that would have applied to that area before the adverse change took effect (European Commission, 2021^[17]).

Whilst the adverse effect need not result in a change of classification (e.g., from 'good environmental status' to one that is not good) a change to a lower status classification would be an example of a significant adverse effect. So too would deterioration of 'good environmental status'.

Box 2.3. "Significance" for damage to Water

Waters under the WFD

For purposes of preventive measures and measures to immediately manage damage factors: significant if assessment results, or ought to result, in a reasonable belief that, without such measures, specified adverse changes and impairments will occur (e.g., impairment of natural services linked to status elements that have suffered loss or deterioration).

For purposes of remedial measures: significant if, in relation to affected area(s), adverse changes result in, for example, a measurable deterioration in a status element.

Waters under the MSFD

For purposes of preventive measures and measures to immediately manage damage factors: significant if assessment results, or ought to result, in reasonable belief that, without such measures being implemented, a range of adverse changes occur (see remedial measures).

For purposes of remedial measures: significant if adverse changes result in a measurable permanent or interim loss in respect of the status of a qualitative descriptor in conjunction with the indicative list of characteristics, pressures and impacts, by taking account of criteria elements and threshold value such that the area affected no longer conforms to the environmental status that would have applied to that area before the adverse change took effect.

Land Damage

The assessment of land damage relates to the *risk* of human health being adversely affected; actual harm need not be shown. The risk, which must be 'significant', is assessed based on the known hazards and level of human exposure to contaminants. Whilst 'land' is undefined, as article 2(1)(c) of the ELD refers to 'in, on or under land', it extends to both the surface and sub-surface of land. Thus, soil is covered by it.

The determination of significance

In determining significance, matters to be taken into account with regard to the presence of the risk to human health include characteristics and function of the soil, the type and concentration of the harmful

substances, preparations, organisms or micro-organisms (i.e., their *specific* risks and possible exposure routes, such as dermal contact or consumption), and the risk and the possibility of their dispersion.

For **preventive measures and measures to immediately manage damage factors**, the risk will be significant if there is reasonable doubt as to the absence of a measurable possibility that an imminent threat or damage factors may cause human beings to be directly or indirectly exposed to contaminants to an extent that is harmful to their health (European Commission, 2021^[17]).

Whilst for **remedial measures**, it will be significant if there is reasonable doubt as to the absence of a measurable possibility of substances, preparations, organisms or micro-organisms directly or indirectly introduced in, on or under land causing human beings to be directly or indirectly exposed to the contaminants to an extent that is harmful to their health (European Commission, 2021^[17]). The definition of 'baseline condition' is of limited use for assessing significance of land damage as when it comes to the remediation of land damage, the ELD requires any significant risk to human health to be removed as opposed to requiring restoration to the condition it was in before contamination.

Box 2.4. "Significance" for Damage to Land

For preventive measures and measures to immediately manage damage factors: significant if reasonable doubt as to absence of measurable possibility that an imminent threat or damage factors may cause humans to be directly or indirectly exposed to contaminants to an extent that is harmful to their health.

For remedial measures: significant if reasonable doubt as to absence of measurable possibility of substances, preparations, organisms or micro-organisms directly or indirectly introduced in, on or under land causing humans to be directly or indirectly exposed to the contaminants to an extent that is harmful to their health.

3

Description of environmental liability legislation in Armenia

Overview of Armenia's environmental liability legislation

Introduction

The ELD and Armenia's environmental laws comprise very different conceptions of environmental liability. The former uses that phrase to reflect a party's legal responsibility, as determined by the relevant regulator, for the financial costs associated with the obligation to prevent or remediate damage actually (or threatened to be) caused to the environment, as determined by *scientific assessment*. On the other hand, under Armenian law, it is used to reflect a party's legal responsibility for payment, as determined indirectly via *formula and/or tariffs*, of compensation (i.e., damages) to the state for the unlawful use of, and/or causing adverse impacts to, natural resources. Economic calculations, reliant on formulae and tariffs, are deployed as a proxy for scientific determination of the level of environmental damage that is actually caused by the violator's activities.

Armenia's environmental liability regime is spread across a range of legislative frameworks. The applicable laws may be divided into two categories: direct and indirect liability laws. Direct environmental liability laws typically regulate use of a discrete type of natural resource, creating offences and, in turn, liabilities (e.g., civil) in respect of their breach. They include:

- Law on Atmospheric Air Protection, 1994
- Law of Flora, 1999
- Law on Fauna, 2000
- Water Code, 2002
- Forest Code, 2005
- Subsoil Code, 2011

As can be seen, the practice is for a single legal framework to deal with a single natural resource.

On the other hand, indirect environmental liability laws are quite distinct to those detailed above in the sense that they (i) do not create new offences and (ii) often cover activities beyond those that may impact on the environment. They do, however, interact closely with the direct laws in the sense that they provide further detail on the consequences of breaching the direct laws, such as setting the level of fines, detailing formulae for how compensation payable to the state ought to be calculated and specifying fees payable by resource users for lawful use of natural resources. These indirect liability laws include:

- Code on Administrative Offences, 1986
- Criminal Code, 2003
- Decision No. 1110 of 14 August 2003 on Approving the Procedure for Assessment of the Impact on Water Resources Resulting from Economic Activities

- Decision No. 92 of 25 January 2005 on Approving the Procedure for Assessment of the Impact on Land Resources Resulting from Economic Activities
- Law No. 88 of 3 May 2005 on Tariffs for Compensation of Damage Caused to Flora and Fauna as a Result of Environmental Violations
- Government Decree No. 91 of 25 December 2005 on the Procedure for Assessing the Impact of Economic Activity on the Atmosphere
- Tax Code, 2016

It is to be noted that whilst damage to air is absent from the definition of environmental damage under art 2(1) of the ELD, it is covered by Armenia's direct (*Law on Atmospheric Air Protection, 1994*) and indirect (*Government Decree No. 91 of 25 December 2005 on the Procedure for Assessing the Impact of Economic Activity on the Atmosphere*) liability laws.

Collectively, the thirteen legal frameworks listed above, detailed summaries of which are set out in Annex 1 of this report, provide for four types of environmental liabilities:

1. use fees for natural resources,
2. compensation (i.e., the payment of damages) payable to the state,
3. fines, and
4. costs associated with performing preventive and/or remedial measures.

These are examined in section 3.1.2.

This report's analysis does not cover the *Criminal Code*, which caters for the imprisonment of offenders, because it is not considered to be a form of environmental liability. Nor does the report cover certain obligations under a permit, license or authorisation, for example, an obligation to restore land following closure of a site or facility such as a landfill or a mine, or maintenance and aftercare of a site or facility post-closure (including the need to monitor its environmental integrity).

Armenian regulators often possess discretion to determine *which* form(s) of liability may be appropriate in a given instance. For instance, under the *Forest Code*, the State Forestry Service (SFS), which supervises application of the Code, is obliged to pursue administrative *or* criminal liability against a violator of it. Liabilities may also apply cumulatively. The *Forest Code*, for example, states that any liability applied for its violation does not exempt the violator from the obligation to eliminate the violation (e.g., undertake remedial measures) *and* compensate the damage caused (article 60(2)). The *Law on Atmospheric Air Protection* states that compensating for damage caused to the environment through its violation does not exclude the possibility of the violator being subject to administrative (e.g., a fine) or other (e.g., criminal) responsibility (article 22).

Of the four types of environmental liabilities detailed above, the ELD caters only for (4) preventive and/or remedial measures. The other types of liability have no basis under the ELD. This, of course, does not preclude their inclusion under the domestic laws of a nation. They are just not comprised in the ELD.

Third parties, such as citizens or companies, may bring civil actions for harm caused to them by another's activities, providing a further source of civil liability for polluters. These claims are, however, entirely separate to the state's regulation of natural resources by direct and indirect means.

Categories of environmental liabilities under Armenian law

This section details the categories of environmental liabilities to which violators of Armenian law, whether legal or natural persons, may be answerable. Annex 1 of this report provides more detailed consideration of the environmental liabilities arising under each of the above legal frameworks.

Use fees

Fees are payable for *lawful* use of natural resources (e.g., flora and fauna) by resource users. For example, under the *Law of Flora*, the user of flora objects must pay the fees defined for flora use (article 27(f)). A similar duty to pay use fees exists under the *Law on Fauna* (article 29(g)), *Water Code* (article 76), *Forest Code* (article 56(1)) and *Subsoil Code* (article 4(1)(10)). These fees are determined by the *Tax Code* (article 203). This states, for instance, that fees are dependent on volumes of water use prescribed by permits issued under the *Water Code* and volumes of mineral extraction provided for by the contract on subsoil use concluded for mining purposes under the *Subsoil Code*. Strictly speaking, it may be more accurate to categorise use fees as a cost of doing business as opposed to a form of environmental liability. The term 'environmental liability', at least in European legal systems, usually refers to financial liability for costs associated with damaging, or potentially damaging, the environment through *unlawful* activity. In sharp contrast, use fees are payments for lawful pollution. In essence, the resource user is paying the state in order to be permitted to pollute the environment.

Compensation

An array of direct environmental liability laws mandate that resource users pay compensation for damage caused by their violation of the law. Examples of requirements under Armenian law to pay compensation may be found in Table 1.

The need to pay compensation for damage caused is implied under the *Law on Flora*, which provides that the regulator has the right to seek to 'recover the damage' caused by violation of the Law (article 30(c)). The *Law on Fauna* is more explicit in its approach. It requires that users of fauna objects must 'compensate the damage caused' by their violation of the Law (article 29(i)). Such a duty also exists under the *Water Code* (articles 116 and 117) and the *Forest Code* (articles 26(3)(c), 34(1)(h) and 61(1)). It should be observed that under the latter Code, forest users are obliged to compensate *or* restore the damage caused to forests and forest lands as a result of their forest use. Thus, the SFS possesses discretion to determine whether compensation or performance of remedial works by the violator is to be required (article 34(1)(h)). The Code does not provide criteria to assist the SFS to make exercise that discretion. It is clear that if the decision is to request that compensation be paid, and that compensation is allocated to the state budget and not used to remediate the harm caused, then the environment will remain in a degraded state. The existence of discretion does not sit easily with article 61 which provides that the damage caused to forest lands by citizens or legal entities as a result of violation of the Code 'is subject to compensation'.

There are indirect references to the need for resource users to compensate for damage caused in the *Law on Atmospheric Air Protection*. This is something of an outlier in the sense that it does not state explicitly that a violator of the law will be liable to pay compensation for the damage caused by the violation. Nevertheless, articles 22 and 28 make reference to compensation payable in respect of this. Article 22 provides that compensating for damage caused to the environment as a result of violating the Code does not exclude the possibility of the person who committed the offence being subject to administrative *or* other (e.g, criminal) responsibility. Article 28 provides that the compensation of damage caused to persons as a result of atmospheric air pollution is regulated by civil legislation (e.g., the *Tax Code*). Note that article 28 relates to damage to *persons*, not the environment as such. The *Tax Code* specifies levels of compensation payable for exceeding limits for emissions (see, article 167(3)). Article 10 of the Law states that if, from a stationary source, a natural person engaged in legal or entrepreneurial activity exceeds the maximum permissible emission norms set by the emission permit, then they will be subject to administrative liability (article 10(1)). The ascription of liability (and the need for a party to compensate for the damage caused), upon a *natural person*, as opposed to the company whose activities created the pollution, is a surprising aspect of the law for it would be expected for the latter to have greater levels of funds at their disposal to shoulder a liability. It may also, at a practical level, be difficult to determine which employee was responsible for the unlawful emissions.

An approach taken under the *Subsoil Code* should also be noted. It for the need for subsoil users to provide a financial guarantee in respect of the management of subsoil use waste and for ensuring implementation of measures provided for in the waste processing plan (art 60.4(1)). This guarantee must also cover defects or damages caused as a result of these actions in order to ensure compensation (article 3(28.2)). Thus, the guarantee, which may be considered a form of financial security, is there should compensation need to be paid to the state. The calculation of the amount of the guarantee provided is made based on the measures provided by the subsoil use waste management or processing plans (article 60.4(2)). Its presence heightens the prospect of the violator possessing funds to pay compensation should, for instance, they become bankrupt or are otherwise unable or unwilling to bear that debt, and ought to be considered as an example of good practice. However, as is detailed in Section 4 below, the guarantee must be designed to be (i) secure in the event of the violator's bankruptcy; (ii) sufficient to cover the liability; and (iii) be available when required.

It is important to observe that the traditional civil liability doctrine of causation bears little resemblance to that provided for under these laws. This is because causation need not be proven. The mere fact of the emission taking place will be sufficient to establish that damage has been caused/occurred.

The level of compensation (i.e., damages) payable to the state is determined by a series of indirect environmental liability laws that are (i) either of a general nature (e.g., the *Tax Code*) or (ii) deal with particular natural resources, specifically water (*Decision No. 1110 of 14 August 2003 on Approving the Procedure for Assessment of the Impact on Water Resources Resulting from Economic Activities*), land (*Decision No. 92 of 25 January 2005 on Approving the Procedure for Assessment of the Impact on Land Resources Resulting from Economic Activities*), flora and fauna (*Law No. 88 of 3 May 2005 on Tariffs for Compensation of Damage Caused to Flora and Fauna as a Result of Environmental Violations*) and the atmosphere (*Government Decree No. 91 of 25 December 2005 on the Procedure for Assessing the Impact of Economic Activity on the Atmosphere*). These indirect liability laws set out formulae to determine the level of compensation payable. This contrasts markedly with the ELD, which requires *scientific* assessment of the actual damage caused to the environment.

Armenia's liability laws are built, principally, upon emission limits (i.e., the level of natural resource use permitted under the applicable direct or indirect liability law). There are two important exceptions. First, the operation of *Decision No. 92 of 25 January 2005 on Approving the Procedure for Assessment of the Impact on Land Resources Resulting from Economic Activities* is dependent upon the existence of specified adverse changes (e.g., reduced fertility and presence of pollution) in the environment resulting in the pollution of land resources. Second, the *Subsoil Code* is the only direct environmental liability law that mentions assessment of environmental damage. It provides that in case of accidents, the subsoil user must provide the regulator with the information required to reduce the consequences for human health and to assess the amount of environmental damage caused and reduce it fully, or failing that, as much as possible (article 60.6(7)). It is not, however, clear who is to carry out the assessment: the subsoil user or the regulator. Moreover, there is no detail provided in relation to how exactly that assessment is to be undertaken and to which scientific criteria it must refer, evidencing important gaps in this current good practice of mandating a more scientific form of damage assessment.

These two exceptions aside, Armenia's liability laws do not, typically, require scientific evidence that damage was caused by the violator. There is, in essence, strict liability once the limits have been exceeded. This reliance on the difference between (i) the relevant limit, and (ii) the extent to which this has been exceeded, has two important implications for the purposes of this report. First, damage under Armenian law typically arises immediately upon these limits being exceeded, even if only marginally. This contrasts with the ELD. The ELD is only applicable when the significance threshold is breached and relevant reference concept(s) met. Second, with the exception of the *Subsoil Code*, there is no need for an assessment of the actual level of damage caused to the relevant natural resource(s) to be undertaken in Armenia. Merely knowing the degree to which the limit was exceeded is sufficient to determine the level of compensation payable by the violator to the state. Again, this contrasts with the ELD which defines damage

as a ‘measurable adverse change in a natural resource or measurable impairment of a natural resource service’ (article 2(2)).

Certain indirect environmental liability laws, specifically *Decision No. 1110 of 14 August 2003 on Approving the Procedure for Assessment of the Impact on Water Resources Resulting from Economic Activities* and *Decision No. 92 of 25 January 2005 on Approving the Procedure for Assessment of the Impact on Land Resources Resulting from Economic Activities*, incorporate the predicted cost of remediating the damage caused into the damage assessment for the purpose of calculating damages to be paid by the violator to the state, which is good practice.

Fine

Some of the laws detailed above cater for the prospect of imposing a monetary fine or other financial penalty for infringing particular direct liability laws and/or the *Criminal Code*. The definition of environmental liability used for the purposes of this report – financial liability (administrative and/or civil) for costs associated with damaging, or potentially damaging, the environment through unlawful activity – would not, in strict terms, cover the payment of a fine for *infringing* environmental law. The polluter-pays principle, as articulated under the ELD, does not seek to punish the operator that caused the damage by way of the imposition of a fine or criminal sanction. Indeed, the ELD does not provide for the imposition of penalties for breaches of environmental law (*Túrkevei Tejtermelő Kft. v Országos Környezetvédelmi és Természetvédelmi Főfelügyelőség* [2017] EUECJ C-129/16, Opinion of AG Kokott, [26]). Nevertheless, it is deemed important to cover fines in the analysis of Armenian environmental laws for two reasons. First, they are a feature of these laws. Second, the laws of certain Member States, including Hungary (*Act LIII of 1995 on the General Rules of Environmental Protection*) and Latvia (*Administrative Penal Code*) provide for the payment of fines for infringing laws that implement the ELD. Whilst the ELD, and its conception of the polluter-pays principle, do not require them, they are a feature of the regimes implemented by certain Member States.

A variety of Armenia’s environmental laws require payment of a fine for their infringement. For instance, under the *Law on Flora*, the regulator must subject violators of the law to administrative penalties (article 30(c)). Under the *Water Code*, article 47.1(1) provides that in the event of non- or improper fulfilment of its requirements, the Regulatory Commission has the right to apply a fine. Article 47.1(2) specifies the level of fine payable by licensed persons. Failure to fulfill or improper fulfilment of the provisions of the Code may, for example, result in the imposition of a fine in the amount of 20 000 to 40 000 times the established minimum salary. Fines are paid into the state budget (article 47.1(3)). In comparison to the other direct laws, the Code is unique in its articulation of fine levels for certain unlawful activities. And under article 117, penalties (i.e., fines) for failure to comply with a violation notice issued by the Water Resources Management and Protection Body (WRMPB) are to be applied for each day of non-compliance, with the penalty imposed being escalated.

