Towards a reform of environmental liability in China: an economic analysis

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Towards a Reform of Environmental Liability in China: An Economic Analysis

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Abstract

In December 2009, the People's Republic of China ('the PRC') introduced a new *Tort Liability Law* ('the TLL'), in which important provisions also deal with environmental liability. This article analyses environmental liability in the PRC using economic insights. First, basic requirements for an efficient environmental liability system are outlined, then circumstances for environmental liability prior to the 2009 changes are highlighted. In the past, many issues relating to the applicable liability rules were highly debated. The TLL clarifies many issues and introduces strict liability for environmental harm. A critical economic analysis of both the old and the new regime are provided, whereby it is concluded that the changes may enable effective use of environmental liability as an instrument to remedy environmental pollution in China.

Introduction

Since the 1960s, impressive scholarship has developed analysing the economic effects of liability rules. Scholars like Guido Calabresi, Steven Shavell and Richard Posner have analysed the specific conditions under which liability rules can be used to increase social welfare by giving incentives to potential polluters for reducing harmful activities and taking appropriate care. In the 1980s and 1990s, this scholarship expanded to environmental law. The result was that, increasingly, scholars have indicated that liability rules can be used not only to provide adequate compensation to victims of environmental pollution, but also to provide incentives to potential polluters to reduce polluting activities and take appropriate care. These economic insights (relating to the deterrent effect of environmental liability) have also increasingly influenced legislators in Europe and in the United States (US). In those legal systems, increasingly legislators have imposed stricter environmental liabilities on polluters in the expectation that this would reduce pollution levels. There is empirical evidence, mostly from the US, that indicates that this policy has indeed been successful. For

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example, after the introduction of strict liability for tanker owners under the *Oil Pollution Law of 1990*, pollution levels have seriously decreased.[1]

It is well known that the People's Republic of China ('the PRC') has enormous environmental problems. Economic development in the PRC continues to correspond with increasing pollution levels. The so-called 'environmental Kuznets Curve' predicts that in the course of economic development in the first phase, pollution levels will rise while economic development increases. However, there is a turning point where, with increasing social welfare, pollution levels will begin to decrease (when preferences change and the population demands higher environmental quality).[2] It is still unclear whether that turning point has already been reached in the PRC. However, there is an equally interesting scholarship indicating that environmental quality in a country depends not only upon economic development, but also upon the institutional structure of a legal system.[3] Hence, an appropriate institutional structure can also help in reducing pollution levels.

The question arises to what extent the law and economics scholarship pointing at the efficiency of environmental liability rules can also be used in the context of the PRC. This question is especially relevant since the PRC has recently introduced a new *Tort Liability Law* ('the TLL'). Chapter VIII of the TLL, which was passed by the National People's Congress in December 2009, has interesting provisions concerning liability for environmental pollution. In addition, Chapter IX has provisions concerning liability for ultra-hazardous activities. To some extent, these provisions do not (completely) align with the suggestions made in law and economic scholarship. Hence, the purpose of this article is to relate the law and economics scholarship to the current text for the new liability law in the PRC. More specifically, it analyses the TLL's provisions on environmental liability from an economic perspective. This allows an examination of the extent to which these provisions are able to provide adequate incentives to potential polluters. Economic analysis can equally be used to formulate a few suggestions on how the provisions could be reshaped in order to better align with predictions from economic theory.

This introduction is followed by a summary of the economic literature with respect to environmental liability. Next, the article provides a brief overview of current environmental liability law in the PRC and the contents of the new law. It then analyses the contents of the new law in the light of the economic literature and presents several suggestions to improve the law, using economic analysis.

Economic Insights into Environmental Liability

There is, as indicated in the introduction, a vast economic literature that has emerged from, and been applied to, environmental issues. The goal of this section is, of course, not to repeat this literature, which would be impossible. Rather, it will identify the main findings of

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1 See R Hendrickx, 'Maritime Oil Pollution: An Empirical Analysis' in M Faure and A Verheij (eds), *Shifts in Compensation for Environmental Damage* (Springer, 2007) 243.

2 See, eg, E B Barbier, 'Introduction to the Environmental Kuznets Curve Special Issue' (1997) 2 *Environment and Development Economics* 357 and M E Porter and C Vanderlinde, 'Toward a new conception of the environment-competitiveness relationship' (1995) 9 *The Journal of Economic Perspectives* 97.

3 See, eg, D C Esty and M E Porter, 'Industrial Ecology and Competitiveness' (1998) 2 *Journal of Industrial Ecology*, 35 and D C Esty and M E Porter, 'Measuring National Environmental Performance and its Determinants' in M E Porter and J Sachs (eds), *The Global Competitiveness Report 2000* (Oxford University Press, 2000).

this literature, allowing us to compare these with Chinese regulations concerning environmental liability and the new law.[4]

Goals and Basis of Liability

It is important, first, to emphasise that from an economic perspective, the main goal of environmental liability is to provide incentives to potential polluters to prevent environmental harm. The foresight of being held liable will, therefore, guide the behaviour of potential polluters towards more environmentally friendly techniques.[5] From an economic perspective, the main goal of environmental liability is deterrence, aiming at prevention. This contrasts with the legal view, where the compensation function of liability rules is often stressed. For economists, compensation is merely a means to an end (deterrence), but not a goal in itself — since there would be a more efficient means (like first party insurance) to provide compensation to potential victims.

This deterrence perspective leads to important starting points for the economic analysis. It not only means that economists will mostly focus on prevention as a tool of internalisation of environmental risk; it also means that if the policy-maker would, for example, strive towards compensation, the economist would advise structuring the compensation system in such a way that it also provides incentives for prevention. This would, for example, imply that if an (environmental) compensation fund were to be installed, the fund should be organised in such a way that those who pollute most, should make a greater contribution to the fund than those who pollute least. Hence, the goal of environmental liability is to attribute the costs of environmental harm proportionally to those who caused the harm. If no environmental liability but a public compensation system would be used, this principle of differentiation (contributing according to the harm created) would have to be applied as well.[6]

Much literature is devoted to the question whether environmental liability should be based on strict liability or on a negligence regime.[7] Economic literature generally accepts that both a negligence rule and a strict liability rule will provide a potential polluter with incentives to adopt an efficient care level.[8] However, if the activity level is also taken into consideration, a negligence rule will not be optimal since the activity level is not incorporated into the due care standard that the courts apply. Hence, it is argued that in a so-called unilateral accident model (whereby only the behaviour of the injurer influences the accident risk), strict liability will be efficient, since it leads both to efficient care and to an optimal activity level. The economic literature accordingly supports a tendency in academic literature, case law and legislation in Europe and the US towards introducing strict liability for environmental damage.

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4 The reader interested in more details concerning the economic analysis of environmental law in general could consult R L Revesz and R N Stavins, 'Environmental Law' in A M Polinsky and S Shavell (eds), *Handbook of Law and Economics* (North-Holland, 2008) vol 1, 500. Specifically for environmental liability, see M Faure, 'Environmental Liability' in M Faure (ed), *Tort Law and Economics*, (Edward Elgar, 2009) 247.

5 There is empirical evidence that environmental liability does indeed have a deterrent effect in the sense of influencing the behaviour of polluters. See, eg, Alberini A and Frost C, 'Forcing Firms to Think about the Future: Economic incentives and the fate of hazardous waste' (2007) 36 *Environmental & Resource Economics* 451.

6 See, eg, M Faure and T Hartlief, 'Compensation funds versus liability and insurance for remedying environmental damage' (1996) 5 *Review of European Community and International Environmental Law* 321.

7 See generally on this choice H B Schäfer and F Müller-Langer, 'Strict liability versus negligence' in M Faure (ed), *Tort Law and Economics* (Edward Elgar, 2009) 3; and S Shavell, 'Liability for accidents' in A M Polinsky and S Shavell (eds), *Handbook of Law and Economics* (North-Holland, 2008) 143.

8 See S Shavell, 'Strict liability versus negligence' (1980) 9 *Journal of Legal Studies* 1; and S Shavell, *Economic Analysis of Accident Law* (Harvard University Press, 1987) 8.

It is important that if the victim can also influence the accident risk (hence, the situation is bilateral), the strict liability rule be accompanied with a defence to take into account the victim's behaviour.[9] This will also provide the victim with incentives for care-taking. Moreover, strict liability is efficient only if an injurer is always held liable to pay fully for the consequences of the accident. If the injurer were insolvent or if the judge were to underestimate the amount of the damage, a negligence rule would be preferred if the judge could at least adequately fill the optimal level of care, even if there were uncertainty concerning the precise amount of the damage.[10] Moreover, specific problems may arise if strict liability is combined with other features that may expand the burden of liability on enterprises. This may be the case particularly if joint and several liability is introduced or high punitive damages for non-pecuniary losses are awarded. Then a strict liability regime could be experienced as 'crushing' and may have overall negative effects.[11]

Causation and Related Issues

A crucial issue in environmental liability is that problems often arise where there is uncertainty as to the causal link between an event (for example, an emission) and a specific outcome (damage). Some legal systems adopt a threshold liability rule (arguing that it must be more probable than not that the defendant caused the loss). Others shift the burden of proof onto the defendant (to prove that he did not cause the damage in question), but that burden may, de facto, often amount to a 'probatio diabolica'.[12] This may lead to a crushing liability on industry and, thus, to over-deterrence. The economically sound solution to causal uncertainty is first to exclude the so-called background risk (the probability that the damage, such as a cancer, was caused by another source) and then to calculate the probability of causation. This probability (expressed in percentage) will then be multiplied with the amount of the damage. This rule is often referred to as a proportionate liability rule and economic analysis holds that this gives optimal incentives for accident prevention. The reason is that the polluter is precisely exposed to the risk they actually caused.[13]

Another issue closely related to causal uncertainty is the tendency to hold joint tortfeasors jointly and severely liable for all damage to which their behaviour might have contributed. An economic argument could be made that this would ex ante provide excellent incentives for mutual monitoring between all potential injurers.[14] There are, however, disadvantages as well, more particularly when one of the other polluters is insolvent and, hence, recourse is impossible.[15] A well-known example of joint and several liability can be found in the US *Comprehensive Environmental Response Compensation and Liability Act of 1980* (CERCLA),[16] which instituted the so-called superfund liability regime. The regime is

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9 Such a defence is usually referred to as comparative or contributory negligence.

10 See R Cooter, 'Prices and Sanctions' (1984) 84 *Columbia Law Review* 1343.

11 See on these issues M J Trebilcock, 'The social insurance – deterrence dilemma of modern North American tort law: a Canadian perspective on the liability insurance crisis' (1987) 24 *San Diego Law Review* 929.

12 A term used for something that cannot be proven.

13 See, inter alia, S Shavell, 'An Analysis of Causation and the Scope of Liability in the Law of Torts' (1980) 9 *Journal of Legal Studies* 463; S Shavell, 'Uncertainty over Causation and the Determination of Civil Liability' (1985) *28 Journal of Law and Economics* 587; and D Rosenberg, 'The Causal Connection in Mass Exposure Cases: a "Public Law" Vision of the Tort System' (1984) 97 *Harvard Law Review* 851.

14 T Tietenberg, 'Indivisable Toxic Torts: the Economics of Joint and Several Liability' (1989) 65 *Land Economics* 305.

15 L A Kornhauser and R L Revesz, 'Apportioning Damages among Potentially Insolvent Actors', (1990) 19 *Journal of Legal Studies* 617.

16 42 USC ch 103 (commonly known as 'Superfund').

thought to be extremely costly and it is doubtful whether it has positive effects on incentives for potential polluters regarding prevention.[17]

Solvency Guarantees

When polluters are insolvent, liability may be totally ineffective and under-deterrence would result.[18] Some economic literature suggests that in that case, a duty to provide financial guarantees (for example, compulsory insurance) may be beneficial for dealing with the under-deterrence that could otherwise follow from the insolvency risk.[19] Moreover, as noted above, when strict liability is introduced, the insolvency risk even leads to more serious problems of under-deterrence than the negligence rule. Hence, strict liability should, when prospective polluters may be potentially insolvent, always be combined with solvency guarantees in order to avoid a risk of under-deterrence.

Regulation

Economic literature has also argued that even though liability rules can provide incentives for prevention, under some circumstances, safety regulation imposed by government may be a superior instrument.[20] In the case of environmental risk, information on optimal abatement technologies can be obtained more easily by a government regulator than by private parties. There are serious insolvency risks as well as risks of under-deterrence, since no liability suit may be brought, for example, if damage is widespread. For those reasons liability rules may fail to have a deterrent effect. There may, hence, be a strong case for controlling environmental harm through regulation.[21]

Some will argue that as soon as regulation (and, more particularly, a permit) is complied with, the polluter can no longer be held liable. However, economic literature usually argues that without tortious environmental liability there would be no incentive for the polluter to invest more in care than the regulation asks for, even if additional care could further reduce the accident costs.[22] Also, exposure to liability, even in case of compliance with regulatory standards, may be an adequate remedy when too lenient standards are set as a result of lobbying by industry. Finally, environmental liability can also be seen as a 'stop gap' for situations not dealt with by the regulation.[23]

In sum, it is important to still apply environmental liability as a complimentary instrument in addition to regulation.

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17 See, inter alia Sigman H, 'Environmental Liability in Practice: Liability for Clean-up of Contaminated Sites under Superfund' in Heyes A (ed), *The Law and Economics of the Environment* (Edward Elgar, 2001) 116.

18 Shavell S, 'The Judgment-proof Problem' (1986) 6 *International Review of Law & Economics* 43.

19 See generally for criteria on compulsory insurance M Faure, 'Economic Criteria for Compulsory Insurance' (2006) 31 *The Geneva Papers on Risk and Insurance* 149; and with an application to environmental liability Kunreuther H and Freeman P, 'Insurability, Environmental Risks and the Law' in Heyes A (ed), *The Law and Economics of the Environment*, (Edward Elgar, 2001), 302.

20 See especially Shavell S, 'Liability for Harm versus Regulational Safety' (1984) 13 *Journal of Legal Studies* 357.

21 See also Arcuri A, 'Controlling Environmental Risk in Europe: the Complimentary Role of an EC Environmental Liability Regime' (2001) *Tijdschrift voor Milieuaansprakelijkheid* (Environmental Liability Law Review) 37.

22 Shavell, 'Liability for Harm', above n 20, 365.

23 S Rose-Ackerman, *Re-thinking the Progressive Agenda, the Reform of the American Regulatory State* (The Free Press 1992) 123–4.

Summary

Although a summary of economic recommendations concerning environmental liability always runs the risk of being rather blunt,[24] one could broadly suggest that an environmental liability regime should have the following features, if an economic perspective is taken into account:

- for ultra-hazardous activities causing environmental harm, strict liability should be imposed;
- a defence should be added to account for the victim's behaviour;
- the polluter should only be held liable to the extent they could influence the risk and to the extent that they actually did so; otherwise, over-deterrence may follow;
- there should be no liability for damage caused by *force majeure*, nor should there be a shift in the burden of proving causation;
- in case of causal uncertainty, a proportionate liability rule should be applied;
- when damage is caused to non-individualised (natural) resources, standing should be awarded to a trustee or authority that can use liability law on behalf of the environment;
- there should, in principle, be no financial caps on liability;
- solvency guarantees (like a duty to insure) should be provided when an insolvency risk arises — this is especially important when strict liability is imposed;
- compliance with regulation (or a permit) should, as a general rule, not free the polluter from liability.