The *Code on Administrative Offences* contains a chapter that details the levels of fines applicable to specified administrative offences that pertain to the natural environment. For instance, harming forest fauna results in the imposition of a fine on citizens in the range of 100 to 160 times the prescribed minimum wage (article 78). The *Criminal Code*, which contains a chapter on environmental crimes, also caters for the prospect of a fine being imposed upon those found guilty of an offence. It provides that the court shall determine the amount of any fine, taking into account the gravity of the crime and the property status of the person being convicted (article 51(2)). There are two important observations to be made here. First, the court possesses significant discretion to determine the amount of the fines payable by violators of environmental laws. This may make parity of treatment of equivalent violations difficult, creating potential for inequity between violators. Second, the financial strength of the violator will be pertinent to this task, meaning that corporations with extensive financial resources may be penalised to a greater extent than natural persons and/or those less well-off corporations.

Costs associated with performing preventive and/or remedial measures

A range of direct liability laws empower the regulator to (i) require that a violator of the law undertake measures specified in a violation notice; or (ii) if the violator fails to perform them, to pursue the violator via presentation of a court order for the costs associated with performance of the works. It appears that measures specified in the notice may be of a preventive and/or remedial nature.

Under the *Forest Code*, the SFS is empowered to give instructions to violators of the Code to ensure elimination of the consequences of the violation (article 26(3)(e)). Whilst the provision does not use the word remediation, use of the word elimination suggests that an equivalent responsibility is being placed on the resource user. However, as is mentioned in greater detail in Section 4 of this report, the provision does not make clear (i) the criteria against which the remediation (or, more accurately, 'elimination') under the Code is to be assessed to determine whether the works carried out are sufficient, and (ii) what ought to happen if it is not possible to eliminate the consequence of the violation. Section 4 shows that under the ELD, the concept of complementary remediation is designed to guard against precisely the latter risk. There is also no reference to the impact on natural resource services and how their interruption is to be catered for by the violator. The same is true of article 34(1)(g), which provides that forest users may be obliged to 'restore the damage caused to forests and forest lands as a result of forest use'. Under the ELD, the concept of compensatory remediation is there to deal with the prospect of interim losses to such services.

The *Water Code* provides that in the event of non-fulfilment or improper fulfilment of the requirements of the Code, the Regulatory Commission has the right to apply measures to restore the situation before the violation, to perform actions arising from it and issue instructions regarding them or to eliminate the violation (article 47.1(1)). Whilst mere infringement of environmental laws, including the ELD (that is, in the absence of environmental damage being caused), would not automatically be considered to create an environmental liability for the polluter, it is prudent to consider this potential liability given the relatively low levels of remediation requirements under Armenian law. This obligation, it seems, may be applicable to both preventive and remedial measures.

The Code also states that if a violator fails, within a reasonable time-period, to comply with a direction given in a violation notice issued by the WRMPB, the WRMPB can ensure the measures stated in the notice are performed (article 117). It appears that the measures specified in the notice may be of a preventive or remedial nature and are not restricted to the latter. If the WRMPB performs the measures, it must submit a claim to the court for reimbursement of the costs from what should be considered a wide range of potentially responsible persons. It is of note that the drafting of article 177 suggests that more than one potentially responsible person may be pursued by the WRMPB at the same time. This, of course, maximises the prospect of full recovery of the costs in the event that the means of a single party may not be sufficient to discharge the liability owed to the WRMPB. As per the *Subsoil Code*, to ensure compliance with the Code and related instruments, the regulator may require guarantee of adequate reliability (i.e., financial security) as a condition for issue of a permit (article 118). A reliable security may be a letter of recommendation from any bank granting a loan, bank guarantee, insurance or other appropriate form of security (article 118).

Finally, article 37.1.1 caters for creation of a fund for the protection of water resources (hereafter 'Water Resources Protection Fund'). The duty of the water user to make allocations to this is included in the water use permit. Funds for the protection of water resources are transferred to the extra-budgetary account of the WRMPB opened in the central treasury and are used exclusively for the conservation or liquidation of wells after groundwater extraction.

Article 69 of the *Subsoil Code* also caters for creation of a fund for nature and environment protection (hereafter, the 'Fund') through payments made by subsoil users. The procedure for calculating contributions to the Fund by subsoil users and sums paid to them is determined by the state (article 69(1))

and detailed in Annex 1 of this report. Sums within the Fund are kept in the extra-budgetary account of the authorised body in the central treasury and are used exclusively for (i) the subsoil user's performance of reclamation works; (ii) carrying out reclamation works not carried out by the subsoil user; (iii) restoration of lands disturbed as a result of the subsoil user's activities (article 69(3)). The subsoil user cannot receive sums from the Fund that exceed the amount that they contributed to it (article 69(4)). After the requisite works are performed and all legal requirements are complied with, any outstanding (i.e., unspent) balance is to be returned to the subsoil user (article 69(5)). Whilst reclamation is not a true remedial measure in the sense that it is not a response to an environmental accident but, rather, a measure imposed under the user's permit, it is common for true remedial measures to be comprised with reclamation requirements, i.e., any environmental damage discovered to be remediated.

Table 3.1. The types of environmental liabilities applicable under Armenian law in the event of violation

	Legal Framework	Use Fee	Compensation	Fine	Preventive & Remedial Measures
1	Law on Atmospheric Air Protection	Yes (but catered for in Tax Code, see articles 166(1)(1) & 167)	Yes (but catered for in Tax Code, see articles 166 & 167)	Implied (indirect reference in article 10(1))	No
2	Law of Flora	Yes (articles 22 & 27(f))	Yes (article 30(c))	Yes (article 30(c))	No
3	Law on Fauna	Yes (article 29(g))	Yes (article 29(i))	Implied (article 33)	No
4	Water Code	Yes (articles 76 & 77)	Yes (article 116)	Yes (articles 67, 47.1(1), 113, 114 & 117)	Implied (articles 47.1 & 117)
5	Forest Code	Yes (article 56(1))	Yes (articles 26(3)(c), 34(1)(g) & 61)	Yes (article 26(3)(c))	Implied (articles 26(3)(e) & 34(1)(g))
6	Subsoil Code	Yes (articles 4(1)(10), 10(1) & 61)	Implied (articles 3.28(2) & 78(1)) (also catered for in Tax Code, see article 170)	Implied (article 78(1))	Implied (articles 30(5)(8) & 60.5(1))
7	Code on Administrative Offences	No	No	Yes (e.g., article 60.1 & 62)	No
8	Criminal Code	No	No	Yes (articles 51(2) & 287)	No
9	Decision on approving the Procedure for Assessment of the Impact on Water Resources Resulting from Economic Activities	No	Yes (see, e.g., article 7, which sets out a formula for calculating damages)	No	No
10	Government Decree on the Procedure for Assessing the Impact of Economic Activity on the Atmosphere	No	Yes (see, e.g., article 6, which sets out a formula for calculating damages)	No	No

11	Law on Tariffs for Compensation of Damage Caused to Flora and Fauna as a Result of Environmental	No	Yes (see e.g., article 3 which sets tariffs for damages)	No	No
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	Violations				
12	Decision on Approving the Procedure for Assessment of the Impact on Land Resources Resulting from Economic Activities	No	Yes (see, e.g., article 6, which sets out a formula for calculating damages)	No	No
13	Tax Code	Yes (see e.g., article 204)	Yes (see e.g., article 167(3))	No	No

Armenia's approaches to the prevention of environmental damage

The direct environmental liability laws detailed in section 3.1.1. comprise a range of provisions concerned with the prevention of damage. These are the focus of this section. The indirect frameworks detailed in section 3.1.2. above will not be considered. Through their imposition of legal liability for violations of the applicable laws, they generate economic *incentives* to prevent violation of these laws arising in the first place. This may be considered to reflect the logic of the prevention principle, at least as understood within the context of EU environmental law. However, these indirect laws do not, generally, *require* (potential) violators to take preventive action to avoid a violation taking place or, if one does take place, to prevent the position deteriorating. They are, therefore, of peripheral relevance to discussion in this report of the prevention of environmental damage under Armenian law. That said, the importance of strong economic incentives to facilitate prevention is considered further in Section 4.

The direct environmental liability laws detailed in section 3.1.1. above will now be examined, with focus specifically on the preventive actions contained therein that bear resemblance to those required under the ELD. There is little to be gained from extracting and discussing *all* actions detailed in these legal frameworks that relate to the prevention and protection of the environment. The exception is the *Law on Atmospheric Air Protection*. Whilst damage to atmospheric air is not covered by the ELD (i.e., it is not deemed to be 'environmental damage'), this Law could fill a gap left by the ELD.

When comparing the prevention requirements of the ELD with those of Armenia's environmental laws, four things become clear. First, the latter is marked by a lack of requirements across its array of direct laws for the resource user to take the necessary preventive measures without delay where environmental damage has not yet occurred but there is an imminent threat of it occurring. Whilst Armenia's laws do refer to prevention regularly, these obligations are vague, key terms are undefined and, significantly, they are not directly related to the conception of environmental damage as understood in the ELD. Second, both regimes do not require the state to perform preventive measures where the responsible party fails to do so itself whether due to its insolvency or mere refusal to perform them. Third, Armenia's environmental laws do not, generally, appear to confer a power on a relevant regulator to take security (i.e., a charge) over the resource user's property, such as real estate, in respect of the costs of preventive measures undertaken by the regulator in the event of the resource user's default, as is required under the ELD. Fourth, under Armenian law, there is, with limited exception, no real ability for natural or legal persons to submit to the relevant regulator any observations relating to instances of imminent threat of environmental damage of which they are aware and request the regulator to take action, a further requirement of the ELD.

Four approaches to the prevention of environmental damage can be elicited from the direct environmental liability laws detailed in section 3.1.1: (i) implementation of preventive measures, with and without being prompted by the regulator; (ii) use of Red Books; (iii) mandatory forecasting of catastrophic situations; and (iv) notification of a regulator about violations. These will now be examined.

Implementation of preventive measures

The requirement for resource users to implement preventive measures is the most common approach to prevention. Several laws cater for the need for parties to undertake such measures. For instance, under the *Law on Atmospheric Air Protection*, legal entities with stationary sources emitting atmospheric air pollutants and greenhouse gases and natural persons engaged in business activities are obliged, inter alia, to consistently improve technological processes by introducing the best available technologies, carry out the capture, utilisation, neutralisation of emissions of polluting substances as well as perform measures aimed at reducing or eliminating these emissions and prevent accidental emissions (article 21(1)).

The *Law on Flora* and the *Law of Fauna* require the users of flora and/or fauna objects to, inter alia, ensure their protection and carry out necessary measures for their reproduction and protection (articles 27 and 29 respectively). Whilst under the *Water Code*, the owner or user of land adjacent to water resources is obliged to take necessary measures to prevent threats to ecological systems related to those resource (article 98). If the regulator becomes aware of a violation of the Code, it must notify the violator through a notice (article 117). The notice can require immediate cessation of the activity until the issue is resolved. If a person that violates the Code fails, within a reasonable time period, to comply with a direction given in the notice then the WRMPB can ensure the measures stated in the notice are performed (article 117). As detailed above, it appears that preventive measures could be specified in the notice. It is clear from article 117 that the WRMPB can perform the requisite (outstanding) works itself and seek to recover the costs of doing so from what is a wide range of persons, which, it seems, cover legal and natural persons. This power may prove useful in the context of violations that (i) have not yet caused damage to the environment; and (ii) have resulted in such damage having been caused, but its impact could be reduced, e.g., through prompt measures aimed at containing a pollution spill. It, therefore, has true preventive potential.

The *Forest Code* requires that forest owners and forest managers carry out a range of preventive measures, including detection and prevention of forest fires, fire safety measures and preventing the outbreak of harmful pests and diseases (articles 5 and 19). Regulators have powers to implement measures to respond to those risks (article 7). Forest users must, inter alia, prevent soil erosion and other negative effects on the condition of forests, observe fire safety rules and implement fire prevention measures (article 34(1)). That measures related to fire safety be undertaken is a key feature of the Code.

Finally, under the *Subsoil Code*, during the operation of a mine and after its closure, subsoil users must implement a waste processing plan in order to prevent or minimise the damage and accidents caused to the environment or human health (article 60.1(2)). The measures mentioned in article 60.1(2) must be implemented using the best available technology or using the best economic activity in an environmental sense (article 60.1(3)). The management and processing of land use waste must be carried out without causing harm to human health and using processes or technologies that will minimise the environmental impact and the damage caused to water, atmospheric air, soil, fauna and flora (article 60.1(1)). According to article 60.6(1), a subsurface user is responsible for ensuring the safety of subsurface waste facilities, developing and applying safety management procedures, as well as using technological and management systems to increase safety and reduce risks. Before the start of subsoil use activities, each subsoil user must, inter alia, develop measures aimed at preventing accidents and initiate their implementation and develop an emergency action plan specifying the measures to be taken for the prevention of accidents, reduction of consequences, protection of their employees and the population living in the zone of potentially dangerous influence (article 60.6(3)). Key objectives of the emergency response plan are to ensure implementation of necessary measures to protect human health and the environment from the effects of accidents and other incidents and specification of requirements in relation to environmental restoration and cleaning works after accidents (article 60.6(6)).

The use of 'Red Books'

The *Law of Flora* and the *Law on Fauna* cater for creation of Red Books. These are to be maintained for the purpose of recording, conservation, reproduction and use of rare and endangered species (article 14). The determinants for registration in the Red Book are data on reduction of the number and distribution limits of species, deterioration of conditions for their existence and risk of extinction. Those upon whose land flora in the Red Book grow must take measures to ensure their protection (article 14). Under the *Law of Flora*, the user of flora objects is obliged to, inter alia, to ensure the protection of the flora, the objects assigned to it and to carry out necessary measures for the reproduction and protection of flora objects (article 27). Under the *Law on Fauna*, users of natural resources who, in the course of economic or other activities, harm animals registered in the Red Book, must take measures for their protection (article 18). The right to use flora and the right to use fauna shall be terminated, inter alia, in case of violation of the need to take protective measures.

Forecasting of catastrophic situations

Article 91 of the *Water Code* caters for the creation of an information system for combating disasters in the water sector and for reducing the damage caused by them in a timely manner. This system, which is found in no other law, comprises preparation of forecasts in relation to the possibility of catastrophic situations. It is concerned with floods or possible floods, mudslides and landslides, droughts or expected drought, the state and stability of natural water resources, the condition and stability important water systems, including reservoir dams and riverbanks and threats to the health of the population.

Notification of regulator about violations

The *Law on Atmospheric Air Protection* is something of an outlier in the sense that it is one of the few laws that requires resource users to notify the relevant regulator of a risk to the environment. Under article 21(1), legal entities with stationary sources emitting atmospheric air polluting substances and greenhouse gases and natural persons engaged in business activities are obliged to immediately notify the regulator about emergency emissions that threaten the life or health of people or cause atmospheric air pollution with similar potential. Though, it appears that the emissions will already have occurred, meaning that their prevention is no longer possible. Whilst under the *Forest Code*, the Forest Committee is responsible for, inter alia, detection and prevention of violations and promptly providing information to the state environmental control body and law enforcement agencies (article 7.1(2)(22)).

Armenia's approaches to the assessment of environmental damage

This section details the approaches taken under Armenia's direct and indirect environmental liability laws to the assessment of damage arising as a result of their violation. It will become clear that in contrast to damage assessment under the ELD which is focused on establishing scientifically whether environmental damage has been caused, in Armenia, damage assessment may more accurately be understood as an assessment of the level of *damages* (or compensation) payable to the state in the event of unlawful use of, or defined adverse impacts being caused to, natural resources.

There is reliance on the use of formulae – referred to as indirect means in this report – in damage assessment. These are used to calculate the level of compensation to be paid by resource users to the state. The *Tax Code*, for instance, plays a central role in setting indirect means of assessing damage caused by violation of environmental laws. Though, it is to be observed that this is not concerned with actual levels of damage to the environment itself but, rather, the level of *damages* payable for breaching resource use limits specified under a permit, license or other authorisation. There are also a range of indirect liability laws which set out formulae for calculating the level of compensation to be paid for damage

caused to particular natural resources, specifically water (*Decision No. 1110 of 14 August 2003 on Approving the Procedure for Assessment of the Impact on Water Resources Resulting from Economic Activities*), land (*Decision No. 92 of 25 January 2005 on Approving the Procedure for Assessment of the Impact on Land Resources Resulting from Economic Activities*), flora and fauna (*Law No. 88 of 3 May 2005 on Tariffs for Compensation of Damage Caused to Flora and Fauna as a Result of Environmental Violations*) and the atmosphere (*Government Decree No. 91 of 25 December 2005 on the Procedure for Assessing the Impact of Economic Activity on the Atmosphere*).

Decision No. 1110 of 14 August 2003 on Approving the Procedure for Assessment of the Impact on Water Resources Resulting from Economic Activities and *Decision No. 92 of 25 January 2005 on Approving the Procedure for Assessment of the Impact on Land Resources Resulting from Economic Activities*, incorporate the predicted cost of remediating the damage caused into the damage assessment for the purpose of calculating damages, which is good practice.

There is a general absence of reference in Armenia's environmental liability legislation to the need for a scientific assessment of environmental damage to be undertaken. With a limited exception, merely knowing the degree to which the limit was exceeded is sufficient to determine the level of compensation payable by the violator to the state. The *Subsoil Code* is the only direct environmental liability law that mentions assessment of environmental damage. It provides that in case of accidents, the subsoil user must provide the regulator with the information required to reduce the consequences for human health and to assess the amount of environmental damage caused and reduce it fully, or failing that, as much as possible (article 60.6(7)). Not only is it unclear who is to carry out the assessment (the subsoil user or the regulator), no detail is provided in relation to how exactly that assessment is to be undertaken or the scientific criteria to which it must refer. It would be good practice for this type of information to be provided in the Code for it would contribute to the formalisation of a more consistent approach to the scientific assessment of damage. Whilst, to reduce the consequences for human health and the environment in the event of an accident, the government will, inter alia, specify requirements for the assessment of the amount of damage and the ways in which that damage is to be reduced (article 60.6(8)). The drafting of these provisions suggests that it is within the scope of the regulator's discretionary decision-making powers to determine how it is to be conducted.

The general absence of guidance on damage assessment is particularly obvious in the context of establishing criminal liability under the *Criminal Code*. Whilst this strictly falls outside the understanding of environmental liability used in this report, consideration of the Code is useful as it highlights the importance for there to be clear legal definitions of key threshold terms in environmental laws. There are a wide array of legal thresholds for liability mentioned in the Code: 'significant change' (e.g., article 281), 'grave consequences' (e.g., article 281), 'significant danger to human health or the environment' (e.g., article 284(1)), 'significant damage' (e.g., article 287(1)), 'significant damage to the environment' (article 290(1)), 'mass destruction' (art 293), 'large damage' (article 291(1)), 'obliteration' (article 295) and 'great damage' (article 297(1)). Article 51(2) provides that the court shall determine the amount of fine, taking into account the 'gravity' of the crime and the 'property status' of the person being convicted. However, a significant gap within the current regulatory framework is that there are no specified means – scientific or otherwise – of assessing the point at which these thresholds (e.g., significant damage to the environment) have been breached. The same may be said of the *Forest Code*. Article 60(k) provides that 'causing *significant* damage to forestry as a result of water pollution' is an offence under the Code. However, there is no guidance on how to assess this.

The *Code on Administrative Offences* provides an insight into how 'significant damage' may be understood under Armenian law. Article 61, for instance, provides for the offence of violating the rules of protection of water resources. It asserts that significant damage arises where the material damage caused exceeds 500 times the minimum wage. This threshold is used in another offence, specifically violation of safety norms for hydrotechnical structures (article 63.4). It appears that under the Code, the significance threshold is determined by reference to the monetary cost of the damage inflicted on the natural resource. There is no

guidance, however, provided on how that determination is to be made by officials. Use of the significance threshold is relatively rare and inconsistent under the Code.

The approach adopted in Armenia, typically, results in a simplified assessment which does not require experts to collect data and conduct assessments in the objective, scientific fashion required under the ELD. Nor does it involve expensive data collection and economic assessment. It is, therefore, easier, quicker and cheaper for regulators to undertake this type of simplified assessment. The obvious downside, however, is that assessment of damages bears no relation to the actual level of environmental damage caused by exceeding the limits. This means that there may be inadequate cost internalisation by resource users; negative externalities may remain externalised, even after the resource user has paid compensation. It is, however, important to note that methodologies for determining the level of funds to be paid by a resource user for environmental damage caused by exceeding the limits under their permit is not, per se, improper, inappropriate or inherently incompatible with the polluter-pays principle as understood under EU environmental law. The multipliers must, however, be transparent, defensible, non-discriminatory, and the policy steering their construction and deployment must be coherent and clearly articulated.

The dominant role of the Tax Code

The *Tax Code* plays a crucial role in the assessment of damage (or, strictly, payment of *damages* for unlawful use of natural resources) under Armenian law. According to article 43, 'tax liability' means the obligation of a taxpayer to pay the sums of any type of a tax and/or fees, as well as the amounts of fines, penalties and fees for the *compensation of damages* calculated for violation of the provisions of the Code and/or the laws of the Armenia on fees as prescribed by the Code and/or the laws of Armenia on fees. This will include the 'direct' liability laws detailed above. Chapter 30 of the Code details the law applicable to environmental taxes.

The Code creates natural resource utilisation payment base limits that are prescribed for the calculation of natural resources utilisation payments and the application of rates (article 203). This includes volumes of water use prescribed by the permits issued under the *Water Code* for use of surface waters and volumes of mineral extraction provided for by the contract on subsoil use concluded for mining purposes under the *Subsoil Code*. Article 204, for instance, sets out payment rates for the use of surface waters. If the utilisation payment base limits prescribed by part 1 of Article 203 are exceeded, the rates set out in parts 1 and 2 of Article 204, as multiplied by three, are applicable as the rates to determine the level of water that exceeded the water use limits. Article 208 provides natural resources utilisation payment rates for the use of biological resources, such as flora. For example, article 208(2) provides that in the case of exceeding the utilisation payment base limits prescribed in Article 203, the actual volumes of the use (storage) of each tree type exceeding the limits for the use (storage) of timber and secondary forest product, the ten-fold value of the rates prescribed by this Article shall be applicable. Rates for environmental taxes and levels of compensation payable in the event of base limits being exceeded are also set out (e.g., article 167, which deals with rates for harmful substances contaminating atmospheric air).

The *Tax Code* does not require scientific assessment of the level of damage caused to natural resources. There are two further important omissions. First, beyond determining whether emission limits have been exceeded, there is no need to determine whether a specified legal threshold (e.g., significant damage, as per the ELD) has been breached. Second, there is no requirement that scientific assessment of damage be undertaken in relation to the *services* that the relevant natural resource provide.

The Code relies heavily on the proposition that damage to natural resources ought to be 'compensated' by resource users, other legal entities and/or individuals. In stark contrast to the ELD, the Code is geared towards establishing the monetary figure – the *damages*, not the damage – to be paid in terms of compensation. This approach is built upon two presumptions. First, the natural resource is deemed to have been 'damaged' immediately upon the limit for the applicable use fees, having been exceeded. Second,

liability is strict for the resource user. If the limits are exceeded, damage is deemed to have been caused. The imposition of liability does not necessitate proof of environmental damage caused by emissions exceeding the base limits be presented.

Compensating damage caused to flora and fauna, water, land and the atmosphere

There are an array of indirect liability laws that deal with compensation payable in respect of damage caused by resource users engaged in economic activities to particular natural resources, specifically flora and fauna (*Law No. 88 of 3 May 2005 on Tariffs for Compensation of Damage Caused to Flora and Fauna as a Result of Environmental Violations*), water (*Decision No. 1110 of 14 August 2003 on Approving the Procedure for Assessment of the Impact on Water Resources Resulting from Economic Activities*), land (*Decision No. 92 of 25 January 2005 on Approving the Procedure for Assessment of the Impact on Land Resources Resulting from Economic Activities*) and the atmosphere (*Government Decree No. 91 of 25 December 2005 on the Procedure for Assessing the Impact of Economic Activity on the Atmosphere*). The conception of impact assessment in the latter three laws is more in line with the idea of damage assessment (i.e., the assessment of damages payable by the violator) than with the idea of environmental impact assessment as is used in EU environmental law.

Under *Decision No. 92 of 25 January 2005 on Approving the Procedure for Assessment of the Impact on Land Resources Resulting from Economic Activities*, impact is defined as an adverse effect on land resources as a result of actions and/or omissions of action of legal and natural persons, and violation of the requirements of Armenian law (article 2). Impact assessment is defined as assessment in value of the adverse effect (in AMD) and includes expenditures for compensation for quantitative and qualitative losses of the product due to the decrease of land resources as a result of adverse effect, additional services required for restoration of land resources as a result of adverse effect, as well as for the loss of agricultural and other products due to the impact of pollution. Adverse effect is defined as an adverse change in the environment resulting in the pollution of the natural environment in relation to land resources, depletion of natural resources, destruction or damaging of ecosystems, with a list of instances of adverse changes being provided (e.g., pollution and exceeding the norms for permissible limits of harmful substances polluting the soil, bacteria and other biological substances, weeds, pests and diseases of plants).

Article 3 provides that the impact assessment is to be carried out in case of a range of violations of Armenian environmental law, including disturbance, pollution and littering of the fertile layer of the soil and pollution of soil with radioactive and chemical substances, industrial wastes, wastewaters, quantities exceeding the limits of pesticides and mineral fertilisers, poisoning with bacteria-parasitic and quarantine organisms, covering with weeds and bushes.

The impact is to be calculated according to specified formulae, as set out from section 6. The formulae, typically, comprise a coefficient that reflects, for example, the expenditures necessary for bringing the damaged land parcel to its former condition. This is to be calculated as the total sum of the expenditures for the implementation of the following measures: works to treat the damaged area; works to restore the fertile layer of the lost or disturbed soil; measures for rehabilitation of the land before bringing the restored layer of the soil to its former (non-damaged) condition; and measures for utilisation of the disturbed (damaged) layer, where necessary. Thus, the predicted costs of undertaking remediation (that is primary remediation to use the language of the ELD) are incorporated into the damage assessment and, thus, to the level of damages payable. The Decision does not, however, provide for what should happen if it is not possible to return the land to its pre-damaged state.

It is also important to note that it is not clear from the drafting of the Decision whether the violator is actually required to restore the land resources which have been adversely affected. It may be the case that the violator need only pay compensation to the state, with that sum reflecting the estimated cost of performing the restorative works. The onus would then, it seems, be on the state to perform the restoration works itself, using the funds made available to it by the violator's payment of compensation. If this is the case,

unless these funds are used by the state to perform the restoration works, the ultimate function of the violator's payment of compensation – paying to pollute – is merely to raise state revenue.

Law No. 88 of 3 May 2005 on Tariffs for Compensation of Damage Caused to Flora and Fauna as a Result of Environmental Violations sets out tariffs for compensation for damage caused to fauna and flora as a result of environmental violations. Article 3 deals with hunting and/or destruction of species registered in the Red Book of Animals. It does so for each individual, meaning that each animal has a price. Fauna is categorised on the following grounds: regionally extinct species; critically endangered species; endangered species; and vulnerable species; and species in respect of which there is insufficiency of date. These shall be referred to as the 'Categorisations' and they are used in other sections of the Law.

Article 5 sets out the tariffs for compensation for the damage caused to the flora as a result of environmental offences in the case of a range of activities including cutting, destruction of trees and bushes and damage to the extent of stopping growth. It provides tariffs for (i) valuable and rare species according to the diameter of the tree trunk (in centimetres); (ii) other species according to the diameter of the tree trunk. In the case of illegal felling or destruction of trees and shrubs with the status of natural monuments, the amount of compensation is calculated in the amount of 10 times the usual tariffs. In specially protected nature areas, arboreturns and groves of tree species and in case of illegal felling or destruction of bushes, the amount of compensation is calculated in the amount of 5 times the usual tariffs. Trees and shrubs in artificial forests, places of general use of settlements in case of illegal felling or destruction, the level of damages is calculated in the amount of 10 times the usual tariffs in the city of Yerevan and in the amount of three times in other settlements.

Article 6 sets out the procedure for calculating the amount of compensation for damage caused to the fauna and flora as a result of specified environmental offences. This is based on the number and/or volume of the objects of flora and fauna damaged and/or destroyed and according to established tariffs (article 6(1)). For instance, for each case of destruction of animal habitats (nesting sites, spawning grounds), the amount of compensation for the illegal hunting and/or destruction of the relevant animal species is calculated in the amount of 3 times the tariffs set by chapter 2 of the Law (art 6(2)).

More generally, the amount of compensation payable for the damage caused to animals and plants as a result of environmental offences is to be calculated by state environmental inspectors (article 7). The compensation is paid to the state budget on the basis of a report prepared by the environmental protection and subsoil inspection body (article 8(1)). After receiving the report, in the event that the offender does not voluntarily pay the compensation within 10 days, payment of the amount is to be recovered by court order based on the claim submitted by the inspection body (article 8(2)).

The focus of *Government Decree No. 91 of 25 December 2005 on the Procedure for Assessing the Impact of Economic Activity on the Atmosphere* is on the negative impact on people's livelihoods, nature and other environmental objects due to non-compliance with laws pertaining to protection of the atmosphere. Impact assessment (or Impact Assessment Value), understood in terms of AMD, includes compensation for quantitative and qualitative losses of products by reducing water, forest and land resources in a polluted environment, as well as compensation for additional services needed to restore these resources, restore the health of the population suffering from pollution and reduced labor productivity (i.e., ability to work is impacted) (article 2). Maximum permissible emissions of harmful substances into the atmospheric air (MPE) means the volume of permissible limits for the emission of harmful substances into the atmospheric air from stationary and mobile sources, which is approved by the Government of the Republic of Armenia. Under article 3, impact is assessed in relation to specified violations of Armenian law, including exceeding the normative permissible limits for the emission of harmful substances into the atmospheric air and emission of harmful substances into the atmospheric air without permission of authorized state bodies. Article 6 sets out the relevant formulae.

Finally, *Decision No. 1110 of 14 August 2003 on Approving the Procedure for Assessment of the Impact on Water Resources Resulting from Economic Activities* is connected to the *Water Code*. It sets out the

procedure for assessment of the impact on water resources resulting from economic activities. The extent of the impact depends on the quantity of water pollutants, the maximum permissible leakage rate of hazardous substances and the period of their impact, as well as on the volume of use of water resources (article 2). Under article 4, the impact can be of two types (i) direct: conditioned by the direct leakage of hazardous substances into the water resource or by the volume of use of the water resource, and (ii) indirect: conditioned by the failure of the equipment in the water treatment plant and leakage of hazardous substances as a result of ineffective performance. Under article 5, assessment of the impact is based on direct or indirect effect of pollutants, the quantity of pollutants, the maximum permissible leakage rate of hazardous substances, the period of impact, expenditures for the prevention and elimination of effects of hazardous substances, as well as the volume of use of water resource.

Article 6 provides that assessment of the impact, understood in terms of AMD, shall include the expenditures for compensation for quantitative and qualitative losses of the product due to pollution of the environment, for additional services required for rehabilitation of the water resources polluted and/or depleted due to the volume of used water resource, expenditures for compensation for recovery of health of the population as a result of pollution and for restoration of works as a result of reduction of productivity of works (including absence from the workplace), for restoration of loss of industrial product as a result of pollution effect on basic funds. Thus, the estimated costs associated with remediation the environment are comprised in the level of damages to be paid.

The Decision sets out a range of formulae to deal with particular factual circumstances. For instance, Article 7 sets out a formula to be used to assess the economic impact where the pollution of water resources results in it being impossible to use the water for drinking and for public water supply and renders it necessary to switch to the use of other water sources and implementation of other technical measures, which are necessary to provide the population with water of relevant quality. Article 8 details that an economic impact assessment shall be made in case of 'bulk' and 'fixed' leakage of pollutants in violation of requirements of the water legislation. 'Bulk' leakage is the leakage where the hazardous substances exceed the maximum permissible norms at least 100 times. In all other cases the leakage is treated as 'fixed'. A formula to calculate bulk leakages is set out.

Limited reference to remediation

With the exception of *Decision No. 92 of 25 January 2005 on Approving the Procedure for Assessment of the Impact on Land Resources Resulting from Economic Activities*, which provides some coverage of the specifics of costing remediation, there is little, if not no, detail provided on the appropriate forms of (primary) remediation that are necessary to address the damage that has been caused. There are only implicit references to it in Armenian law. Moreover, Armenian's environmental liability laws do not deal with the need for complementary or compensatory remediation. The type of remediation to be undertaken is related to damage assessment, at least within the context of the ELD, given that the assessment will, ultimately, help to determine the appropriate type of remediation to address the damage. The dearth of reference to remediation under Armenian law is notable under the *Subsoil Code* which provides that in the event of an accident, the subsoil user shall immediately provide the regulator with the information required to reduce their consequences for human health and to assess the amount of environmental damage and reduce it entirely 'or as much as possible' (article 60.6(7)). This acknowledges that it may not be possible to return the site to its pre-accident status but imposes no further obligation on the polluter. There is the prospect for externalisation of pollution costs, even after remedial works have been carried out by the resource user. That complementary remediation be undertaken could prove valuable in such an instance. The need to accommodate these two innovative forms of remediation necessitates the use of a damage assessment technique termed "Equivalency Analysis". This technique (or an equivalent concept) is not referenced at all in the existing damage assessment methodologies in Armenia, exposing a significant gap in the context of the proposed transposition of the ELD. This means that equivalency analysis can play no role in determination of the appropriate remediation measures to be undertaken by resource users. Thus,

the administrative liability imposed upon a resource user for causing environmental damage will not reflect the true level of loss to the environment and society caused by the pollution incident. For instance, 'interim losses' (i.e., losses which result from damaged natural resources and/or services not being able to perform their ecological functions or provide services to other natural resources or to the public until the primary or complementary measures have taken effect) cannot be catered for.

4 Recommendations for improving provisions for the prevention and assessment of environmental damage in Armenia

Overview

This section sets out ten recommendations for improving provisions for the prevention and assessment of environmental damage in Armenia. It will look at how select countries transposed the prevention-focused requirements of the ELD then consider how the ELD's approach to damage assessment could be implemented under Armenia's environmental liability regime. It is to be observed from the outset that the European Commission's 2021 guidelines for providing a common understanding of the term 'environmental damage', which should now be utilised by Member States, are likely to have a unifying approach to the assessment of damage as required under the ELD. This makes analysis of the approaches taken in select countries somewhat superfluous.

Improving provisions for prevention of environmental damage in Armenia

This section will begin by setting out how Belgium, Germany, the Netherlands, Georgia and the UK transposed the prevention-focused aspects of the ELD into their domestic laws. The European countries were requested to be included in the report by the Ministry of Environment of Armenia, while the author added Georgia as an example of the only Eastern Partnership country which at the time of writing has adopted a stand-alone Law on Environmental Liability. The section will then detail recommendations for improving provisions for the prevention of environmental damage under Armenian law.

The transposition experience of select countries

Each of the countries of focus transposed the prevention-focused aspects of the ELD into their domestic laws in different ways. Germany, Georgia and the UK did so under a new, standalone law. Belgium did so, principally, at a regional level, with new decrees and ordinances being implemented and existing ones amended. The Netherlands amended its framework environmental law.