Of course, other regimes could be installed when not only deterrence is the goal of the environmental liability regime, but also compensation or distributional justice needs, for example, are to be achieved. However, even when an environmental compensation system, for example, would be installed for that reason, it is important to organise it in such a way that polluters are still financially exposed to risk (for example, via contributions to finance the fund) to the extent that they contributed to the risk. Thus, the funding mechanism can still provide correct incentives for prevention and care-taking.

Environmental Liability Law in the PRC

Current Legal Rules Dealing with Environmental Liability

The current legal rules concerning environmental liability in the PRC are contained both in basic civil law and in specific legislation.[25] To some extent, they are inconsistent and contradict each other.

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[24] Of course, the recommendations in the literature are often very nuanced and differentiated, depending upon specific conditions and circumstances.

[25] For the history of those statutes, see W P Alford and Yuanyuan Shen, 'Limits of the Law in Addressing China's Environmental Dilemma' (1997) 16 *Stanford Environmental Law Journal* 127.

Substantive Law

Article 124 of the *General Principles of the Civil Law of the PRC of 1986* (GPCL)[26] stipulates that when a polluter violates relevant statutes and regulations aiming at the protection of the environment and at prevention of pollution and surely causes harm to others, the polluter shall be liable for the harm. This article is the basic one in the GPCL to deal with the issue of environmental liability. For a polluter to be held liable, the violation of relevant laws is a prerequisite according to this article, which is still a controversial requirement in the view of some scholars (see below).

In addition, there are other environmental protection statutes governing specific fields and creating a cause of action for environmental liability. For example, the *Ocean Protection Law of 1982, 1999*; the *Law of the PRC on Prevention and Control of Water Pollution of 1984, 1996*; the *Air Pollution Prevention Law of 1987, 1995, 2000*; the *Environmental Protection Law of 1989*; the *Solid Toxic Pollution Prevention Law of 1995*; the *Environmental Noise Pollution Prevention Law of 1996*.[27] In general, in these statutes, there is no such a requirement of violation of relevant laws as is the case in the GPCL.

For instance, article 42 of the *Ocean Protection Law of 1982* stipulates that legal entities or individuals who have suffered losses because of ocean pollution are entitled to compensation from the polluter. This Law is the first one adopting a strict liability rule without requiring the violation of relevant laws. The polluter will be liable as long as the harm and the causation can be proven. In the Amendment of 1999 to this Law, article 90 still takes a similar approach: the person who pollutes the ocean and causes harm shall eliminate the risk and compensate for the losses.

The *Environmental Protection Law of 1989* is a general statute concerning environmental protection. In section 1 of article 41, it states that the person who gives rise to the risk of polluting the environment shall eliminate such a risk and shall compensate the legal entities or individuals who directly suffer losses.

The relationship between the GPCL and these specific statutes in terms of the creation of a cause of action for environmental liability is controversial and still disputed among scholars. The fundamental question is on which basis a polluter shall be held liable for the harm caused by his pollution: a negligence rule[28] or a strict liability rule; or put in another way, which rule has priority. There are mainly two lines of thought on this issue: one takes the view of a strict liability rule without requiring violation of relevant laws;[29] other scholars consider it as a negligence rule, but only requiring wrongfulness of the activities irrespective of the injurer's fault.[30] Within the latter approach, there are also some

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[26] At moment, in the PRC there is no civil code yet and the GPCL are functioning like a civil code and have been considered as the basic civil law.

[27] These specific statutes are comprehensive as far as environmental protection is concerned. For example, the *Environmental Protection Law of 1989* includes chapters on general provisions; environmental supervision and regulation; environmental protection and improvement; prevention and control of environmental pollution and other public hazards; legal liability; and supplementary provisions. Chapter V dealing with legal liability includes not only civil liability (arts 41–42); but also administrative punishments (arts 35–40) and even criminal penalties (arts 43–45).

[28] Here, a negligence rule is based on the wrongfulness of activities, not on the injurer's fault.

[29] See Jin Wang, *Environmental Law* (Beijing University Press, 2006) 569. Those who favour a strict liability rule argue that those specific statutes are new and specifically targeting one specific field, so they shall apply first when the issue under consideration falls within their domain. Also see, Song Zongyu, *Environmental Liability* (Chongqin University Press, 2005) 125, in which the author argues that the requirement of wrongfulness of activities is problematic in the field of environmental liability and a strict liability rule should apply.

[30] They argue that these specific statutes do not take precedence over the GPCL because: the GPCL is made by the People's Congress of PRC, but those specific statutes are passed by the Standing Committee of the National

different views on the interpretation of the requirement of a violation of relevant laws: some scholars argue the requirement of wrongfulness in the GPCL can be fulfilled as long as the violation of relevant laws is interpreted broadly so as to include the violation of legally protected rights and interests.[31] Some scholars take a more limited view on that issue.[32]

In legal practice, there are also different rulings from the people's courts. For instance, in the case of *Sun, Youli, Gao, Weihua & Ors v Qianan First Paper Manufacturing Factory & Ors*, the Court, arguably for the first time, held a complying polluter liable for the harm caused by the pollution.[33] The Court held that the compliance with the relevant pollution standards did not rule out the polluter's civil liability.[34] In this respect, there was one reply issued by the State Environmental Protection Agency of PRC in 1991 to a provincial agency worth mentioning here because it is quoted quite often by courts as a sort of authoritative source to justify applying a strict liability rule to environmental harm cases. The relevant paragraph of this reply stated:

> the national or local standards are only used as a legal ground for environmental protection agencies to decide on whether a polluter shall pay for over-pollution fees or for agencies to carry on environmental regulation, but not as a threshold for a polluter's liability.

However, in some cases, the courts have held the opposite opinion — that for the polluter to be liable, violation of relevant standards is crucial. As a result, the plaintiffs lost their cases because the defendants had either complied with relevant standards or the plaintiffs could not prove that the defendants had violated such standards.[35]

People's Congress, so they are not of the same level of importance; and the relevant provisions in those specific statutes cannot be seen as establishing an independent imputation principle, say, a strict liability, rather than the application of article 124 in the GPCL. See Cheng Wang, 'On Interpretation and Legislation of Environmental Liability' (2008) 152 *Law Review* 89.

31 See Xinbao Zhang, *The Principles of Tort Liability* (Renmin University Press, 2005) 375. See also Mingde Cao, *Environmental Liability* (Law Press China, 2000) 166.

32 Lixin Yang, *On Torts* (People's Court Press, 2005) 495. Yang argues that the violation of relevant laws in the article 124 of the GPCL means violation of mandatory rules in environmental protection laws, non-discharge of duty to prevent environmental pollution, or misuse of rights endorsed by environmental protection laws. See also see Congfu Chen, 'On the Wrongfulness of Environmental Liability' (2006) 5 *China Legal Science* 79, in which Chen argues that the requirement of wrongfulness in environmental liability is necessary to balance the interests of the injurer and victim. However, the determination of that is not wholly based on the violation of regulatory standards. A complying injurer can still be held liable for other reasons. For a more limited view, see Cheng Wang, above n 30, 92–6, in which he argues that here the relevant laws mean specific standards. When a polluter has complied with those relevant standards and caused serious harm to a victim, the victim can be compensated not based on article 124 or other provisions in those specific statutes, but based on article 132 of the GPCL, which stipulates that when parties are not at fault for the harm, they may share responsibility according to the exact situation, which is based on the so-called 'equity principle' of the GPCL.