Table 4.1. Transposition of ELD in select countries

	Country	Nature of transposing legislation	Preventive action
1	Belgium	<p>ELD transposed principally at regional level (see below). However, certain specific competences reserved for federal government.</p> <p>Regions transposed ELD through use of decrees and ordinances but with similar structure to ELD.</p> <p>Flanders: transposed ELD through Decree of 21 December 2007 and amending Decree of 5 April 1995.</p> <p>Walloon Region: transposed ELD through Decree of 22 November 2007 and amending Book I of Environment Code.</p> <p>Brussels Capital Region: transposed ELD through Ordinance of 8 May 2014 and amending Ordinance of 25 March 1999.</p>	<p>Prevention of environmental damage a central feature of Belgium's transposition.</p> <p>Prior to transposition of ELD, there was no general administrative law applicable to environmental damage in Belgium. This said, there were regimes in place in each region which covered prevention and remediation of damage to surface and groundwater and biodiversity. The legislation which transposed the ELD did, however, increase their stringency.</p> <p>The Flemish and Walloon regions provide for power of state to apply 'safety' or 'coercive' measures.</p> <p>The Flemish region defines 'safety' measures as any necessary action taken to eliminate, reduce to an acceptable level or stabilise a significant risk to mankind or the environment. This includes, for instance, cessation or execution of certain operations, actions, or activities, immediately or within a specified period.</p> <p>The safety measure will be in place until the risk is eliminated, reduced to an acceptable level, or stabilised.</p> <p>The Walloon legislation provides for similar 'coercive' measures, including taking any useful measure to put an end to a threat to the environment, including human health.</p>
2	Germany	<p>ELD transposed by enacting a standalone Act (<i>Act concerning the Prevention and Remedying of Environment Damage (Umweltschadensgesetz)</i> of 10 May 2007).</p> <p>Amendments made to Federal Water Act (<i>Wasserhaushaltsgesetz</i>) of 19 August 2002 and Federal Nature Conservation Act (<i>Bundesnaturschutzgesetz</i>) of 25 March 2002.</p>	<p>Competent authority subject to a legal duty to act in certain circumstances (<i>Ermessensreduzierung auf Null</i>).</p> <p>It has a general responsibility to prevent realisation of imminent risk and ensure protection of public safety (<i>öffentliche Sicherheit</i>) and public order (<i>öffentliche Ordnung</i>).</p> <p>Where an environmental impairment constitutes such a risk, the authority must act. Outside of such a scenario, there is no duty to act.</p>
3	Netherlands	<p>ELD transposed by amending Environmental Management Act (<i>Wet Milieubeheer, 'Wm'</i>).</p> <p>A new title (17.2: 'Action in the event of environmental damage or an imminent threat of such damage') added to Chapter 17 of <i>Wm</i>.</p> <p>Title 17.2 <i>Wm</i> provides for a general scheme of measures in the event of environmental damage or imminent environmental damage.</p> <p>Guidance, albeit not legally binding, developed on the application of Title 17.2 <i>Wm</i>: the 'Manual on environmental damage' (<i>Handreiking milieuschade</i>).</p>	<p>The state is not subject to subsidiary liability under Title 17.2 <i>Wm</i>.</p> <p>If the competent authority is unable to determine who is responsible, it must decide whether to take measures itself (Article 17(14)(2) <i>Wm</i>).</p>

	Country	Nature of transposing legislation	Preventive action
		Dutch government did not amend other specific environmental laws, e.g., the <i>Water Act</i> and the <i>Soil Protection Act</i> for reasons of transparency, consistency, uniformity, and legal clarity.	
4	Georgia	ELD transposed by enacting a standalone Act (<i>Law of Georgia on Environmental Liability</i>)	<p>The transposing legislation is something of a hybrid between the traditional means of dealing with infringements of environmental law in Georgia (i.e., payment of monetary compensation/damages to the state) and the requirements of the ELD (i.e., the prevent and remediation of environmental damage).</p> <p>Several terms used in the ELD are defined differently under the transposing legislation, notably 'environmental damage' and 'significant environmental damage'. These bear little resemblance to the way these terms are defined under the ELD.</p> <p>Article 4, which deals with the prevention of environmental damage, is largely in line with the approach taken in the ELD to prevention.</p> <p>State not subject to a duty to act. Article 4 deals with the prevention/mitigation of significant damage. Article 4(6) asserts that [the Department of Environmental Supervision] shall <i>have the right</i> to apply to the Environmental Programme Commission with a request to implement necessary measures.' The Environmental Programme Commission provides a means of financing the prevention of environmental damage via the state budget which creates a risk of other companies other than the polluter paying for prevention costs.</p>
5	United Kingdom	<p>As environmental issues are, generally, a devolved matter in the UK, different transposing regulations are in place for England, Wales, Scotland, and Northern Ireland:</p> <p>England: Environmental Damage (Prevention and Remediation) (England) Regulations 2015, SI 2015/810, as amended.</p> <p>Wales: Environmental Damage (Prevention and Remediation Regulations) (Wales) Regulations 2009, SI 2009/995.</p> <p>Scotland: Environmental Liability (Scotland) Regulations 2009, SSI 2009/266, as amended.</p> <p>Northern Ireland: Environmental Liability (Prevention and Remediation) Regulations (Northern Ireland) 2009, SI 2009/252, as amended.</p>	<p>The transposing legislation closely follows the structure of, and definitions used in the ELD, including implementation of the preventive obligations contained therein.</p> <p>State not subject to a duty to act.</p>

Source: Adapted (Stevens & Bolton, 2013^[20]) and (Milieu Consulting, 2019^[21]).

Recommendations

Five recommendations will now be made in order to improve provisions for the prevention of environmental damage under Armenian law.

Recommendation 1: Embed the polluter-pays principle

The polluter-pays principle, as understood and applied under the ELD, should first be embedded explicitly and prominently within Armenia's environmental liability regime. This will help 'trigger and reinforce' doctrinal developments in Armenian law and help 'stimulate legal change' (Scotford, 2017^[22]). At present, there are implicit traces of the principle, as articulated under the ELD, in its laws (i.e., under article 60(2) of the *Forest Code*, the violator must eliminate the violations). However, the principle must be deployed therein and, where appropriate, by the courts with far greater respect for its aims and policy drivers if the correct message is to be sent to resource users and society. The manner in which the indirect method of damage assessment (i.e., assessment of the level of monetary compensation – or *damages* – to be paid to the state for violating the applicable law) is currently applied by the Government of Armenia bears little relationship to the requirements of the polluter-pays principle *as articulated under the ELD*. The principle, as enshrined in the ELD, means that an operator causing environmental damage or creating an imminent threat of such damage should, in principle, bear the cost of the necessary preventive or remedial measures alongside other related administrative expenses e.g., the cost of assessing environmental damage. It does not seek to punish the operator that caused the damage/imminent threat of it, e.g., through imposing a fine and/or a requirement to pay compensation (i.e., damages) to the state. In stark contrast, Armenia's environmental liability regime is built on the need for resource users to pay compensation to the state for unlawful use of, or causing adverse impacts to, natural resources; there is not a general requirement across its environmental liability laws for (i) preventive action to be taken as a matter of course to avoid damage to the environment or to ensure that damage that has been caused does not worsen, and/or (ii) remedial measures to be undertaken by the resource user to return the environment to the condition that it was in prior to the damaging event. There is, therefore, some distance between the requirements of the principle as enshrined under ELD (prevention and remediation) and the dominant focus of Armenia's approach (the payment of damages to the state).

A significant departure in legal culture is, therefore, needed to deliver the principle's important overarching objectives given Armenia's focus on the need for compensation to be paid. The principle's unique role in seeking to prevent and remediate damage to natural resources at the private cost of the polluter ought to be clearly articulated in law. Transposing this conception of the principle into Armenian law would not preclude its environmental liability laws from, for example, imposing penalties to punish or reprimand offenders. These just should not be enacted under the guise of the polluter-pays principle.

Recommendation 2: More complete implementation of the polluter-pays principle

Once explicit reference to the principle is made under Armenia's environmental liability laws, the next step is to ensure complete implementation of it through ensuring that resource users are responsible for preventing (and remediating) damage to the spectrum of relevant natural resources. When a polluter is not required to bear the environmental costs generated by their activities, those costs need not be reflected in its costs of production. Not only can it ignore them in deciding how much to produce and at what price to sell, negative externalities may be transferred to local communities, the environment and wider society. The principle, as originally conceived by the OECD in the 1970s and expanded in the 1980s, seeks to correct this market failure by making polluters 'internalise' these costs in their costs of their goods and services.

An essential component of an explicit and prominent implementation of the principle and, in turn, the effective functioning of Armenia's framework of environmental liability, is a clear and legally robust

definition of environmental damage (or its equivalent, e.g., environmental harm). There is imprecision and inconsistency in how environmental damage is understood under Armenian law. References to damage under its liability laws, typically, relate to the need for those that have exceeded the natural resource use limits, or caused adverse impacts to natural resources, to compensate the state. The idea of a legal threshold beyond which environmental damage, as conceived in a strict legal sense, is deemed to have been caused (i.e., significant), does not really feature with any degree of prominence under its direct environmental liability laws. Its absence renders it difficult to undertake a robust assessment of the level of damage caused to the environment. The *Criminal Code* comprises a wide array of threshold terms which dictate when criminal sanctions may be imposed. However, there is no guidance on how to assess objectively and scientifically whether these have been reached following an event or incident. This raises the real prospect of arbitrariness in the imposition of criminal liability under the Code.

Whilst there is reference in Armenia's laws to damage caused to certain natural resources, there is no substantive reference to damage to the *services* performed by a natural resource for the benefit of another natural resource (or natural resources) or the public. It will be recalled that under the ELD, 'natural resource' means protected species and natural habitats, water and land (article 2(12)). Under the ELD, 'services' and 'natural resources services' mean the functions performed by a natural resource for the benefit of another natural resource or the public (article 2(13)). Services to ecosystems and other ecological resources include habitat for food, shelter, and reproduction; organic carbon and nutrient transfer through the food web; biodiversity and maintenance of the gene pool; and food web and community structure (Chapman and LeJeune, 2007^[23]).

The Government of Armenia may wish to:

- define 'environmental damage' more fully, referring to that definition more consistently throughout the relevant provisions of its environmental liability laws;
- provide guidance on the threshold of damage necessary in order to render the relevant resource user liable for the costs of prevention and/or remediation (e.g. specific determinants of the 'significance' of the damage); and
- incorporate damage to the services provided by natural resources for other natural resources and the public in the definition of 'environment damage'. Unless this is done, it creates problems when undertaking assessment of the level of damage to the environment caused by a resource user and, ultimately, the appropriate level of remediation due from them; the polluter will not pay to remedy the full extent of the damage caused.

The concept of environmental damage is clearly and explicitly defined in the ELD. Though not uncontroversial, the definition, when viewed alongside the 2021 guidance provided by the European Commission on the meaning of environmental damage,⁵ could provide a useful model for the Government of Armenia to draw from. In drafting a definition of environmental damage, it is important to recall that the ELD does not apply to damage that fails to reach the requisite degree of seriousness, i.e., 'significant' or does not relate to the relevant reference concept(s). In such circumstances, there is no 'environmental damage', at least not as understood within the context of the ELD. The direct liability laws of Armenia could, however, provide a gap filling function where there were relevant and applicable laws to deal with the incident.

The definition accorded to the phrase 'environmental damage' (or its equivalent) will have a direct bearing on the degree of cost internalisation that is possible under Armenia's new environmental liability regime. First, where the definition can allocate to enterprises the costs associated with a more complete range of impacts that they may have caused or contributed to, then it can create stronger incentives to avoid their creation in the first place, as compared to a definition that is narrower and less inclusive. This aligns with the principle that preventive action should be taken, a priority in both the ELD and EU environmental law more broadly. The decision will, however, be left up to the corporation as to the optimal means of prevention. Economic incentives cannot *mandate* changes in behaviour.

This upstream benefit of cost internalisation gives the definition accorded to ‘environmental damage’ an important role in environmental protection. The incentivising potential associated with being able to impose liability in respect of the costs associated with preventing (or remediating) environmental damage, or phrased negatively, its deterrent effect, derives from the fact that ‘potential polluters who know they will be liable for the costs of remedying the damage they cause have a strong incentive to avoid causing such damage’ (European Commission, 1993^[24]). In light of the costs associated with remedying those impacts, it is economically rational for enterprises to increase the level of care that is exercised in undertaking the activity and/or decrease the volume of activity (Bergkamp, 2001^[25]). However, if ‘environmental damage’ were to be defined narrowly under Armenian law then the incentive function is diluted. This would result in a weak and incomplete expression of the principle.

Second, the interpretation accorded to ‘environmental damage’ will impact upon a resource user’s costs of production. The capacity of that phrase to facilitate internalisation of the array of environmental costs that an enterprise may create will mean that the costs of their goods or services will more closely reflect the true cost to society of their production (Brugge, 2008^[26]). A narrow construction of the phrase would allow the enterprise to externalise costs traceable to their activities, creating false price signals for consumers. Where consumers benefit from market prices that do not reflect the true cost to society of producing the goods or providing the services then there will be greater demand for those produced or provided by enterprises whose activities have been subsidized by society (De Sadeleer, 2002^[27]). The phrase’s definition will help to correct this market failure, ensuring a more accurate price signal for consumers who will, it is presumed, move to cheaper (and cleaner) alternatives. Cost internalisation may, therefore, ensure that polluters are priced out of the market. This would, in turn, facilitate a more indirect form of prevention as these polluters would no longer be able to pollute.

Recommendation 3: Rebuttable presumption of causality for diffuse pollution

Armenia’s laws must be capable of dealing with responsibility for diffuse pollution and ought to incorporate the rebuttable presumption of a causal link created by the jurisprudence of the Court of Justice of the European Union (CJEU). Diffuse pollution is understood to encompass, ‘pollution from widespread activities with no one discrete source, e.g. acid rain’ (European Environment Agency, undated). Diffuse emissions can occur from various scattered sources, including road transport, agriculture and small business. Whilst pollution from individual diffuse sources may not be of particular concern at the individual level, in combination they have a significant environmental impact.

The ELD only applies to damage caused by pollution of a diffuse kind where it is possible to establish a *causal link* between the damage and the activities of individual operators. Thus, to be clear, as a matter of general principle, the ELD is applicable to pollution of a diffuse character but only *where a causal link can be established*. There is important caselaw from the CJEU (C-379/08 *Raffinerie Mediterranée (ERG) SpA v Ministero dello Sviluppo Economico* [2010] 3 CMLR 9), which provides for a rebuttable presumption of causality, which will enhance the capacity of competent authorities to establish that link in cases of such pollution. In turn, not only will this help to ensure that remediation may be financed at the private cost of those responsible but it will help generate a stronger economic incentive to minimise the prospect of that type of damage arising in the first place. This may be through, for instance, the operator’s investment in appropriate preventive measures, including staff training on, for example, in spill containment and investment in pollution-abating technology.

In the *Raffinerie* case, the CJEU offered guidance on identifying polluters. Whilst the ELD applies to environmental damage caused by occupational activities (article 3), it does not specify how precisely a causal link was to be established; the manner in which that criterion was to be interpreted falls within the competence of the Member States (paragraph 55). According to the polluter-pays principle, the obligation to take remedial measures was imposed on operators due to their *contribution* to the creation of pollution (paragraph 57). The court asserted that the ELD did not preclude national legislation which allowed the

competent authority acting *within* the framework of the Directive, ‘to operate on the *presumption...* that there is a causal link between operators and the pollution found on account of the fact that the operators’ installations *are located close to the polluted area*’ (paragraph 70). If such a link was to be presumed,

the competent authority must have plausible evidence capable of justifying its presumption, such as the fact that the operator’s installation is located close to the pollution found and that there is a correlation between the pollutants identified and the substances used by the operator in connection with his activities (paragraph 57).

Where the competent authority has such evidence then it could establish the requisite causal link between the operators’ activities and the (diffuse) pollution (paragraph 58). Operators may seek to rebut the presumption that their activities have caused damage through adducing relevant evidence (paragraph 58). This will be difficult in the presence of proximity to the damage and correlation of pollutants.

Recommendation 4: A legal duty to take necessary preventive measures

Whilst there are references in Armenia’s direct environmental liability laws to the need for resource users to take measures to prevent damage or, more commonly, violations of law (which may, ultimately, lead to damage), a legal duty to do so at their own expense ought to become a more prominent feature of them. This could be modelled on article 5(1) of the ELD. This states that where environmental damage has not yet occurred but there is an imminent threat of it occurring, the operator shall, *without delay*, take the necessary preventive measures (article 5(1)). There is deemed to be an ‘imminent threat of damage’ when there is ‘a sufficient likelihood that environmental damage will occur in the near future’ (article 2(9)). Preventive measures mean ‘any measures taken in response to an event, act or omission that has created an imminent threat of environmental damage, with a view to preventing or minimising that damage’ (article 2(1)). Whether Armenia chooses to implement the ELD via a new, self-contained law (as Germany, Georgia and the UK did) or by revising its existing environmental liability laws (as the Netherlands did), this need to undertake preventive measures without delay should be core. Indeed, the Belgian regions prioritise preventive measures in their respective laws which transpose the ELD. This would be a prudent strategy for Armenia’s transposition.

Under the ELD, the competent authority possesses no discretion to determine whether the operator is to perform the preventive measures. In Armenia, a similar approach may be adopted, with the regulator subject to a *duty* to require the resource user to carry out the necessary preventive measures at its own expense. Armenia may also wish to reflect on whether it may wish to accept subsidiary responsibility for undertaking preventive measures should the resource user fail to perform them. This would reduce the prospect of an entirely preventable environmental accident materialising. Germany differed from the other countries detailed in Table 2. It imposed a duty on the state to act to prevent realisation of imminent risk and ensure protection of public safety and order. There is much value in this. Nevertheless, a duty to act will likely result in a significant financial burden for the state. As discussed below, the optimal solution may be for resource users to have provided financial security in respect of the need to undertake preventive (and remedial) measures. This, if implemented effectively, would preclude the need for the state to fund performance of a resource user’s preventive measures, contrary to the polluter-pays principle. Under the ELD, if the operator does not perform the works, then the competent authority ‘may’ take these measures itself (article 5(5)). This would be the best option, should a mandatory financial security regime be implemented.

The Government of Armenia may wish to consider implementing a requirement for resource users to report instances where an imminent threat of damage is dispelled as a result of preventive measures taken. This would, however, be going further than is required under the ELD, which creates no such duty. It does provide that where an imminent threat of environmental damage is *not* dispelled despite preventive measures being taken, operators must inform the competent authority ‘of all relevant aspects of the situation, as soon as possible’ (article 5(2)). This said, the competent authority does possess the power,

at any time, to 'require the operator to provide information on any imminent threat of environmental damage or in suspected cases of such an imminent threat' (article 5(3)(a)). Armenia should transpose such a requirement as it could highlight poor practice by resource users. This, in turn, ought to result in a closer monitoring of higher risk regulatees by the regulator.

Recommendation 5: Request for action

Embedding an explicit right for non-governmental organisations (NGOs) and other interested parties to request the pertinent environmental regulator to take action may be a prudent strategy. Under the ELD, natural or legal persons: affected or likely to be affected by environmental damage; having a sufficient interest in environmental decision making relating to the damage; or alleging the impairment of a right, shall be entitled to submit to the competent authority any observations relating to instances of imminent threat of environmental damage of which they are aware and shall be entitled to request the competent authority to take action under the ELD (article 12(1)). There is no such power under Armenian law. The provision under Armenian law closest to article 12 is the somewhat vague right under the *Law on Atmospheric Air Protection* for NGOs to participate in the protection of atmospheric air (article 20(4)). Whilst under the *Water Code*, NGOs and citizens can participate in the discussion of issues related to water resources and water systems and submit proposals (article 106).

Recommendations for improving the assessment of environmental damage in Armenia

This section will set out a series of recommendations as to how the assessment of environmental damage in Armenia might be improved. It will be recalled that there were three main, interconnected limitations under its current approach:

1. First, existing methodologies for damage assessment in Armenia are geared towards establishing the *monetary figure* (i.e., the damages) to be paid by resource users who have exceeded their natural resource use limits, or caused adverse impacts to natural resources, as opposed to establishing the actual degree of damage caused to the environment.
2. Second, and relatedly, they are, typically, based on equations/formulas and tariffs, as opposed to a technical, scientific assessment based on measurable data.
3. Third, there is an absence of legal certainty over requirements for remediation. With the exception of procedures for costing remediation for the sole purpose of calculating the level of compensation payable to the state, as provided for by *Decision No. 1110 of 14 August 2003 on Approving the Procedure for Assessment of the Impact on Water Resources Resulting from Economic Activities* and *Decision No. 92 of 25 January 2005 on Approving the Procedure for Assessment of the Impact on Land Resources Resulting from Economic Activities*, there is little, if not no, detail provided on the appropriate forms of primary remediation that are necessary to address the damage that has been caused. Moreover, Armenian law does not deal with the need for complementary or compensatory remediation, two crucial and, indeed, innovative aspects of the legal framework also implemented by the ELD.

The consequence of these limitations is that the administrative liability imposed upon a resource user for causing environmental damage is highly unlikely to come anywhere close to reflecting the true level of loss to the environment and society caused by the environmental damage. Implementation of the polluter-pays principle is, thus, impeded.

Recommendation 6: A scientific approach to the assessment of environmental damage

A scientific approach to the assessment of environmental damage ought to be taken, with a guidance document operating alongside the implementing legislation to provide the requisite technical detail to enable effective assessments to be performed in line with best practice.

Under the ELD, the duty to assess the significance of the damage rests with the competent authority (article 11(2)). The competent authority can, however, require the relevant operator to (i) carry out its own damage assessment, and (ii) provide the necessary information and data to it (article 11(2)). Whilst final determination of the significance of environmental damage is for the relevant competent authority, Annex I of the ELD provides guidance for assessing damage to protected species and natural habitats (but not damage to water and land).

Measurability sits at the heart of effective assessment of environmental damage. According to article 2(2) of the ELD, 'damage' means 'a *measurable* adverse change in a natural resource or *measurable* impairment of a natural resource service which may occur directly or indirectly'. Thus, damage can only occur where the adverse change and/or impairment is measurable. The damage must be capable of quantification or estimation, and it must be possible to compare the position before a damaging occurrence with the position afterwards. In terms of establishing the situation before the occurrence, the baseline condition is key. According to article 2(14) of the ELD, 'baseline condition' means 'the condition at the time of the damage of the natural resources and services that would have existed had the environmental damage not occurred, *estimated on the basis of the best information available*'. Whilst, in certain instances, it may be challenging to establish the baseline condition after damage has occurred, it can be estimated, easing the evidential burden for competent authorities. Armenia may wish to consider implementing an equivalent understanding of 'baseline condition'.

The first step towards establishing a more effective system of assessing environmental damage is to define 'environmental damage' clearly in law, with article 2(1) of the ELD representing an appropriate model to build upon. Once a definition is in place, a more accurate, robust assessment of the level of damage caused or threatened to be caused can take place against it. The next step would be to prepare a guidance document on the thresholds of damage necessary to render the relevant resource user liable for the costs of prevention and/or remediation (e.g., specific determinants of the 'significance' of the damage and appropriate reference concepts) and how to assess this. The 2021 guidance provided by the European Commission on the meaning of environmental damage (as referred to above in the context of Recommendation 2) could provide a useful model for the Government of Armenia to draw from. The third step would be to facilitate training for government officials and the private sector on how to operationalise this guidance when undertaking damage assessments. The European Commission has developed training materials on the ELD, including a handbook, for operators, competent authorities and other stakeholders.⁶ This covers damage assessment and can be helpful to Armenia. Best practice could also be drawn upon from competent authorities across the EU and the UK.

Recommendation 7: A requirement for primary, complementary and/or compensatory remediation, as appropriate, and use of equivalency analysis

The Government of Armenia may wish to consider revising its laws to make explicit reference to the need for resource users who have caused environmental damage to undertake primary, complementary and/or compensatory remediation, as appropriate. This would provide an opportunity for equivalency analysis to be utilised. This recommendation is directly related to the consequences of implementing an ELD-style approach to damage assessment, for the type of remediation to be undertaken will be informed by the results of the assessment. The three types of remediation to which the ELD caters for do not feature under Armenia's current environmental liability laws. Armenia's environmental laws do refer implicitly to the need for resource users to undertake remedial measures or, more accurately, to eliminate the violation of the relevant law. This may be equated with the ELD's reference to the need for operators to undertake primary

remediation in the event of environmental damage being caused. Under the ELD, primary remediation is remediation of damage to water or protected species or natural habitats. It is achieved through restoration of the environment to its baseline condition. This includes actions to directly restore the natural resources and services on an accelerated time frame, or through natural recovery. The need to undertake primary remediation must be catered for under any law transposing the ELD.

Under the ELD, where the damaged natural resources and/or services do not return to baseline (i.e., primary remediation has not ‘worked’), then complementary remediation will be undertaken. This type of remediation, which may occur at an *alternative* site, seeks to provide a level of natural resources and/or services *similar* to that which would have been provided if the damaged site had been returned to its baseline condition. Where possible and appropriate, the alternative site should be geographically linked to the damaged site. The ELD also provides for compensatory remediation. This refers to action taken to compensate for *interim losses* of natural resources and/or services which occur from the date of the damage occurring to when primary remediation is complete. The term ‘interim losses’ refers to losses which result from the fact that the damaged natural resources and/or services are not able to perform their ecological functions or provide services to other natural resources or to the public until the primary or complementary measures have taken effect. To be clear, compensatory remediation consists of *additional improvements* to protected natural habitats and species or water at either the damaged site or at an alternative site, not financial compensation to members of the public.

There is, currently, no explicit reference to either complementary or compensatory remediation in Armenia’s environmental liability laws. This is an important omission as it weakens substantially the ability of the Government to implement the polluter-pays principle fully and effectively.

The framework of primary, complementary and compensatory remediation measures does not apply to land damage. Remediation of damage to land is to comprise measures necessary to ensure, as a minimum, that the relevant contaminants are removed, controlled, contained or diminished so that the contaminated land, taking account of its current use or approved future use at the time of the damage, *no longer poses any significant risk of adversely affecting human health*. There is no requirement for the land to be taken back to baseline condition, ‘a more stringent standard’ (Fogleman, 2015^[28]). The presence of such risks is to be assessed through risk-assessment procedures taking into account the characteristic and function of the soil, the type and concentration of the harmful substances, preparations, organisms or micro-organisms, their risk and the possibility of their dispersion. A natural recovery option (i.e., where there is no direct human intervention) could be deemed acceptable.

As the framework of primary, complementary and compensatory measures does not apply to land damage cases, interim losses are not to be considered when selecting the most appropriate measure(s) to remediate land damage. The operator is, thus, relieved of liability for interim losses where its activities have only caused damage to land (that is not a protected habitat and is governed by the ELD).

If complementary and compensatory remediation were introduced to Armenia’s environmental liability regime, this would provide an opportunity for equivalency analysis to be utilised. Equivalency analysis is used by competent authorities to determine the type and amount of: (i) natural resources and services lost over time as a result of the damage; and (ii) complementary and compensatory remediation needed to offset that loss. It seeks to ensure that polluters neither under-compensate nor over-compensate for losses, thereby facilitating respect for the polluter-pays principle.

There are three main methods of equivalency analysis: service-to-service, resource-to-resource and value equivalency. Prior to examining these, core common terms will be outlined:

- **Debit:** an expression of the quantity of *loss* suffered as a result of the environmental damage; may be multidimensional as the damage may have negative effects on a number of different species, habitats, ecosystem functions, and human values.

- **Credit:** an expression of the natural resource or service *benefit* gained through complementary and compensatory remediation.
- **Metric(s):** one or more measurements of loss which serve as indices of natural resources or services subject to damage. The same metric must be used to express the debit and the credit.
- **Scaling:** the process whereby the credit is made to equal the debit, when quantified in terms of the same metric. It has three steps: (1) quantification of the total debit; (2) quantification of the credit expected per unit of remediation (e.g., improvement in habitat services per hectare of remediated land); and (3) division of the total debit by the unit credit to determine the total amount of credits (i.e., remediation) needed to offset the loss (Lipton et al., 2018^[29]).
- **Discounting:** this process caters for the fact that debits and credits occur at different points in time. Services gained from remediation conducted in the future are less valuable to the public than services available today (Chapman and LeJeune, 2007^[23]). The services available today can be used to generate further benefits which would be given up if those services were unavailable until later year(s). Discounting, through use of a discount rate, allows debits and credits to be compared on an equal footing, i.e., their present-day value.

Service-to-service

This method, also known as Habitat Equivalency Analysis (HEA), expresses losses in terms of *habitat* and are offset by remediation of similar habitat. It assumes that equivalent habitats provide equivalent services and so years of lost services can be compensated for by the provision of acres of additional habitat. The metric that this method utilises is, typically, a discounted-service-acre-year (DSAY). This represents the value of all of the ecosystem services provided by one acre of the habitat in one year. Once calculated, remediation measures are selected that would adequately offset these DSAYs in the form of acres of remediated habitat.

Resource-to-resource

This method, also known as Resource Equivalency Analysis (REA), expresses losses in terms of *resource units* (e.g., numbers of fish or birds). It seeks to match the resources lost as a result of the environmental damage with new ones. It necessitates determination of the organisms lost following environmental damage and which are gained by remediation.

Value Equivalency

The methods which fall under this category assume that damage to natural resources and the services they provide can be measured in monetary terms and compensated for in terms of physical resource and service provision (Lipton et al., 2018^[29]). The *value-to-cost* version ensures equivalence between the debits and credits by assuming that the cost of remediation equals the total debit. In contrast, the *value-to-value* version ensures equivalence by assuming that the level of remediation required is based on the increase in value derived from/provided by the proposed remediation project rather than on the value of the damage. Thus, both the debits and the credits are measured in monetary terms. Whilst compensation may be measured (or scaled) in monetary terms, compensation under the ELD can only be provided in resource-based units, not money.

In value equivalency, monetary values are based on individuals' preferences for given changes in the quality and/or quantity of resources of service. This may be measured in two ways:

- individuals' willingness to pay (WTP) money to avoid an environmental loss or secure a gain; or
- individuals' willingness to accept money as compensation (WTAC) to tolerate an environmental loss or to forgo a gain.

Whilst environmental values which depend upon people's actual use of the environment are referred to as use values, those which derive from people's contentment from knowing that environmental resources are preserved even if they do not directly use or interact with them, nor ever will, are referred to as non-use or existence values. Reductions and gains in use and non-use values will be included in the debit and credit estimates conducted in relation to environmental damage (Chapman et al., 2018^[30]). As these types of values are often not priced in the market, two broad techniques have emerged which can be invoked to determine appropriate monetary values for the equivalency analysis:

- **Revealed preference techniques:** these use information about people's actual behaviour in markets related to the resources or services being valued to estimate value. There are two main methods:
 - **Travel cost:** uses how much people are willing to pay to travel to visit an ecosystem or recreational site as a proxy for a market price.
 - **Hedonic analysis:** uses economic values for environmental services that directly affect market prices, e.g., all other things being equal, the difference in house prices between one house that is on a polluted site and one that is not provides an estimate of the loss in value flowing from pollution. This figure could then be used as the value that remediation must create to compensate the public for the pollution.
- **Stated preference techniques:** use questionnaires to elicit respondents' WTP for provision/conservation of an environmental asset or WTAC for the loss of an environmental asset. Two main methods for valuation of non-market resources:
 - **Contingent valuation method (CVM):** individuals questioned directly on how they value the prevention of a specific environmental damage and the implementation of proposed restoration projects.
 - **Conjoint Analysis:** individuals questioned about how they value the prevention of a specific environmental damage and implementation of proposed restoration projects but given more choices than under CVM.

The ELD states that resource-to-resource or service-to-service equivalence approaches 'should be considered first' to determine the scale of complementary and compensatory measures to remediate damaged water or protected species or natural habitats (Annex II, para 1.2.2). If their use is not possible, alternative valuation techniques, such as value equivalency, are to be used. Should such techniques need to be utilised, the ELD expresses a preference for value-to-value over value-to-cost approaches (Annex II, para 1.2.3). The competent authority can prescribe the appropriate method. The Government of Armenia may wish to follow the ELD's lead and consider expressing a preference for resource-to-resource or service-to-service approaches to equivalency analysis, permitting default to value equivalency where the preferred approaches cannot be deployed. The Government of Armenia will need to ensure access to sufficient numbers of specialists who are trained to conduct equivalency analysis.

Other key recommendations for aligning environmental liability legislation in Armenia with the ELD and the polluter-pays principle

The section will set out three further recommendations for aligning environmental liability legislation in Armenia with the ELD and the polluter-pays principle. The first pertains to transposition of the ELD through a new, self-contained environmental law. The second concerns making it far clearer how the direct environmental liability laws interact with the indirect ones. Finally, a requirement that resource users provide financial security for their environmental liabilities.

Recommendation 8: Transposition of the ELD through a new, self-contained law

There are two main options available to Armenia as regards implementing the ELD under its domestic laws: (i) create an entirely new, self-contained law; (ii) make necessary adjustments to existing laws. It should be noted that option (i) is likely to require some amendments to existing laws where these, for example, overlapped or conflicted with the proposed new law. Both options will now be considered.

The safest, most straightforward and, indeed, recommended means of implementing the ELD into Armenian law is to enact a new, standalone law that directly transposes its requirements. This was, for instance, the approach taken in Germany, Georgia and across the UK (i.e., in England, Wales, Scotland and Northern Ireland). There are a number of clear advantages associated with this approach. First, it would ensure clarity and adequacy of key definitions. Second, it would provide a single reference point for regulators whose role it was to enforce. Instead of having to peruse a range of laws, the new law would provide a single source of truth. Thirdly, and perhaps most importantly, it would signal the dramatic change of legal culture needed to implement its requirements. Armenia's environmental liability laws are built upon the payment of compensation for exceeding use limits or the causing of impacts to natural resources. Typically, it is the mere exceedance of limits, or the fact of the impacts having been caused, that results in damage being deemed to have arisen. The ELD, in contrast, necessitates scientific assessment of measurable data. Creation of a new, self-contained law would be all the more viable given Armenia's traditional approach to environmental liability, i.e., payment of compensation to the state. There would be little in the way of existing law to revise to ensure that there was no conflict or overlap with its current liability laws.

It is to be observed that Georgia's transposition of the ELD ensures that compensation may still be paid by operators to the state in certain circumstances, such as where environmental damage is caused but it is not deemed to be significant for the purposes of the ELD. This type of hybrid approach would allow Armenia to balance its desire to enact the ELD whilst maintaining its tradition of creating financial (dis)incentives for polluters, in the form of the need to pay compensation to the state, where emission limits are exceeded or non-significant adverse impacts caused.

Alternatively, Armenia could amend *each* of its existing, ELD-relevant direct liability laws. This could comprise, for example, introduction of new definitions for 'environmental damage', specification of the different liability regimes applicable under the ELD (i.e, strict and fault-based), and requirements related to primary, complementary and compensatory remediation. A small number of new, self-contained instruments could be enacted to deal with particular aspects of the ELD, such as the criteria to be used when assessing the significance of environmental damage and the designation of high-risk (i.e., Annex III) activities. This was the approach adopted by Latvia. The risk of amending a nation's existing liability laws is creation of unintentional conflicts, gaps and overlaps therein. In Lithuania, for example, which relied mainly on amending its framework environmental law, there is still uncertainty as to whether the ELD has been transposed fully due, in part, to differences in terminology used. And, as shown in Table 2, whilst the Dutch government transposed the ELD by *amending* its framework environmental law, the *Environmental Management Act*, it did not amend other specific environmental laws (e.g., the *Water Act* and the *Soil Protection Act*).