33 Some scholars argue that it is the first time that a court applies a strict liability rule to an environmental case. However, it can also be interpreted this way that the polluter is liable because he has violated the general duty of care under tort law although he has complied with relevant regulatory standards. So one could also argue that in this case the court simply applied a negligence rule.

34 For this case, see, Wang, Shuyi, Textbook: Cases and Materials on Environmental and Natural Resource Laws, Intellectual Property Press, 2004, 87.

35 See *Chen Brothers v. South Cement Factory and Xingye Cement Factory* in 1994; see also *Residents v Coal Exploration Company* in 2000. In the *Chen Brothers* case, the claim of the plaintiffs was dismissed by the Court because there was no relevant evidence showing that the polluter had violated relevant emission standards. For the details of this case, see Zhongmei Lv and Tao Jiang , 'On Environmental Suits' in Wang Canfa, *The Theory and Practice on Environmental Disputes Resolution* (CUPL Press, 2002) 69. In the case of *Residents v Coal Exploration Company*, the claim of the plaintiffs was dismissed because there was evidence showing that the polluter had not breached the relevant national emission standards. For this case, see Shuyi Wang, *Textbook: Cases and Materials on Environmental and Natural Resource Laws* (Intellectual Property Press, 2004) 141.

In addition, article 123 of the GPCL concerning ultra-hazardous activities also has some connection to environmental harm. The wording of this article is clear and it stipulates a strict liability rule. The injurer will be liable when engaging into such ultra-hazardous activities as long as the harm and causation can be proved, unless they can prove that the harm is inflicted intentionally by the victim.[36]

Procedural Law

Burden of Proof

As far as procedural issues are concerned, especially for the burden of proof, article 74 of the *Opinions of the Supreme People's Court on Several Issues Concerning the Application of the Civil Procedure Law of the PRC of 1992*,[37] stipulates that when harm is caused by ultra-risky activities or pollution, the burden of proof shall be reversed, that is, when the defendant denies the facts put forward by the plaintiff, the defendant shall bear the burden of proof for disproving the facts as alleged by the plaintiff.

Furthermore, section 3 of article 4 in the *Rules of Evidence in Civil Lawsuits* issued by the Supreme People's Court in 2001,[38] makes clear that, for damages claims arising from environmental pollution, the injurer has the burden of proof concerning the stipulated situations of exemption and non-existence of causation between the activities and the harm inflicted.[39]

Limitation of Action

Article 42 of the *Environmental Protection Law of 1989* stipulates a longer limitation period than the term of two years that usually applies to actions in tort.[40] The limitation of action for a claim for the harm resulting from environmental pollution is three years, starting from the time when parties in the dispute know or should know that the harm occurred.

Stipulated Exemptions

Article 123 of the GPCL holds that for the harm caused by toxic or radioactive activities, the injurer shall not be liable if he can prove that the harm is intentionally inflicted by the victim.

Section 3 of article 41 of the *Environmental Protection Law of 1989*, states that, when harm is due to a natural disaster and the injurer already took timely and proper measures to mitigate damage, they shall be exempted from the liability for harm resulting from unavoidable environmental pollution.

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36 This article states: 'when engaging into ultra-hazardous activities like high altitude; high voltage; inflammable materials; explosives; toxics; radioactive substances; high-speed transportation vehicles, the injurer will be liable for the harm unless he can prove that such harm is inflicted intentionally by the victim'.

37 Discussed and adopted at the 528th meeting of the Judicial Committee of the Supreme People's Court, and promulgated by Judicial Interpretation No 22 [1992] of the Supreme People's Court on 14 July 1992.

38 Approved by the Judicial Committee of the Supreme People's Court on 6 December 2001, issued on 21 December 2001 and entered into force 1 April 2002.

39 See, in the case of *Li v Decoration Company*, the Court hearing this case reversed the burden of proof based on the *Rules of Evidence in Civil Lawsuits* issued by the Supreme People's Court in 2001. For detailed analysis of this case, see Zitai Zhang and Yufei Yu, 'The Application of Specific Rules in Environmental Liability: from the First Interior Decoration Pollution Case of Jiangsu Province' (2004) 1 *Science, Technology and Law* 103.

40 See GPCL art 135.

Article 92 of the *Ocean Protection Law of 1999* stipulates that the polluter shall be exempted from liability for unavoidable harm resulting from oceanic pollution if they took timely and proper mitigation measures in case of the following situations: war; natural disaster; and negligence of the authority in charge of the light tower or other assisting facilities.[41]

Article 63 of the *Air Pollution Prevention Law of 2000* states that when harm is due to a natural disaster and the injurer already took timely and proper measures, he shall be exempted from the liability for the harm resulting from unavoidable air pollution.

Article 41 of the *Law of the PRC on Prevention and Control of Water Pollution of 1996*, stipulates that for losses from water pollution intentionally or negligently inflicted by a third party, the third party shall be liable and the polluter shall be exempted. Article 42, states that when harm is due to a natural disaster and the injurer already took timely and proper measures, he shall be exempted from the liability for harm resulting from unavoidable water pollution.

In the *Solid Toxic Pollution Prevention Law of 1995, 2004* and the *Environmental Noise Pollution Prevention Law of 1996*, there are no provisions concerning exemption of liability.[42]

Environmental Liability Cases in Practice

It has already been noted that the victims often lose the case since the violation of relevant standards is used as a prerequisite to establish the liability of the injurer. In addition, it must be pointed out that environmental pollution cases in the PRC, especially the serious ones, often end up with minor awards of compensation, compared to the severe magnitude of the accidents; or, even worse, without any compensation.

In the case of the Tuo River pollution of 2004, for example, the direct losses from the water pollution were estimated at least as high as ¥300 million. However, the polluter only paid ¥11 million as compensation to the victim fishermen.[43] In the notorious case of the Songhua River pollution of 2005,[44] the direct losses were officially estimated as high as ¥69.8 million; in addition eight people died and 60 were injured. However the polluter, the Jilin Chemical Company was only fined ¥1 million and so far no civil lawsuits have been brought.[45] The fact is, in these serious cases, often central or local governments play a dominant role to discipline the officials, for instance, to prosecute the agents who are in charge, even to apologise for such a wrong in public and at end, to pay the bill by means of direct or indirect payments. In brief, for those severe cases, civil lawsuits initiated by the victims are so far only playing a negligible role in the PRC: either no case is brought against

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41 See generally on the protection of the marine environment in China: Guo Ping and Zhao Lujun, 'The legal protection of the marine environment in China: current situation and challenges', in M G Faure and J Hu (eds), *Prevention and compensation of marine pollution damage: Recent developments in Europe, China and the US* (Kluwer Law International, 2006) 285.

42 Accordingly, some scholars argue that it is a kind of absolute liability without any exemptions. See Zongyu, above n 29, 142.

43 See Qiu Feng, 'What has 11 Millions bought?', *South Metropolitan News*, 7 June 2004.

44 See the contributions in M Faure and Y Song (eds), *China and international environmental liability: Legal remedies for transboundary pollution* (Edward Elgar, 2008).

45 See China Forum of Environmental Journalists, <http://www.cfej.net/Environment/ShowArticle.asp?ArticleID=685>. See 'A Reflection on the Legal Awkwardness of the Administrative Fine of the Songhua River Pollution Accident: From Point of View of Liability for Ecologic Damages'. See also <http://www.sxhb.gov.cn/main/News.asp?Class_Id=1&Class_Name=%D0%C2%CE%C5%B6%AF%CC%AC&News_Id=3712>.

the polluters, as in the Songhua River pollution case; or the polluter pays a minimal amount of compensation to the victims, as in Tuo River pollution case.