Armenia could follow the approach taken by the Netherlands. It will be recalled that not only does the ELD apply to a relatively limited range of natural resources (i.e., its articulation of the definition of the environment is, in fact, quite narrow) it is concerned solely with environmental damage that meets the threshold of 'significant'. This raises two important implications for Armenia's implementation of the ELD. First, amending some domestic laws but not others would create inconsistency and result in a lack of uniformity across Armenia's liability laws. Its direct liability laws would have entirely different functions and effects depending on whether they were impacted by the ELD's implementations or not. The ELD-relevant ones would require prevention and remediation whilst the non-ELD relevant ones would remain focused on requiring payment of compensation. Second, care would need to be taken to ensure that ELD-relevant

domestic laws catered for situations where environmental damage did not meet the 'significance' threshold. The prospect of there being no domestic law which could deal with, say, moderate levels of damage to natural resources ought to be avoided. This would be a risk where ELD-relevant domestic laws were amended to implement the ELD. Thus, ELD-relevant domestic laws would need to preserve the availability of two options: (i) the need for polluters to pay for compensation to the state where the damage was not significant (the traditional approach); *and* (ii) their need to undertake preventive and remedial measures (the new approach).

Transposition of the ELD will, however, require much thought as to the role that use limits will play post-transposition and whether, in fact, there is a desire to maintain their existence. There are certainly benefits associated with the latter. First, as detailed above, there are quite significant elements of ecological damage that are not covered by the ELD and these instruments could be maintained to fill these regulatory gaps. Air pollution would be an obvious example. Whilst the ELD does not currently cover impairment of air quality, the framework implemented by it will come into operation where water, land, protected species or natural habitats are damaged by emissions to air from, for instance, an industrial chimney stack. The *Law on Atmospheric Air Protection* could be retained to ensure that resource users could be held liable for violating the Law. Second, existing liability laws could be maintained to facilitate calibration of the level of *fin*es for causing environmental damage. Though, to be clear, these laws would have no bearing on specifying the type and scope of remediation required in the event of a pollution incident. Indeed, certain Member States (e.g., Latvia) have maintained such a use of fines, something that is not prohibited by the ELD. Third, as the ELD only applies to significant environmental damage, there is the potential for a range of pollution incidents to arise which fail to reach this threshold. The existing liability laws could provide a means of dealing with these incidents.

The alternative, where there is scope for overlap, is for the decision to be made to repeal them and embed in Armenian law the culture of prevention and remediation upon which the ELD is built.

Recommendation 9: Explicit connection between direct and indirect liability laws

The manner in which the direct environmental liability laws interact with the indirect liability laws could be far clearer under Armenian law. Often, it is vague. For instance, under the *Law on Fauna*, the sole reference to 'liability' is in article 33. This states that liability for violating the Law is in accordance with 'established procedure'. No further detail is provided. Under the *Water Code*, where there is a violation of the water standards then the water use is considered illegal and a 'statutory liability' applies (article 67). Again, no further information on the liability (i.e., its source or scope) is provided. The statutory liability may refer to *Decision No. 1110 of 14 August 2003 on Approving the Procedure for Assessment of the Impact on Water Resources Resulting from Economic Activities*, which sets out the procedure for the payment of compensation to the state for infringements of environmental law, but the point to note is that the proper source of the statutory liability is not made explicitly clear.

More generally, in the direct liability laws, it would be prudent to cross-refer to the relevant provisions of the particular indirect law where relevant. In the absence of doing so, there is an element of guesswork involved in determining the type of liability and the actual liability regime that will apply. As detailed above, maintenance of the range of existing direct and indirect environmental liability laws that penalise resource users (e.g., by way of fine and requirement to pay compensation) for polluting the environment would certainly be useful, particularly given that a high threshold (i.e., 'significant' environmental damage) must be met in order for any law intended to transpose the ELD to apply.

Recommendation 10: Mandatory financial security

A mandatory financial security regime should be implemented to address the risk that a bankruptcy or financial weakened resource user that has caused environmental damage or the imminent threat of it is unable to bear their environmental liabilities. When a polluter is unable to bear the costs associated with

its environmental obligations, there are two possible outcomes. First, the environment may remain unremediated following a decision by the regulator that the works will not be carried out at public cost; society pays *metaphorically* through the need for it to inhabit a lower quality environment. Second, the state will be required to pay from its own resources; society pays *financially* through reduced levels of state funds available to fund public services. Neither accords with the policy objectives of the polluter-pays principle and the theory of cost internalisation from which it derives.

A potentially powerful means of heightening the prospect of the important policy objectives driving the polluter-pays principle being fulfilled is to implement legal requirements for resource users to provide financial security⁷ for their environmental liabilities prior to commencing the activity. A resource user (or a party related to them, such as a parent company or other group company) provides financial security where they provide and maintain evidence, in the form of a certificate or other documentation, that provision has been made for environmental obligations that the resource user *may* (i.e. following an industrial accident) or *will* (i.e. under the terms of their permit) be subject to (Fogleman, 2005^[31]). This could, depending upon the obligation under consideration,⁸ comprise measures such as insurance, a bank guarantee, a bond or a cash deposit with the competent authority. It could also include contributions to an industry fund. Indeed, such funds feature in Armenian law.

Whilst there are a number of measures at the disposal of resource users, there are three useful characteristics which competent authorities may use to assess the provision offered by a resource user (Irish Environmental Protection Agency, 2015^[32]). Funds represented by the measure(s) should be:

- **Secure** in the event of the resource user's bankruptcy, i.e., the funds or assets utilised for the provision are ring-fenced and not rendered available to the general body of the resource user's creditors,
- **Sufficient**, i.e., the level of provision made should cover the costs of a *third-party* undertaking the requisite (but outstanding) prevention or remediation works, and
- **Available when required**, i.e., there should be a ready source of private funds to undertake the requisite prevention and remediation works when needed.

The primary purpose of financial security requirements may be seen to lie in their capacity to facilitate remediation at the private cost of the resource user(s). However, financial security also exhibits significant potential to motivate resource users to reduce their environmental risk, this being defined as the probability that their activities will cause environmental damage (Mackie, 2014^[33]). Whilst this potential may arise in a variety of guises, broadly, it presents itself through the contractual governance of the resource user's behaviour (e.g., under the terms and conditions of an insurance policy) and the provision of economic incentives to improve safety levels and/or its financial strength. A means of evidencing financial security possesses a preventive capacity where it attaches a *price*, defined broadly, to a resource user's choice as to whether, and indeed how, they would undertake an environmentally dangerous activity: an insurance premium, a collateral requirement which reflected the level of risk exhibited by the resource user (Mackie, 2014^[33]). This price and, most importantly, its *responsiveness* to the implementation of (environmental) risk-reducing measures by the resource user, could motivate them to modify their behaviour to ensure that they operate more safely (Mackie, 2014^[33]).

Despite its potential, only a handful of Member States (e.g., Bulgaria, the Czech Republic, Portugal, Slovakia and Spain) have introduced mandatory financial requirements regimes for potentially hazardous industrial activities. Financial security has, however, long been a requirement in international conventions concerning marine oil pollution and nuclear facilities.⁹ And it is common in EU environmental law in relation to coverage of the costs associated with environmental obligations under a permit. These are, of course, known, foreseen obligations as contrasted with those arising by fortuity following a pollution incident. The inference to be drawn from this is that there is greater *political will* to impose mandatory regimes where obligations are *certain* to arise. In many Member States, this dissipates when the obligations are a *fortuity*. It seems that the financial burden is too large to justify.

There are five main ways in which financial security may be provided:

1. Monies or assets may be *set aside* with a third-party, such as a bank or a trustee, in favour of the competent authority (e.g., escrow accounts and trust funds).
2. A resource user (or, in theory, a company associated with them) may grant the competent authority a *charge* of a valuable asset, such as real estate, in their ownership.
3. *Risk may be transferred* to a third-party, such as an insurer or bank, in return for a premium, fee or charge (e.g., insurance, bank guarantees and surety bonds).
4. The *financial strength* of the resource user or a company associated with it (i.e., its parent company or another group company) may be 'tested' and accepted as evidence of financial provision in and of itself (e.g., self-insurance and parent company guarantee).
5. The resource user, alongside other resource users, could be required to contribute to a *compensation fund* or other industry fund. The European Parliament asked the European Commission to consider establishing a European fund for damage caused by activity governed by the ELD, 'for insolvency risks and only in cases where financial security markets fail' and also for cases of 'large-scale accidents, when it is impossible to trace the operator responsible for the damage' (European Parliament, 2017^[6]). This controversial prospect was not taken further by the European Commission.

It is important to note that the competent authority may enable these five categories of measures to be used individually or in *combination*. Thus, the resource user (or a company or companies affiliated to them) could use more than one to evidence capacity to meet their environmental obligations, thereby reducing the risks associated with any single category. Insurance has proven to be the most popular instrument to cover environmental liability under the ELD, followed by bank guarantees, funds and bonds (European Commission, 2010^[34]). The remedial and preventive capacity of each of the five categories is set out in the table in Annex 2 of this report. Further information on the strengths, weaknesses and means through which the latter may be mitigated is available in (Mackie et al., 2016^[35]) and (Mackie et al., 2017^[36]).

5 Conclusion

This report assessed Armenia's legislation and methodologies relating to environmental liability and explored how they might be improved to better align with the requirements of the EU Environmental Liability Directive (the ELD) and implement the polluter-pays principle comprised therein. As requested by Armenia's Ministry of Environment, the scope of the report was limited to the prevention and assessment of environmental damage.

The ELD is concerned with the prevention and remediation of damage to specific natural resources, i.e., protected species and natural habitats, water, and land. It centres on the obligation of the state, acting through the relevant competent authority (i.e., the domestic regulator responsible for enforcing the law(s) that implement the Directive), to require operators to undertake preventive and remedial measures or take the measures itself and recover the costs from the responsible operator. It is not concerned with the payment of financial compensation to the state or third parties.

It was found that Armenian environmental laws provided for four types of environmental liabilities: (i) use fees for natural resources, (ii) compensation, (iii) fines, and (iv) costs associated with performing preventive and/or remedial measures. Only (iv) is reflected under the ELD.

In terms of the prevention of environmental damage, four approaches can be elicited from Armenia's environmental laws: (i) implementation of preventive measures, with and without being prompted by the regulator; (ii) use of Red Books; (iii) mandatory forecasting of catastrophic situations; and (iv) notification of regulator about violations. Only (i) is reflected under the ELD.

The approach utilised in Armenian law for damage assessment differs markedly from that required under the ELD. The *scientific* assessment of the damage (or threat thereof) caused to the environment is a central feature of the ELD. In contrast, under Armenia law, damage assessment refers to the process of using *formula and/or tariffs* to establish the level of compensation (i.e., damages) to the state for the unlawful use of, and/or causing adverse impacts to, natural resources. There is, in contrast to the ELD, no need for scientific assessment of the actual level of damage caused to natural resources to be undertaken. Typically, merely knowing the degree to which the limit was exceeded, or that certain adverse impacts have been caused to the environment, is sufficient to determine the level of compensation payable to the state by the violator. Certain indirect environmental liability laws, specifically *Decision No. 1110 of 14 August 2003 on Approving the Procedure for Assessment of the Impact on Water Resources Resulting from Economic Activities* and *Decision No. 92 of 25 January 2005 on Approving the Procedure for Assessment of the Impact on Land Resources Resulting from Economic Activities*, incorporate the predicted cost of remediating the damage caused into the damage assessment for the purpose of calculating damages, which is good practice.

Ten recommendations were proposed to improve Armenian's environmental liability regime to better align it with the requirements of the ELD and implement the polluter-pays principle.

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Annex A. Overview of Armenia's environmental liability legislation

As we have seen, Armenia's environmental liability regime is detailed across a range of 'direct' and 'indirect' legislative frameworks. The aim of this Annex is to provide a greater level of detail on the content of these frameworks than was possible in the main body of this report.

'Direct' Liability Arising under Frameworks of Environmental Law

The frameworks of liability directly applicable to the environment will now be discussed.

Law on Atmospheric Air Protection, 1994

This Law regulates (i) the legal and organizational basis of atmospheric air protection, and (ii) provision of atmospheric air quality (article 1). The 'atmosphere' is defined as 'a gaseous layer surrounding the planet earth, the lower boundary of which is in contact with the water and land surface of the earth, extends to near-Earth space and rotates with the earth as a whole' (article 4(1)). 'Atmospheric air' is 'a natural mixture of gases that make up the atmosphere and is located outside buildings and structures' (article 4(2)). The Law caters for two sets of rules: maximum permissible emissions of polluting substances; and technical standards for emissions of polluting substances (article 9(1)). If, from a stationary source, a natural person (i.e., *not* a corporation) engaged in legal or entrepreneurial activity exceeds the maximum permissible emission norms set by the emission permit, then they will be subject to administrative liability (article 10(1)). Their permit may also be annulled (article 10(1)). The ascription of liability upon a *natural person*, as opposed to the company that created the pollution, is a surprising aspect of the law for it would be expected for the latter to have greater levels of funds to meet a liability. It may also, at a practical level, be difficult to determine which employee was personally responsible for the unlawful emissions.

The Law is also unusual in the sense that it does not state explicitly that a violator of the law will be liable to pay financial compensation for the damage caused by the violation. This is dealt with by the *Tax Code*. Articles 22 and 28 do make reference to compensation payable in respect of this. Article 22 provides that compensating for damage caused to the environment as a result of violating the Code does not exclude the possibility of the person who committed the offence being subject to administrative or other (e.g., criminal) responsibility. Whilst article 28 provides that the compensation of damage caused to persons as a result of atmospheric air pollution is regulated by civil legislation.

Law of Flora, 1999

This Law defines State policy on protection, maintenance, reproduction and use of natural flora. Flora is defined as 'trees, shrubs, herbs (including mosses, ground mosses, horsetails and ferns), as well as the integrity of species of algae, fungi and lichens and their coexistence in natural conditions (article 1). The user of flora objects must pay the defined fees for the flora use on time (article 27(f)). Under article 30(c), officials controlling implementation of the Law have the right to draw up a protocol against persons for violation of the Code, subject them to administrative penalties (e.g., a fine) *and* take measures in order to

recover the damage. Thus, there are two distinct sources of liability to the State for violators: (i) liability for a fine; and (ii) liability for 'damage' caused.

Law on Fauna, 2000

This Law defines State policy on protection, maintenance, reproduction and use of wild species. Fauna is defined as 'wild species of animals (invertebrates and vertebrates) and their integrity of coexistences (article 1). Users of fauna objects must pay defined fees for the fauna use (article 29(g)) and compensate the damage caused by the violation of environmental protection legislation (article 29(i)). The sole reference to 'liability' lies in article 33, where it states that liability for violating the Law is in accordance with established procedure. No further detail is provided.

Water Code, 2002

This Code governs water relations in Armenia and issues of management and protection of Lake Sevan (article 2). Its main purpose is conservation of the national water reserve, effective management of useable water resources and securing ecological sustainability (article 6). The basic principle of economic regulation of the use, restoration and protection of water resources, water supply and/or wastewater systems is chargeable water use (article 76). Where there is a violation of the established water standards then the water use is considered illegal and a statutory liability applies (article 67). Under article 114, persons liable for concluding unlawful transactions under the Code, as well as those engaged in unlawful activities (e.g., not complying with permit requirements or polluting water unlawfully), bear criminal or administrative responsibility under statute. The regulator, therefore, seems to have discretion to determine which form of legal responsibility is the most appropriate. Violators of the Code must compensate for the damage caused by their activities due to the violation (article 116).

Article 117 deals with the payment of damages for violation of the requirements of the Code. It states that if the regulator becomes aware of such a violation by any person, it must notify the violator. The notice can: (i) require immediate cessation of the activity until the issue is resolved and (ii) specify the damages payable should the activity not cease. Penalties for failure to comply with the notice are to be applied for each day of non-compliance, with the prospect of the penalty imposed being escalated. Failure to comply with the notice will render the person subject to statutory liability (article 117). If the person that violates the Code fails, within a reasonable time-period, to comply with a direction given in a violation notice issued by the WRMPB within a reasonable period of time, then the WRMPB can ensure the measures stated in the notice are performed (article 117). If this occurs, the WRMPB shall submit a claim to the court to reimburse costs from a wide range of potentially responsible persons, namely:

- any person who was previously, or is currently responsible for, or who directly or indirectly contributed to the pollution;
- the owner of the land from which the pollution occurred or the possibility of pollution arose;
- the person who had the right to use the land at the time when the contamination occurred or the possibility of contamination arose (e.g., the tenant);
- the person whose negligence resulted in the pollution of water resources not being prevented.

Thus, it is clear from article 117 that the WRMPB can perform the requisite (outstanding) works itself and seek to recover the costs of doing so from what is a wide range of persons. The drafting of the article (e.g., the 'following persons') suggests that more than one potentially responsible person may be pursued by the WRMPB at the same time to maximise the prospect of full recovery of the costs.

In order to ensure compliance with the Code and related instruments, bodies authorized to issue water use and water systems use permits may require guarantee of adequate reliability as a condition for issue of a

permit (article 118). A reliable security may be a letter of recommendation from any bank granting a loan, bank guarantee, insurance or other appropriate form of security (article 118).

Article 47.1(1) provides that in event of non- or improper fulfilment of the requirements of the Code, the Regulatory Commission has the right to apply certain measures in order to restore the situation before the violation, to perform actions arising from it as well as to issue instructions regarding them or to eliminate the violation. The measures of liability applied to licensees are: a warning; fine; suspension of the license; and termination of the license. Article 47.1(2) details the level of fine payable by licensed persons. For instance, failure to fulfill or improper fulfilment of the provisions of the Code may result in the imposition of a fine in the amount of twenty thousand to forty thousand times of the established minimum salary. Fines are paid into the state budget (article 47.1(3)).

It is important to note that there is interchangeability of the terms, 'liability' and 'responsibility' in Article 47.1 (e.g., 'the Regulatory Commission has the right to apply measures of *responsibility* provided for by this Code' and '[t]he measures of *liability* applied to licensees are'). This may be due to issues arising from the translation. Alternatively, it could raise an important issue surrounding the terminology that is used in Armenia in the context of the imposition of a legal sanction by a regulatory body. Whilst a fine would, at least within Western legal systems, be deemed to be a liability, issuance of a warning would not. When comparing applicable rules under legal systems, it is important that key terminology is agreed and its use is consistent. For the purposes of this report, a warning, suspension and/or termination of the license are not treated as forms of environmental *liability*. They are sanctions. And a fine would be a form of *administrative liability*.

Finally, article 37.1.1 caters for creation of a fund for the protection of water resources (hereafter 'Water Resources Protection Fund'). The duty of the water user to make allocations to the water resource protection fund is included in the water use permit. Funds for the protection of water resources are transferred to the extra-budgetary account of the WRMPB opened in the central treasury and are used exclusively for the conservation or liquidation of wells after groundwater extraction.

Forest Code, 2005

This Code regulates the sustainability of forests and forest lands, including their management, conservation, protection, restoration, afforestation and efficient use. It also deals with forest accounting, monitoring, control and relations with forest lands. A 'forest' is defined as 'a mutually connected and interacting whole of biological diversity and natural environment components with a predominance of treetop vegetation in forest or other lands allocated for afforestation purposes, the minimum surface of which is 0, 1 hectare, with a minimum width of 10 meters and where tree foliage covers at least 30 percent of the area, as well as non-forested areas of previously forested forest land' (article 3). Use of state forests is subject to payment of a fee (article 56(1)).

The State Forestry Service (SFS) supervises the application of the Code (article 26(1)). It is obliged to (i) submit a petition to the relevant state body for administrative or criminal liability for violations of forestry legislation and (ii) submit a lawsuit to the court with a demand for compensation from the violator for the damage caused to forestry (article 26(3)(c)). Thus, the SFS is obliged to determine *which* form of liability should be pursued, administrative or criminal. They are authorized to 'take' from violators those items and documents which are regarded as the tools or direct objects of violation (article 26(3)(d)). This would appear to permit tools, machinery and unlawfully felled timber to be confiscated, reducing the prospect of the violators benefiting financially from the illegal actions. The SFS is also empowered to give instructions to violators of the Code to ensure 'elimination' of the consequences of the violation (article 26(3)(e)). Under article 34(1)(h), forest users are obliged to compensate or restore the damage caused to forests and forest lands as a result of forest use. Note the discretion conferred in relation to whether compensation or performance of remedial works is required. And under article 60(2), people found guilty of infringement of the Code (e.g., those who have polluted the forest with chemical and radioactive substances and destroyed

or damaged forests) shall bear legal responsibility. However, any liability applied in relation to violation of the Code does not exempt the violator from the obligation to eliminate the violations *and* compensate the damage caused (article 60(2)). Those that cause damage to forest lands are liable to pay compensation (article 61(1)).

Subsoil Code, 2011

This Code defines the principles and procedure of subsoil use, regulates the protection of nature and the environment from harmful effects, ensuring the safety of work, as well as protecting the rights and legal interests of the state and individuals during subsoil use (article 1). 'Subsoil' is described as being located 'below the soil cover, and in its absence, below the surface of the earth, the bottom of water basins or watercourses, a part of the earth's crust located according to depth, which is available for subsoil use' (article 3(1)). Subsoil users that violate the Code are subject to legal responsibility (article 78(1)). This includes implementation of subsoil use without the right of subsoil use, for this is prohibited under the Code (article 78(2)). Furthermore, the extraction of minerals or carrying out a geological study for the purpose of mineral extraction without the requisite permits will also create legal responsibility (article 78(2)). The extent of legal responsibility that arises is determined by the *Tax Code*.

The Code caters for the need for subsoil users to provide a financial guarantee in respect of the management of subsoil use waste and for ensuring the implementation of measures provided for in the subsoil use waste processing plan (article 60.4(1)). A financial guarantee is a guarantee issued by legal entities meeting the criteria set by the government and submitted to the authorized body of state management of the environment (article 3(28.2)). This guarantee must also cover defects or damages caused as a result of these actions in order to ensure compensation (article 3(28.2)). The calculation of the amount of the financial guarantee provided is made based on the measures provided by the subsoil use waste management or subsoil use waste processing plans (article 60.4(2)).

Furthermore, Article 69 caters for creation of a fund for nature and environment protection (hereafter, the 'Fund') through payments made by subsoil users. The procedure for calculating contributions to the Fund by subsoil users and sums paid to them is determined by the state (article 69(1)) and is discussed below. Sums within the Fund are kept in the extra-budgetary account of the authorized body in the central treasury and are used exclusively for (i) the subsoil user's performance of reclamation works; (ii) carrying out reclamation works not carried out by the subsoil user; (iii) restoration of lands disturbed as a result of the subsoil user's activities (article 69(3)). The subsoil user cannot receive sums from the Fund that exceed the amount that they contributed to it (article 69(4)). After the requisite works are performed and all legal requirements are complied with, any outstanding (i.e., unspent) balance is to be returned to the subsoil user (article 69(5)).

Decision No. 1079 of 23 August 2012 on Determining the Procedure for Calculating the Sizes of Allocations and Using the Environmental Protection Funds sets out how the Fund is to be used and how the amount of the allocations made by subsoil users, as catered for in Article 69 of the *Subsoil Code*. Principal amounts are allocated in the form of (i) initial allocations and (ii) current allocations. The 'initial allocation', which is made 30 days after the subsoil contract is signed, is at least 15% of the 'base amount' (i.e., the estimated value of the reclamation works provided by the mineral extraction project or the geological study program) as defined by the subsoil use contract. The 'current allocation' is made for each year of the payment period established by the contract for the implementation of reclamation works (except for the last year of the contract's validity period), within the time limits set by the contract's schedule. The amount of the current allocation is calculated by use of a formula. In order to receive money from the Fund to implement reclamation works, the subsoil user must submit to the authorized body the level of reclamation works undertaken during the reporting year. Once performance has been confirmed by the regulator, payment will be made to the subsoil user. Thus, to be clear, funds may only be recovered from the Fund after they

have been expended by the subsoil user. Amounts payable from the Fund will be provided on an annual basis.

‘Indirect’ Liability Arising under Miscellaneous Codes

The frameworks of liability indirectly applicable to the environment will now be discussed.

Code on Administrative Offences, 1986

This Code contains a chapter that details the levels of fines applicable to specified administrative offences that pertain to the natural environment. For instance, unlawful water use results in the imposition of a fine on citizens in the amount of 100 times the specified minimum wage (article 62). Illegal felling of trees, bushes or vegetation or transportation of illegally acquired stumps, trees or bushes results in the imposition of a fine on citizens in the range of 100 to 200 times the specified minimum wage (article 68). And harming forest fauna results in the imposition of a fine on citizens in the range of 100 to 160 times the prescribed minimum wage (article 78).

Criminal Code, 2003

This Code contains a chapter on environmental crimes. It comprises a broad range of criminal offences, including pollution of water (article 287), the marine environment (article 288), and atmospheric air (article 289). It also covers spoilage of soil (article 290). These offences are punishable, as standard, by imprisonment and deprivation of the right to hold certain posts or practice certain activities. There are also fines for more serious offences. There is a wide array of thresholds for establishing criminal liability under the Code. For instance, ‘significant change’ (e.g., article 281) ‘grave consequences’ (e.g., article 281), ‘significant danger to human health or the environment’ (e.g., art 284(1)), ‘significant damage’ (e.g., article 287(1)), ‘significant damage to the environment’ (article 290(1)), ‘mass destruction’ (art 293), ‘large damage’ (article 291(1)), ‘obliteration’ (article 295) and ‘great damage’ (article 297(1)). Article 51(2) provides that the court shall determine the amount of fine, taking into account the ‘gravity’ of the crime and the ‘property status’ of the person being convicted. There are two important observations that may be made here. First, the court possesses significant discretion to determine the amount of the fines payable by violators of environmental offences. Second, the financial strength of the violator will be pertinent to this task, meaning that corporations with extensive financial resources may be penalised to a greater extent than natural persons and/or those less well-off corporations. Third, there are no specified means of determining the point at which the wide variety of thresholds set out in the Code (e.g., ‘significant damage to the environment’) have been reached.

Decision No. 1110 of 14 August 2003 on Approving the Procedure for Assessment of the Impact on Water Resources Resulting from Economic Activities

Connected to the *Water Code*, this Decision sets out the procedure for assessment of the impact on water resources resulting from economic activities. The extent of the impact depends on the quantity of water pollutants, the maximum permissible leakage rate of hazardous substances and the period of their impact, as well as on the volume of use of water resources (article 2). Under article 4, the impact on water resources resulting from economic activities can be of two types:

- i. direct: conditioned by the direct leakage of hazardous substances into the water resource or by the volume of use of the water resource, and
- ii. indirect: conditioned by the failure of the equipment in the water treatment plant and leakage of hazardous substances as a result of ineffective performance.

Under article 5, the assessment of the impact shall be based on direct or indirect effect of pollutants, the quantity of pollutants, the maximum permissible leakage rate of hazardous substances, the period of impact, expenditures for the prevention and elimination of effects of hazardous substances, as well as the volume of use of water resource.

Article 6 provides that the assessment of the impact shall include the expenditures for compensation for quantitative and qualitative losses of the product due to pollution of the environment, for additional services required for rehabilitation of the water resources polluted and/or depleted due to the volume of used water resource, expenditures for compensation for recovery of health of the population as a result of pollution and for restoration of works as a result of reduction of productivity of works (including absence from the workplace), for restoration of loss of industrial product as a result of pollution effect on basic funds.

The Decision sets out a range of formulae to deal with particular factual circumstances. For instance, Article 7 sets out a formula to be used to assess economic impact where the pollution of water resources results in an impossibility to use the water for drinking and for public water supply and renders it necessary to switch to the use of other water sources and implementation of other technical measures, which are necessary to provide the population with water of relevant quality. Article 8 details that an economic impact assessment shall be made in case of 'bulk' and 'fixed' leakage of pollutants in violation of requirements of the water legislation. 'Bulk' leakage is the leakage where the hazardous substances exceed the maximum permissible norms by at least 100 times. In all other cases the leakage is treated as 'fixed'. A formula to calculate bulk leakages is set out.

Decision No. 92 of 25 January 2005 on Approving the Procedure for Assessment of the Impact on Land Resources Resulting from Economic Activities

This Decision regulates the description of and procedure for assessment of the impact on land resources resulting from economic activities. It is, however, more accurate to state that it sets out the formulae to be used to determine the level of monetary damages payable to the State in respect of an 'impact'. Article 2 sets out a range of important defined terms. For instance, 'impact' is defined as an 'adverse effect on land resources as a result of actions and/or omissions of action of legal and natural persons, violation of the requirements of land and other legislation of the Republic of Armenia'. 'Impact assessment' is defined as 'assessment in value of the adverse effect (in AMD)' and 'includes expenditures for compensation for quantitative and qualitative losses of the product due to the decrease of land resources as a result of adverse effect, additional services required for restoration of land resources as a result of adverse effect, as well as for the loss of agricultural and other products due to the impact of pollution'. Thus, the Decision has a particular conception of impact assessment, which is more in line with the idea of damage assessment than the idea of 'environmental impact assessment' as understood under EU environmental law.

Article 3 provides that the impact assessment is to be carried out in case of a range of violations of Armenian environmental law, including disturbance, pollution and littering of the fertile layer of the soil and pollution of soil with radioactive and chemical substances, industrial wastes, wastewaters, quantities exceeding the limits of pesticides and mineral fertilisers, poisoning with bacteria-parasitic and quarantine organisms, covering with weeds and bushes.

Article 5 provides that in this Decision, the provisions of Article 17 of the *Civil Code* shall underlie the impact assessment.

The impact is to be calculated according to specified formulae, as set out from section 6. It is of importance that the formulae often comprise a coefficient that reflects, for example, the expenditures necessary for bringing the damaged land parcel to its former condition. This is to be calculated as the total sum of the expenditures for the implementation of the following measures: works to treat the damaged area; works to restore the fertile layer of the lost or disturbed soil; measures for rehabilitation of the land before bringing

the restored layer of the soil to its former (non-damaged) condition; and measures for utilisation of the disturbed (damaged) layer, where necessary. Thus, the predicted costs of undertaking remediation (that is primary remediation to use the language of the ELD) are incorporated into the level of damages payable to the state. The Decision does not, however, provide for what should happen if it is not possible to return the land to its pre-damaged state. It is not clear from the drafting of the Decision whether the violator is required to perform the restoration works itself or is merely required to pay to the state a level of compensation which reflects the estimate costs of performing those works. In the case of the latter, it would be presumed that the state would then perform the works itself using the funds paid by the violator by way of compensation. If the state did not perform the works, the compensation paid to the state by the violator would merely have a revenue raising function.

Law No. 88 of 3 May 2005 on Tariffs for Compensation of Damage Caused to Flora and Fauna as a Result of Environmental Violations

This Law sets out the procedure for compensating for damage caused to flora and fauna only. This may be considered broadly similar to assessment of damage as per the approach taken elsewhere in Armenian law, such as described in section 3.3.1. It is important to note that it does not cover all natural resources, such as water, air and subsoil. The *Tax Code* deals with these.

Article 3 sets out the tariffs for compensation for damage caused to fauna as a result of environmental violations in the case of hunting and/or destruction of species registered in the Red Book of Animals. It does so for each individual, meaning that each animal has a 'price'. Fauna is categorised on the following grounds: regionally extinct species; critically endangered species; endangered species; and vulnerable species; and species in respect of which there is insufficiency of date. These shall be referred to as the 'Categorisations'. They are used in other sections of *Law No. 88 of 3 May 2005 on Tariffs for Compensation of Damage Caused to Flora and Fauna as a Result of Environmental Violations*.

Article 5 sets out the tariffs for compensation for the damage caused to the flora as a result of environmental offences in the case of a range of activities including cutting, destruction of trees and bushes and damage to the extent of stopping growth. It provides tariffs for (i) valuable and rare species according to the diameter of the tree trunk (in centimetres); (ii) other species according to the diameter of the tree trunk. In the case of illegal felling or destruction of trees and shrubs with the status of natural monuments, the amount of compensation is calculated in the amount of 10 times the usual tariffs. In specially protected nature areas, arboreturns and groves of tree species and in case of illegal felling or destruction of bushes, the amount of compensation is calculated in the amount of 5 times the usual tariffs. Trees and shrubs in artificial forests, places of general use of settlements in case of illegal felling or destruction, the level of damages is calculated in the amount of 10 times the usual tariffs in the city of Yerevan and in the amount of three times in other settlements.

Article 6 sets out the procedure for calculating the amount of compensation for damage caused to the fauna and flora as a result of specified environmental offences. This is based on the number and/or volume of the objects of flora and fauna damaged and/or destroyed and according to established tariffs (article 6(1)). For instance, for each case of destruction of animal habitats (nesting sites, spawning grounds), the amount of compensation for the illegal hunting and/or destruction of the relevant animal species is calculated in the amount of 3 times the tariffs set by chapter 2 of *Law No. 88 of 3 May 2005 on Tariffs for Compensation of Damage Caused to Flora and Fauna as a Result of Environmental Violations* (art 6(2)).

The amount of compensation payable for the damage caused is to be calculated by state environmental inspectors (article 7). The compensation is paid to the state budget on the basis of a report prepared by the environmental protection and subsoil inspection body (article 8(1)). After receiving the report, in the event that the offender does not voluntarily pay the compensation within 10 days, payment of the amount is to be recovered by court order based on the claim submitted by the inspection body (article 8(2)).

Government Decree No. 91 of 25 December 2005 on the Procedure for Assessing the Impact of Economic Activity on the Atmosphere

This decree governs assessment of the impact caused by economic activities on the atmosphere. It is, however, more accurate to state that it sets out the formulae to be used to determine the level of monetary damages payable to the State in respect of an impact. Impact is defined in article 2 as a negative impact on people's livelihoods, nature and other environmental objects due to non-compliance with the laws of Armenia on the protection of the atmosphere by legal and physical persons. Meanwhile, Impact assessment or Impact Assessment Value (in AMD) includes compensation for quantitative and qualitative losses of products by reducing water, forest and land resources in a polluted environment, as well as compensation for additional services needed to restore these resources, restore the health of the population suffering from pollution and for reduced labor productivity (i.e., ability to work is impacted) (article 2). Maximum permissible emissions of harmful substances into the Atmospheric air (MPE) are defined as the volume of permissible limits for the emission of harmful substances into the atmospheric air from stationary and mobile sources, which is approved by the Government of Armenia (article 2).

Under article 3, impact is assessed in relation to specified violations of Armenian law, including exceeding the normative permissible limits for the emission of harmful substances into the atmospheric air, and emission of harmful substances into the atmospheric air without permission of authorized state bodies. Article 4 deals with how the impact associated with gases emitted from mobile sources ought to be evaluated. Article 6 sets out the relevant formulae.

Tax Code, 2016

This Code, inter alia, creates natural resource utilisation payment limits that are prescribed for the calculation of natural resources utilisation payment and the application of rates (article 203). This includes, for instance, volumes of water use prescribed by the permits issued under the *Water Code* for use of surface waters and volumes of mineral extraction provided for by the contract on subsoil use concluded for mining purposes under the *Subsoil Code*. Article 204, for instance, sets out payment rates for the use of surface waters. If the utilisation payment limits prescribed by Article 203 are exceeded, the three-fold value of the rates prescribed by parts 1 and 2 of Article 204 are applicable as rates for the actually used volumes of water exceeding the limits of water use for any of the purposes prescribed by these parts. Article 208 provides natural resources utilisation payment rates for the use of biological resources, such as flora. For example, article 108(2) provides that in the case of exceeding the utilisation payment limits prescribed in Article 203, the actual volumes of the use (storage) of each tree type exceeding the limits for the use (storage) of timber and secondary forest product, the ten-fold value of the rates prescribed by this Article shall be applicable. Rates for environmental taxes and levels of compensation payable in the event of base limits being exceeded are also set out (e.g., article 167, which deals with rates for harmful substances contaminating atmospheric air).