In addition, for cases actually brought into civil courts, even if victims win, the enforcement of those judgments is not without problems for a range of reasons including: the bankruptcy of polluters;[46] local government protection of the polluters;[47] and the corruption of local officials.[48]

The New Tort Liability Law

General Structure

On 26 December 2009, the 11th Standing Committee of the National People's Congress of China approved the *Tort Liability Law of the PRC* (on the 12th meeting) to come into force on 1 July 2010.

The TLL includes 12 chapters and 92 articles. For the sake of simplifying the analysis, it can be seen as mainly consisting of two parts: the general parts (chs I–IV), which apply to cases not specified in specific liability fields and also supplement specific cases when necessary, and specific parts (chs V–XI), under which each chapter covers one specific liability field, like products liability in Chapter V; liability for car accident in Chapter VI; liability for medical harm in Chapter VII; environmental liability in Chapter VIII; liability for ultra-hazardous activities in Chapter IX; animal-raiser's liability in Chapter X; and liability for the harm caused by objects in Chapter XI. Chapter XII only contains article 92, stipulating that the Law comes into force 1 July 2010.

In particular, for the purpose of this article, Chapter VIII of the TLL and other relevant articles dealing with environmental liability will be addressed and analysed below.[49]

Strict Liability

In the TLL, there is one chapter specifically dealing with environmental liability, namely, Chapter VIII, which comprises four articles. According to article 65, environmental liability in the TLL falls into a strict liability regime and a polluter will be liable for the harm caused by his pollution irrespective of his fault or wrongfulness, which takes the same approach as the *Environmental Protection Law of 1989* and is contrary to the previous rule in the GPCL requiring the violation of relevant laws as a prerequisite.

Burden of Proof and Exemptions

Moreover, the polluter has the burden of proof with regard to causation and to the stipulated situations of exemption and mitigation of liability under article 66 of the TLL provides situations of exemption and mitigation of liability.[50] For example, when the injured

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46 This problem is much more severe for big pollution cases because of lack of financial insurance or solvency guarantees for polluters. For this point, see the discussion on compulsory liability insurance.

47 The situation is worse if the case is tried in one jurisdiction, but will be enforced in another jurisdiction, or the victims are not the resident of jurisdiction where the polluter is located or registered.

48 For enforcement problems with Chinese environmental laws in general, see Wang Canfa, 'Chinese Environmental Law Enforcement: Current Deficiencies and Suggested Reforms' (2008) 8 *Vermont Journal of Environmental Law* 161.

49 The relevant provisions are included in Appendix 1 of this article.

50 See Appendix 1.

contributes to the occurrence of harm, the liability of the polluter might be mitigated or exempted.[51] When the harm is caused by *force majeure*, the injurer will not be liable unless the law stipulates otherwise.[52]

When there are multiple polluters, the liability of each is apportioned according to the types of pollutants and the volume of emission.[53]

If the harm is caused by a third party's fault, the victim is entitled to compensation either from the polluter or from the third party. If the polluter compensates the victim for the harm, the polluter has a recourse right against the third party for the compensation.[54]

Ultra-Hazardous Activities

Chapter IX deals specifically with ultra-hazardous activities. The basic rule is similar to the rule in Chapter VIII; a strict liability rule. However, there are some differences with regard to stipulated situations of exemption and mitigation. In short, the stipulated situations of exemption and mitigation are specified according to different activities covered under each article in this Chapter IX.[55] Article 77, also stipulates that where there is liability for ultra-hazardous activities, when there are provisions limiting the amount of damages, these provisions shall prevail.[56]

Substantive Law

From the above discussion, it can be seen that the provisions in the TLL concerning environmental liability follow the pattern of previous specific statutes falling into a strict liability regime without the requirement of the violation of relevant laws. They differ markedly from the provisions in the GPCL. Whether a polluter abides by or violates the relevant formal laws has no impact on the determination of the civil liability of the polluter. The polluter will be liable as long as the harm and causation are proved and no stipulated situations of exemption apply.

Procedural Law

Article 66 of the TLL states very clearly that the polluter bears the burden of proof for the stipulated situations of exemptions and mitigation of liability, and for the causation as well.[57] Such a provision is missing in the GPCL and in the subject-specific statutes, and only appears in the Rules issued by the Supreme People's Court.[58]

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51 See TLL arts 26–27.

52 See TLL art 29.

53 See TLL art 67.

54 See TLL art 68.

55 The stipulated situations of exemption or mitigation are, to some extent, becoming easier to be met as the magnitude of harm or the risk of the activities is decreasing. For example, TLL arts 70–71 stipulate a strict liability for the operator of civil nuclear facilities and air vehicles, and they can be exempted only for the situations of war or the harm inflicted intentionally by the victim. However, under art 72 (concerning the liability for occupants or users of flammables, explosives, toxics, radioactive materials) there is an exemption if it can be proved that the harm is caused by the victim intentionally or by *force majeure*. The liability can also be mitigated when the injured are grossly negligent.

56 For instance, in the *Reply to the Issue of Nuclear Accident Civil Liability issued by the Council of State on 30 June 2007*, art 7 stipulates a cap on the amount of damages compensation for which operators can be held liable.

57 This article basically follows the Rules of 2002 issued by the Supreme People's Court. For the details on the Rules, see the procedural law discussion on burden of proof.

58 Although the Supreme People's Court has some rulings on this issue, it might be preferable to have such a rule formally written into legislation.

For the limitation of action, there is no relevant provision in this respect in the TLL, so it seems that the longer three-year limitation of action in the *Environmental Protection Law of 1989* is still valid and will apply to environmental liability cases.

Stipulated Exemptions and Mitigations

Before the TLL was enacted, the provisions concerning stipulated exemptions and mitigation of liability could be found in different statutes and were, to some extent, inconsistent.[59] In the TLL, one chapter, Chapter III, deals entirely with this issue. It consists of six articles and is generally applicable to all types of liability cases in the Law.[60] Chapter IX, concerning liability for ultra-hazardous activities, stipulates different rules according to each ultra-hazardous activity causing different types (and magnitudes) of harm under each article, which is quite unique and sensible.[61]

The Relationship Between the TLL and Existing Specific Statutes

The question arises about the relationship between the TLL and the relevant provisions in the GPCL. Article 124 of the GPCL will most likely be replaced by the TLL although this is not clearly stated in the TLL.[62]

The relationship between the TLL and specific legislation is even more uncertain. According to article 5 of Chapter I of the TLL, when other laws have specific provisions concerning tort liability, these provisions shall prevail.[63] So for existing statutes, which create a cause of action for environmental liability in specific fields, it remains unclear whether provisions in the TLL shall prevail or whether relevant provisions in the field-specific statutes take priority. This may need an interpretation by the Supreme People's Court.

Environmental Liability Insurance

In the TLL, there are no provisions with regard to mandatory environmental liability insurance. These provisions are only provided for in the *Regulations of the PRC concerning Environmental Protection in Offshore Oil Exploration and Exploitation of 1983* and in the *Ocean Environmental Protection Law of 1982, 1999*.[64]

For example, in the *Regulations of the PRC concerning Environmental Protection in Offshore Oil Exploration and Exploitation of 1983*, article 9 states that the entities shall purchase environmental liability insurance or other financial guarantees.

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59 See the earlier discussion on substantive environmental law in the PRC prior to the TLL.

60 For the text of this chapter, see the Appendix 1 to this article.

61 That is because, according to insights from economic analysis of tort law, the more risky the activity of the injurer and the higher the magnitude of potential harm, the more efficient it is for those undertaking ultra-hazardous activities to control those activities, that is to spend more to prevent harm resulting from those activities.