Annex B. Financial Security Measures: Characteristics, strengths and weaknesses

Table A B.1. Financial Security Measures: Characteristics, strengths and weaknesses

	Measure	Characteristics	Strengths	Weaknesses
1	Cash Deposit (trust funds, escrow accounts and cash deposits)	<p>With a trust fund, payments would be made into the trust until full provision has been made for the resource user's obligations. A charge over the contents of the trust would secure the funds in the event of the resource user's bankruptcy.</p> <p>With escrow accounts and cash deposits, funds are deposited with a third party, often a bank, which are only to be available to the competent authority where certain conditions specified in the underlying agreement between the resource user and the competent authority are satisfied.</p>	<ul style="list-style-type: none"> Ensures ready availability of private funds to undertake the works required of the resource user; immediate access upon presentation of relevant documentation. Funds and assets are segregated from the general body of the resource user's assets (i.e. 'ring-fenced') meaning that they are likely to be beyond the reach of its creditors should it subsequently enter into bankruptcy or deteriorate financially. Redresses the risks associated with the non-renewal of products from third-party providers, such as insurers or banks, i.e. where products must be renewed on a regulator basis, there is the prospect that deterioration of a resource user's financial strength may mean that the bank is no longer willing to provide a guarantee. Where the level of cash or other assets deposited with the third party is determined by a risk assessment of the resource user's activities, this provides a strong economic incentive for the resource user to operate safely to ensure full recovery of the cash or assets upon termination of the activity. 	<ul style="list-style-type: none"> Where the balance does not accrue fully until the final payment has been made and there is no other supplementary/complementary financial provision in place then the value of the 'deposit' may be insufficient to cover the necessary costs should it need to be called upon in the event of bankruptcy prior to full capitalisation. Sterilisation of funds and assets during the operational phase of the activity in the sense that they are 'locked in' and inaccessible to the resource, e.g. assets are unable to generate debt finance from a bank.

2	Charge on Assets	A charge (or security) in favour of the competent authority is taken over an asset (or assets) belonging to the resource user (or, potentially, a company or companies affiliated to them). This could be done <i>ex ante</i> (i.e. before the resource user is allowed to commence activity) or <i>ex post</i> (i.e.	<ul style="list-style-type: none"> Charges on assets provide a secure means of evidencing financial provision in the event of the resource user's entry into bankruptcy or their financial deterioration. If the financial condition of the resource user deteriorated and it later succumbed to bankruptcy proceedings, a competent authority with a charge over heritable property (i.e. real 	<ul style="list-style-type: none"> As the competent authority must exercise the power of sale conferred by the charge and find a purchaser in order to realise the funds, its ability to recover their costs will be dictated by prevailing market conditions and, perhaps most importantly, demand for that particular asset; the less marketable the asset, the lower the prospect of a prompt sale at a price which it was expected to achieve (and vice versa). The specialist nature of certain
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	<p>after the occurrence of environmental damage). In both cases, the competent authority would need to exercise the power of sale conferred by the charge to recoup the funds secured by it. Assets such as real estate are particularly ripe for such a charge. Other valuable assets, such as heavy machinery, stock or vehicles may also be suitable where there is a buoyant secondary market for their resale.</p>	<p>estate) would have direct recourse to that asset if full payment had not been made. There would be no need to compete with the company's other creditors. A <i>first-ranking</i> fixed charge affords competent authorities the greatest protection as the competent authority would be paid prior to (1) satisfaction of any other charge secured over the asset and (2) the company's general creditors. Consequently, where the resource user was unable (or unwilling) to undertake the works itself, the existence of the charge, or the potential to take one, could give the competent authority comfort to undertake the works itself.</p> <ul style="list-style-type: none"> • Charges over assets result in sufficient financial provision where there is adequate value in the asset to bear the full costs associated with the environmental obligations. • Funds can be released from an illiquid asset (i.e. real estate) and dedicated to financial provision for the resource user's potential environmental liabilities. • The value of the asset subject to the charge will not, generally, be impacted by the financial deterioration/bankruptcy of the resource user. • Lenders could combat the prospect of their charges losing priority by requiring borrowers to hold environmental impairment liability insurance throughout the period of the loan. In essence, the private sector could mandate that resource users hold insurance as opposed to it being mandated by the state. 	<p>industrial premises may result in market being narrower and less active than other sectors of the commercial property market. This means that it may take some time for the property to sell, delaying the time in which value may be realised from the asset. Thus, charges over assets may not result in the secured funds being available when required.</p> <ul style="list-style-type: none"> • A decision to prioritise the charge in favour of the competent authority over a charge in favour of a third party, such as a commercial lender, is a decision that a debt owed to society is to be prioritised to a debt owed to the resource user's creditors. This may be controversial where there is a creditor whose charge, having been 'overreached' by a competent authority's charge, no longer secured the entire debt owed to it. • The competent authority's charge would deplete the pool of assets available to unsecured creditors upon the resource user's entry into bankruptcy proceedings. There may be policy concerns associated with this. • Where there are prior-ranking charges, then this will inhibit the protection afforded by the measure in the sense that there may be insufficient equity in the asset to accommodate all charges. • The value of the asset could decline, decreasing the security afforded to the competent authority.
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3	Risk Transfer (insurance, letters of credit, bank guarantees and surety bonds)	<u>Insurance</u> Insurance enables risk-averse parties to transfer the prospect of a large financial liability for environmental damage to an insurer for a comparatively small fee. The insurer charges a premium – the fee paid for the risk of loss to be removed – for coverage that reflects the level of risk posed by the resource user. <u>Letters of Credit, Bank Guarantees and Surety Bonds</u>	<u>Insurance</u> <ul style="list-style-type: none"> • Where an insured risk materialises and the insurer meets the claim of the policy-holder, this will, within the confines of the policy's terms, provide a source of private funds through which environmental damage may be remediated. Where this occurs, insurance implements the remedial function of the polluter-pays principle. • Where an insurance premium can be adjusted to accurately reflect changes in the environmental risks associated with engaging in a particular activity (i.e. differentiated), they 	<u>Insurance</u> <ul style="list-style-type: none"> • Under traditional liability insurance, insurers will only cover an insured risk where liability can be established. Difficulties in establishing causation, for example, may prevent liability insurance from providing funds for remedial measures. Even where liability can be established, insurers are also unlikely to cover all costs for all activities. Limits and sub-limits to indemnity, deductibles, conditions, exclusions, specific policy periods and triggers mean that insurance does not ensure that an insured's losses will be covered. • Intentionally caused harms, criminal activity and intentional violations of
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	<p>A third party (the 'provider') agrees to meet a predetermined level of the resource user's environmental obligations; the risk of those obligations not being fulfilled by the resource user is transferred to the provider. The trigger for this to occur may vary between the measures. They are likely to be granted for annual terms but may be extended automatically subject to the purchase of r's continuance as a low credit risk and adherence to the contractual terms.</p>	<p>may provide market-based incentives for resource users to adopt safer practices.</p> <p><u>Letters of Credit, Bank Guarantees and Surety Bonds</u></p> <ul style="list-style-type: none"> • The provider will, typically, be subject to direct liability under the instrument and will be required to meet its contractual obligations even if the resource user becomes bankrupt. They are, therefore, secure in the event of the resource user's bankruptcy. • As the guarantee is provided by an independent financial institution as opposed to the resource user or a company affiliated to it, there is no connection between the resource user's financial health and that of the provider. • The funds will also, presuming that the provider does not refuse to 'pay out' for a particular reason, be available when required. • And where the level of coverage of the product is sufficient to meet the costs associated with the obligations required by the resource user then this will ensure that public funds need not be utilised to undertake them. • The specified level of funds will be available from the outset, meaning that the dangers of waiting for funds to accumulate are avoided. 	<p>statutes or regulations are often excluded from all liability insurance policies. This means that the intentional emission of pollution to air, in contravention of the emission limits in a permit, may not be covered by a typical insurance policy. Whilst such exclusions are understandable from the insurer's perspective as they provide a crucial means to reduce moral hazard, resource users under significant financial pressure may intentionally cut corners to reduce operating costs. In such a situation, there is significant scope for coverage under the policy to be refused.</p> <ul style="list-style-type: none"> • As coverage is determined <i>ex ante</i> under the insurance contract whilst restoration requirements are controlled <i>ex post</i> by competent authorities, the policy may not cover certain restoration requirements. <p><u>Letters of Credit, Bank Guarantees and Surety Bonds</u></p> <ul style="list-style-type: none"> • As they are usually renewed annually, there is the risk that where the guarantee is not renewed, the financial provision may 'fall away' leaving the resource user to find an alternative means of evidencing its capacity to bear its environmental liabilities. This may prove troublesome where its financial strength has weakened. However, the terms of the instrument could, in theory, be drafted so that the provider could be required under contract to 'pay out' where the product is not renewed. • The 'price' accorded by measures such as surety bonds and bank guarantees bear no relation to the resource user's environmental risk; they are priced according to the risk of the resource user becoming insolvent (i.e. its financial risk). These measures do, however, motivate the resource user to remain financially strong so as to benefit from lower price products from third parties. Whilst, in itself, this should be viewed as a positive thing, they create no substantive motivation to reduce <i>environmental</i> risk.
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4	Financial Test (self-insurance, self-bonds and parent company guarantees)	<p>With this category of measures, which includes self-insurance, self-bonds and parent company guarantees, a resource user (or a company with whom they are affiliated, such as their parent company) must meet specified criteria to show their financial net worth or credit rating. The underlying assumption is that large,</p>	<ul style="list-style-type: none"> • Where a surplus exists between the funds available to the resource user (or the party which has satisfied the financial test) and the costs associated with the environmental obligations to which it is subject, these measures will enable the resource user to meet those obligations in full. • As regards the parent company guarantee, it contractually overrides the publicly ordered limitation on the parent 	<ul style="list-style-type: none"> • When competent authorities accept financial test-based measures as evidence of financial provision they do not demand that the resource user (or affiliated company) set aside assets or funds to cover environmental obligations. No financial provision in the truest sense of the phrase is actually made; no funds are provided, prepared or arranged in advance of the works. It is a financial illustration of an ability to pay. This means that the resource user (or affiliate's) assets and funds will be available to its creditors should it enter
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		<p>profitable companies are able bear their environmental liabilities without the need to involve unaffiliated third-parties, such as financial institutions.</p>	<p>company's liability for environmental liabilities arising from its subsidiary's activities (i.e. the conferral of limited liability to shareholders under domestic corporate law). It creates a default target for the competent authority should the resource user be unable to meet the requisite costs. This achieves by contract what 'veil piercing' and other liability extending mechanisms (e.g. the interpretation of the relevant statutory language so as to capture the parent) seek to achieve through judicial discretion.</p> <ul style="list-style-type: none"> • Self-insurance (i.e. satisfaction of financial tests) motivates the resource user to remain financially strong so as to remain exempt from the need to purchase expensive products, such as insurance, from third parties. This should be viewed positively. 	<p>into bankruptcy; they are inherently insecure as a result.</p> <ul style="list-style-type: none"> • The parent company guarantee is a mere unsecured, contractual obligation to pay. The parent company may have suffered financially, perhaps as a result of the resource user's financial deterioration, and this could affect its ability to meet the resource user's environmental obligations. It is, therefore, neither secure nor guaranteed to be sufficient in the event of the resource user's bankruptcy. • Self-insurance (i.e. satisfaction of financial tests) accords no price whatsoever to the resource user's activities and so to its environmental risk; that is the beauty of it for those resource users large enough to benefit from it. It creates no substantive motivation to reduce environmental risk.
5	Compensation Funds	<p>The fund will, generally, pay for remediation, provide compensation to claimants and may also permit fund administrators to pursue the offending resource user(s) for reimbursement of remediation/clean-up expenses.</p> <p>The main source of finance of compensation funds is likely to derive from taxes or charges against resource users engaged in the regulated activity. Though, this could be supplemented by public funds.</p> <p>Funds are typically created to deal with a particular type of environmental hazard such as oil spills or storage of hazardous waste.</p> <p>There are two main types of funds relevant to the present discussion:</p>	<ul style="list-style-type: none"> • Where a compensation fund is privately financed, it has the capacity to ensure that private funds can be drawn upon to undertake the necessary remedial measures. • If the associated costs are high, it may not be possible to recover all of these costs from a single resource user. A compensation fund could assist in providing full compensation to the state or a private claimant. • Improved levels of safety within a particular industrial sector could be achieved through imposing requirements upon resource users who wished to obtain membership of the fund. For instance, they could be required to take preventive measures before being accepted as a member of the fund, e.g. obtain particular certification (e.g. ISO 14000 certified or registered in the EMAS Program). <p>Alternatively, resource users who wished to join the fund could be required to provide evidence of a predetermined level of</p>	<ul style="list-style-type: none"> • The actual 'polluter' does not pay, or more accurately, does not pay in full, given that the cost of environmental damage is shared by the resource user and the industry covered by the fund. Thus, they appear to run counter to the true aim of the polluter-pays principle and, consequently, the normative justifications for the frameworks of environmental liability based upon it. • Funds often exhibit bureaucratic inefficiencies which hinder the ability of claimants to gain compensation readily. • Fund maintenance may be difficult and the ability to obtain contributions from the relevant industrial sector relies on continued political will. • If a resource user was permitted to pass its liability on to the fund and carry on as usual, not only would the polluter-pays principle be implemented inadequately but there would be little incentive to reduce the risks which it exhibited. The fund could, however, be conferred the right to pursue a cost recovery action against the responsible resource user. • Accurate differentiation may be difficult meaning that there will be a reduced incentive upon resource users to prevent environmental damage. If the

	<p>(1) Guarantee funds <i>complement</i> civil and/or administrative liability regimes and other financial provisions on measures by protecting competent authorities against the possible bankruptcy of a resource user (or the provider of</p>	<p>financial provision, such as insurance.</p> <ul style="list-style-type: none"> Where fund administrators are able to differentiate the risk associated with the individual resource user through the contributions it charges then resource users will possess the requisite incentive to improve 	<p>contribution is determined by a flat rate or by volume of product produced (e.g. cents per barrel), then large, safe resource users are penalised as smaller, potentially less safe resource users will not contribute in proportion to their prospective loss.</p> <ul style="list-style-type: none"> A failure to differentiate ignores safety
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	<p>their financial provision, e.g. an insurer or a bank).</p> <p>(2) General funds, in contrast, may operate as an <i>alternative</i> to liability and insurance.</p>	<p>safety precautions and, consequently, prevent environmental damage arising from their emissions to air.</p>	<p>precautions taken by individual resource users, rendering it unlikely that they will be encouraged to exceed legally mandated minimum safety requirements.</p> <ul style="list-style-type: none"> • The administrative costs associated with tailor-made contributions may be high and they may suffer from the same information deficiencies which hinder the pricing of insurance.
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Notes

¹ It is prudent to note that operators engaged in certain activities may be exposed to both categories of costs. For instance, not only is a mining company likely to be subject to an obligation to restore the land after closure of the site but it will be exposed to liability for environmental damage should its activities, for example, contaminate groundwater. Nevertheless, these two categories are conceptually distinct and must be treated as such by policy makers, regulators, operators and scholars alike.

² According to article 2(2) of the ELD, 'damage' means 'a measurable adverse change in a natural resource or measurable impairment of a natural resource service which may occur directly or indirectly'.

³ According to article 2(14) of the ELD, 'baseline condition' means 'the condition at the time of the damage of the natural resources and services that would have existed had the environmental damage not occurred, estimated on the basis of the best information available'.

⁴ According to article 3(4) of the MSFD, 'environmental status' means 'the overall state of the environment in marine waters, taking into account the structure, function and processes of the constituent marine ecosystems together with natural physiographic, geographic, biological, geological and climatic factors, as well as physical, acoustic and chemical conditions, including those resulting from human activities inside or outside the area concerned'.

⁵ European Commission, 'Guidelines providing a common understanding of the term 'environmental damage' as defined in Article 2 of Directive 2004/35/EC of the European Parliament and of the Council on environmental liability with regard to the prevention and remedying of environmental damage' [2021] C118/1 [https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021XC0407\(01\)](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021XC0407(01)) (accessed 17 November 2023)

⁶ See, e.g. Environmental Liability Directive: Training Handbook (February 2013) <https://circabc.europa.eu/ui/group/3b48eff1-b955-423f-9086-0d85ad1c5879/library/a1f191ef-6ddf-491e-947d-b32bea4ad15a/details?download=true> (accessed 17 November 2023).

⁷ The terms 'financial assurance', 'financial provision', 'financial guarantee' and 'or their equivalent' are often used, and these terms may be considered to be interchangeable with the term financial provision.

⁸ For instance, insurance is only available to cover a fortuity (e.g., environmental damage following a pollution incident), not an event which is foreseen and certain to occur (e.g., remediation of a mine upon the end of its operational life).

⁹ See, e.g. Convention on Civil Liability for Oil Pollution Damage (the 'Civil Liability Convention'), article VII (mandatory insurance for liability for oil pollution required in the UK by Merchant Shipping Act 1995, s 163); Convention on Third Party Liability in the Field of Nuclear Energy 1960 (as amended) (the 'Paris Convention'), article 10 (mandatory financial security for claims for bodily injury and property damage from nuclear matter required in the UK by Nuclear Installations Act 1965, s 19).



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Environmental liability provisions in Armenia: Damage prevention and assessment

The EU Environmental Liability Directive (ELD) is the main law governing environmental liability of polluters in the EU countries.

As foreseen by the EU-Armenia Comprehensive and Enhanced Partnership Agreement, Armenia is considering options for approximating its legislation with the ELD.

This report assesses Armenia's legislation and methodologies relating to environmental liability and provides recommendations on how they could be improved to align with the requirements of the ELD. The report also proposes the ways to implement the polluter-pays principle comprised therein, specifically as regards prevention and assessment of environmental damage.

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