62 That is because the TLL is meant to establish civil liability systematically and to be part of the *Civil Code of the PRC* in future. However, there still exists a problem in this respect because the TLL was passed by the Standing Committee and the GPCL was made by the People's Congress, so they are not of the same importance. Whether the Standing Committee has the authority to promulgate a new act to replace an old one made by the People's Congress is questionable.

63 Chapter I of the TLL has a general scope, meaning that the provisions within that chapter shall apply to other chapters of the TLL unless there are different/specific provisions in those chapters.

64 In fact, in the *Reply to the Issue of Nuclear Accident Civil Liability issued by the Council of State on 30 June 2007*, art 8 also requires the operators to purchase some kind of financial guarantees or insurance.

In the *Ocean Environmental Protection Law of 1982*, article 28 states that vessels with a capacity of more than 2000 tons of oil shall hold a valid oil pollution liability insurance policy or an oil pollution liability credit certificate or other financial credit guarantee.[65]

In the *Ocean Environmental Protection Law of 1999*, article 66 stipulates that the State will establish and enforce a civil liability regime for vessel oil pollution damage. According to the principle of jointly bearing the risk among the vessel's owner and the cargo owner, the State will establish vessel oil pollution insurance and an oil pollution damage fund system. The specific measures to establish this system will be enacted by the Council of State.[66]

A voluntary environmental liability insurance program has also been trialled and promoted at some local governmental level since 1991, but it is reported to have been unsuccessful because the scope and cover of this insurance are limited, so enterprises are not willing to purchase this kind of liability insurance.[67]

Ecological Damage

There are no provisions in the TLL and other field-specific statutes with regard to ecological damage, although it has been suggested by several scholars.[68] In practice, there has been one case where a local government sought compensation for the environmental harm caused by the solid toxic waste deposited by polluters and where no injury ever occurred to persons or properties. In the notorious case of the Songhua River pollution, a lawsuit was brought for the ecological damage resulting from this pollution, but it was rejected by the Court.[69]

Critical Economic Analysis

The goal of this section is to use the economic principles outlined previously, in order to analyse pre-TLL and post-TLL Chinese environmental liability law as described above. At the same time, some differences between that previously existing environmental liability regime and the new TLL will be highlighted.

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65 This article basically follows the *International Convention on Civil Liability for Oil Pollution Damage* opened for signature 29 November 1969 (entered into force 19 June 1975), to which the PRC acceded in 1980. See on the application of this and subsequent international oil pollution liability conventions in China: Wang Hui, 'Transboundary vessel-source marine pollution – international legal framework and its application to China', in M Faure and Y Song (eds), *China and international environmental liability: Legal remedies for transboundary pollution* (Edward Elgar, 2008) 64.

66 On the state of compulsory insurance for oil pollution damage in China, see Chen Pingping, 'A study on the types of liablity of the insurer for oil pollution and that of the party liable', in M Faure and J Hu (eds), *Prevention and compensation of marine pollution damage: Recent developments in Europe, China and the US* (Kluwer Law International, 2006) 241.

67 See Zongyu, above n 29, 235–8; also see, Xiong Ying, Bie Tao and Wang Bin, 'Propositions of Environmental Liability Insurance in PRC', (2007) 29(1) *Modern Law Science* 96.

68 See, Liu Wenyan, Jiao Hua, 'On Ecological Infringement' (2005) 30(2) *North Environment* 10; Zhou Ke, *Ecological and Environmental Law* (Law Press, 2001). There is one article in the *Environmental Protection Law of 1989* (art 19) stating that measures must be taken to protect the ecological environment when exploring or utilising the natural resources. However, the wording of this article is very vague and how this requirement is to be fulfilled is not very clear.

69 See, the news from: <http://www.sxhb.gov.cn/main/News.asp?Class_Id=1&Class_Name=%D0%C2%CE%C5%B6%AF%CC%AC&News_Id=3712>. See also Wang Canfa, Yu Wen-Xuan, Li Dan and Li Jun-Hong, 'Pondering over the incident of Songhua river pollution from the perspective of environmental law' in M Faure and Y Song (eds), *China and international environmental liability. Legal remedies for transboundary pollution* (Edward Elgar, 2008) 291.

Basis of Liability

As noted previously, the situation with respect to environmental liability was not particularly clear prior to the enactment of the TLL. The general rule was enacted in the GPCL, which had as a prerequisite for liability that the polluter had to violate 'relevant statutes and regulations'. Taken literally, this would mean that there could only be liability when specific legislation had been violated. This would amount to a negligence regime, but a very restrictive one in the sense that if relevant laws would be absent, the polluter could no longer be held liable. However, as argued above, some scholars and cases provided a broader interpretation of this liability rule by holding that the liability would already apply in case of violation of a legally protected right or interest.

From an economic perspective, a negligence rule can provide efficient incentives for taking optimal care, but not for incorporating an efficient activity level as well. Moreover, in the strictest interpretation (ie only finding negligence when there is a violation of relevant laws), the scope of the liability based on negligence would potentially be too limited. Liability would then fail to provide potential polluters with incentives for care-taking in those cases where 'relevant laws' would either be absent or set an inefficiently low standard of care.

In addition, it should be mentioned that already under the old regime strict liability applied for specific cases, such as those falling under the *Ocean Protection Law*. Strict liability was also provided for in the GPCL for ultra-hazardous activities.

The introduction of strict liability specifically for ultra-hazardous activities is largely in line with economic analysis. Ultra-hazardous activities often have a unilateral nature (only the polluter influences the accident risk) or at least the polluter's influence on the accident risk can be considered more important than the victim's (in bilateral cases). In those cases, a strict liability rule has the advantage of providing both incentives for optimal care and for an optimal activity level. Moreover, in those ultra-hazardous activities the injurer may be best placed to acquire optimal information on risk-reducing activities.

The regime changed rather radically in the TLL. For environmental liability, the main liability rule now is strict liability. This not only has the advantage that some inefficiencies in the previous negligence regime (only applicable in case of violation of relevant laws) disappeared, but also that this general introduction of strict liability for environmental harm follows the suggestions from economic analysis.

Tort Law and Regulation

As outlined in the economic analysis, a crucial issue in any environmental liability regime is how it deals with the relationship between regulation and tort law. Given that many polluting activities are often regulated, this is, in practice, usually a crucial issue.

It has already been mentioned that the old regime had a curious way of dealing with the relationship between liability and regulation. This relationship seemed to be too strong in the sense that liability could only apply in case of violation of 'relevant laws'. As already mentioned, this inefficiently restricted the scope of environmental liability. The TLL does not requires this violation of 'relevant laws' and even radically opts for a strict liability regime. By choosing for the strict liability one can even assume (although this still has to be clarified in legal doctrine and case law in the PRC) that compliance with either regulation or an environmental permit will not free the polluter from liability. Compliance with regulation

or a permit is not mentioned as a specific defence. This has the major advantage that environmental liability thus provides incentives to potential polluters to take preventive measures, even if these would require going beyond the standards set in regulation or a permit. In this way, environmental liability can potentially generate a positive incentive effect.[70]

Exemptions

Already under the old regime, article 123 of the GPCL held that the strict liability for certain hazardous activities would not apply if the harm was inflicted intentionally by the victim. Such a contributory negligence defence is always crucial in bilateral accident cases (where the victim can equally influence the accident risk). If such a defence were not present, victims would lack an incentive in cases where they could equally reduce the accident risk by taking optimal care. However, the fact that only intentional behaviour of the victim reduces the liability of the polluter may somewhat limit the application of the defence. After all, there are equally many situations of non-intentional behaviour by a victim (for example, acting negligently), which could be captured through a broader contributory negligence defence.

Under the TLL, the general exemption rules as laid down in Chapter III apply. For example, article 26 provides that when the victim also contributes to the occurrence of the harm, the liability of the injurer can be mitigated. This amounts to a comparative negligence regime on the basis of which the liability of the injurer will be proportionally reduced (to the extent that the victim contributed to the harm as well). Law and economics literature has often held that such a comparative negligence regime constitutes an efficient liability rule.

In addition, it should be mentioned that the specific environmental laws (like the *Environmental Protection Law*, *Ocean Protection Law* or *Law of the PRC on Prevention and Control of Water Pollution*), which are all still applicable today in addition to the TLL, all stipulate that when harm is, for example, due to a natural disaster and when the injurer took timely and proper measures, they shall be exempted from liability. This rule again largely fits with suggestions from economic analysis. The economics of tort law holds that liability makes sense only if the potential injurer can take measures to reduce the accident risk. If, the potential polluter could in no way have avoided the occurrence of the accident (for example, because it was caused by a natural disaster), holding the injurer liable makes no sense from an economic perspective, since it never could positively affect his incentives for care or prevention. Excluding liability where the damage is caused by a natural disaster hence underlines that liability makes sense only if it can affect the injurer's incentives for prevention. The fact that the exemption only applies when the injurer took timely and proper measures moreover gives the potential injurer incentives to take those measures and is, thus, in line with economic analysis.

These field-specific environmental laws with provisions concerning tort liability still prevail after the entry into force of the TLL.

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[70] See generally on this issue the contributions in W H van Boom, M Lucas and C Kissling (eds), *Tort and regulatory law*, (Springer, 2007). For an economic analysis of the relationship between tort and regulation, see A Ogus 'The relationship between regulation and tort law: goals and strategies' in van Boom, Lucas and Kissling, 377; and M Faure, 'Economic analysis of tort and regulatory law' in van Boom, Lucas and Kissling, 399.

Causation

The previous legislation had few provisions concerning causation. Only article 74 of the *Opinions of the Supreme People's Court on Several Issues Concerning the Application of the Civil Procedure Law of the PRC of 1992* provided that in the case of an ultra-hazardous activity, the burden of proof shall be reversed. However, it was not so clear whether this burden only related to proof of unlawfulness, or also to proof of causation. A subsequent ruling of the Supreme People's Court of 2001 made clear that it is the injurer who has the burden of proof of the non-existence of causation between their activity and the harm inflicted. This provision is potentially problematic. Especially in cases where there is uncertainty over causation, the reversal of the burden of proof could mean that if the injurer were not able to show that his activity did not cause the loss, he could be held liable for harm that was not the result of his activity. An example of when such uncertainty might arise is where it is unknown whether a particular activity caused health damage or was the result of a natural cause. Particularly with environmental health damage, this may be a serious danger. Suppose that on average 100 persons in 10,000 in a country get a specific disease (say cancer). Now it turns out that in the neighbourhood of a power plant the number of people diagnosed with cancer is 120. Scientific evidence is unclear as to whether the additional 20 are related to the activity of the power plant, nor is it possible to identify which of the additional 20 individuals would suffer harm as a result of the presence of the power plant (if it all). A reversal of the burden of proof could amount to the situation that 120 victims (all suffering from the disease) would sue, whereas it is certain (at least statistically) that for 100 of the victims, the disease was not caused by the presence of the power plant, but the result of a natural cause. If, in such a case, the burden of proof in causation is shifted to the power plant owner, they must prove that the particular disease was not caused by their activities. If this is impossible, it would in effect lead to a liability of the power plant owner for all 120 cases, although statistically 100 cases of cancer were not caused by the power plant. An inefficient over-deterrence would be the result.[71]

This potential inefficiency is still present in the TLL, where article 66 holds that the polluter shall bear the burden of proof for the causation between the activity and the harm during the dispute. The danger of an inefficient over-deterrence resulting from a reversal of the burden of proving causation is, hence, still present.

A more efficient solution to this problem of causal uncertainty, suggested above, is a proportionate liability rule. In the example given above, this would mean that one would first exclude the background risk and then calculate the probability that the damage of a particular victim was caused by the tort of the polluter.

Strikingly, Chinese law does follow such a proportional approach when more than one tortfeasor is involved. Article 67 of the TLL stipulates that when more than two polluters are involved 'the liability of each shall be ascertained according to the factors such as the types of pollutant and the volumes of emissions'. In this case, Chinese law clearly rejects a joint and several liability rule and chooses a (probably more efficient) proportional approach.

[71] See S Shavell, 'Uncertainty over causation and the determination of civil liability' (1985) 28(3) *Journal of Law and Economics* 587.

Ecological Damage

Neither Chinese law before the TLL, nor the TLL has any specific solution for providing legal redress for ecological damage. As indicated in the overview above of the TLL, ecological damage (in contrast to personal injury, property damage or economic loss) is apparently not compensated under Chinese law. This may result in a serious under-deterrence of polluters, given that ecological damage (more particularly, to natural resources) primarily constitutes a social loss. Moreover, if no specific provision allows for circumstances where resources are not individually owned — for example, by granting standing either to a public authority or to a non-government organisation (NGO) — the effect will be that tort liability cannot be argued in all cases in which no individual victim with standing to sue can be identified. Under-deterrence of the potential polluter may obviously be the result.

Compulsory Liability Insurance

As previously mentioned in the economic analysis discussion, a liability system can be totally ineffective if a potential polluter would not be able to compensate for the harm he would cause. Especially when a strict liability rule is introduced, this under-deterrence following from a potential insolvency risk is quite serious. It is striking that environmental liability law in the PRC has, especially as far as the specific environmental laws were concerned, many strict liabilities and, at the same time, mandatory solvency guarantees. This is, for example, the case in the *Marine Environment Protection Law* concerning oil pollution damage.[72] This combination of strict liability with solvency guarantees is hence in line with economic analysis. However, it is striking that the TLL introduces a general strict liability rule, but is silent on the issue of solvency guarantees. This may potentially constitute a serious problem of under-deterrence.

Damages and Remedies

The final question that arises is what remedies are possible if environmental liability is established and how damages are calculated. From an economic perspective, it should again be stressed that it is important that the damages that are to be paid by the polluter should equal social costs. That requires an adequate calculation of ecological losses. Environmental economics has developed a variety of techniques that enable calculation of the value of ecological damage. However, none of those appear to have been applied in the PRC.

Looking at the amount of damages awarded in the few environmental court cases in the PRC, one can notice that in one case (the Tuo River pollution case) the compensation due by the polluter by the fishermen (¥11 million) was only a fraction of the real estimated damage (¥300 million). In another incident (the Songhua river pollution case), where substantial personal injury was suffered as well as damage to the environment, no civil liability suit was brought at all. These examples, hence, cast serious doubt on the effectiveness of civil liability as an instrument of deterrence of environmental harm in the PRC.

[72] Although specific measures to carry out this obligation to obtain a solvency guarantee still need to be established.

Policy Recommendations

Of course, economic analysis is only one of potentially many instruments that could be used to analyse environmental liability. Other approaches, for example, based on distributional justice or principles of environmental law[73] could be used as well. One should, therefore, keep in mind that the policy recommendations made here are merely based on 'one view of the cathedral',[74] being economic analysis. However, the critical perspective provided by economic analysis presumably largely goes hand-in-hand with other approaches, such as ecological approaches, which would equally call for a more generous approach to environmental liability than is currently the case in the PRC.

Following from the summary of economic recommendations concerning environmental liability provided earlier in this article,, it may be clear that the criticism and, hence, recommendations made here are not so much related to the first three points discussed (basis of liability, relationship with regulation and exemptions) but rather to the last four.

First, as far as causation is concerned, a reversal of the burden of proof in causation may undoubtedly benefit potential victims, but could potentially stretch liability too much, even leading to over-deterrence. In order to avoid that problem, it may be advisable to replace the rule of the reversal of the burden of proof in causation with a proportionate liability rule. In that way, the polluter would be liable to compensate only for the damage that resulted from his activity. This seems both efficient and fair.

Second, it seems important to improve the working of environmental liability (and, more particularly, its deterrent effect) by introducing rules that allow the application of environmental liability law when harm is widespread and no individual victim has a sufficient incentive to bring a lawsuit or can prove a direct personal harm. This could be done by, for example, granting a right of standing to NGOs (if they meet specific conditions) or by appointing a trustee, such as a public authority, who could act on behalf of a natural resource that may have been damaged.

Third, it seems important that the true social costs of ecological losses are accurately estimated using tools developed in environmental economics, like hedonic pricing and contingent valuation. Moreover, possibilities could also be developed to allow judges to grant injunctions, for example, to remedy pollution that occurred in the past or to prevent further pollution from occurring.

Fourth, it seems essential to combine the new general strict liability rule as introduced in the TLL with solvency guarantees. Otherwise, there is a serious danger that strict liability may lead to under-deterrence in all cases where the magnitude of the harm is greater than the polluter's wealth (which is, potentially, often the case).

Conclusion

In this article environmental liability in the PRC was reviewed using an economic analysis of law. The article examined the possibilities for victims to obtain compensation under Chinese law as it existed prior to December 2009 and paid special attention to the important

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[73] Such as the polluter-pays principle, the prevention principle and the precautionary principle.

[74] To paraphrase the well-known article by Calabresi and Melamed: G Calabresi and D Melamed, 'Property rules, liability rules and inalienability: One view of the cathedral' (1972) 85 *Harvard Law Review* 1089.

changes brought in by the TLL, which has a dedicated chapter on environmental liability, as well as one on damage resulting from hazardous (high risk) activities.

The starting point for economic analysis is that a liability rule should provide incentives to potential polluters to prevent pollution by following an optimal care and optimal activity level. In cases where potential victims can contribute to the harm, they should also be given incentives for optimal care-taking. These basic points are clearly reflected in the Chinese rules concerning environmental liability and this was largely already the case prior to the TLL. However, a basic problem with the previous law was that it required 'violation of relevant laws' as a basis for liability. Even if strict interpretation of this notion was disputed in legal doctrine, it could potentially restrict environmental liability of polluters in an inefficient way. That shortcoming has now been removed with the general introduction of a strict liability rule. Environmental liability is, hence, disconnected from regulation: from the wording of the TLL it seems to follow that even in case of compliance with regulation, the polluter is still strictly liable — although it remains to be seen whether the strict liability will indeed be interpreted in this way by the courts.

However, there is one potential problem with the introduction of strict liability, since it is not accompanied with solvency guarantees. This could lead to under-deterrence, for example, in cases where polluters are corporate entities and, hence, are protected by limited liability.

Even though the TLL seems an important step in the development of an effective environmental liability regime in the PRC, further improvements are still possible. These relate especially to the fact that in practice it may still be difficult for a victim to bring a tort suit on the basis of environmental harm. Even when practical issues (like the need for legal aid, legal expertise and an independent and sufficiently capable judiciary) are disregarded, the problem arises that most victims will not have a sufficient incentive to bring a suit unless they have suffered an individual harm (like fishermen suffering losses as the result of the pollution of a river). Many pollution cases result in damage of a widespread nature. The damage can be significant, but no individual victim may have sufficient incentive to bring a lawsuit. In order to enable the use of tort law in those cases, mechanisms have to be developed, such as granting NGOs standing or appointing a trustee who could sue on behalf of the damaged natural environment.

Of course, it is acknowledged that environmental liability is not the only tool that guides the behaviour of potential injurers. Other policy instruments, like regulation and environmental taxes, may play a role. However, empirical research has demonstrated that these regulatory tools are never perfect,[75] as a result of which tort liability can play an important additional role in providing incentives to potential polluters to avoid polluting. Moreover, environmental liability may be an important instrument for pollution victims to obtain compensation for the damage they have suffered.

Even the implementation of the recommendations formulated in this article will not necessarily lead to an effective environmental liability regime in the PRC. Much will obviously also depend upon the courage and ability of judicial authorities to act in an independent manner and force polluters to pay substantial amounts of compensation, including in cases where these are major corporations with strong ties to the political elite. However, even that elite will realise that it is in the interest of the PRC to use tools like environmental liability as instruments to internalise external costs by pollution. In this way environmental liability can play a modest but important role in the greening of the PRC.

[75] See D N Dewees, D Duff and M Trebilcock, *Exploring the domain of accident law: taking the facts seriously* (Oxford University Press, 1996).

Appendix 1: Translation of Chapters II, III, VIII and IX of the Tort Liability Law of 2009 of PRC

Chapter II: The Establishment and Forms of Liability

Article 15: Forms of tort liability are:

1) Injunction;
2) Removal of the obstruction
3) Elimination of risk;
4) Return of property;
5) Restitution;
6) Damage compensation;
7) Apology;
8) Elimination of negative impact and restore of reputation.

These forms of tort liability can apply separately or simultaneously.

Chapter III: The Stipulated Situations of Exemption and Mitigation of Liability

Article 26: when the injured also attributes to the occurrence of the harm, the liability of the injurer might be mitigated.

Article 27: the injurer will not be liable when the harm is caused intentionally by the injured.

Article 28: when the harm is caused by a third party, the third party shall be liable.

Article 29: when the harm is caused by force majeure, the injurer will not be liable unless the law stipulates otherwise.

Article 30: when the harm is caused by justifiable defense, defender will not be liable. When the self-defense exceeds the necessity and causes unjustifiable harm, the defender shall be liable for the unnecessary harm.

Article 31: when the harm is caused by necessity, the person who sets off such a risk shall be held liable to the injured for the harm. When such a risk is caused by natural forces, the person who acts upon shall not be held liable or indemnify the injured to an appropriate extent. When that person who acts upon takes unnecessary measures or exceeds the necessity and causes unjustifiable harm, he shall be liable for such unnecessary harm.

Chapter VIII: Environmental Liability

Article 65: the polluter shall be held liable for the harm caused by his pollution.

Article 66: the polluter shall bear the burden of proof for the stipulated situations of exemption or mitigation of liability and for the causation between the activity and the harm during the dispute.

Article 67: when there are more than two polluters involved, the liability of each shall be ascertained according to the factors such as the types of pollutant and the volume of emission.

Article 68: for the harm caused by a third party's fault, the injured may claim damage compensation either from the polluter or from the third party. When the polluter compensates the injurer, the polluter has the recourse to the third party.

Chapter IX: Liability for Ultra-hazardous Activities

Article 69: when engaging into ultra-hazardous activities and causing harm to others, the injurer shall be held liable.

Article 70: when civil nuclear facility accidents happen, the operator shall be liable unless he can prove that such harm is caused by war or inflicted by the victim intentionally.

Article 71: when civil air crafts cause harm to others, the operator shall be liable unless he can prove that harm is inflicted by the victim intentionally.

Article 72: occupants or users of the flammables, explosives, toxics, radioactive materials, and other ultra-hazardous materials, shall be liable for the harm to others when occupying or utilising such materials unless he can prove that such harm is inflicted by the victim intentionally or caused by force majeure. When the injured is grossly negligent, the liability of occupants or users might be mitigated.

Article 73: when engaging into high-altitude, high-voltage, underground-digging activities or operating high-speed track vehicles and causing harm to others, the operator shall be liable unless he can prove that the harm is inflicted by the victim intentionally or caused by force majeure. When the injured also contributes to the harm, the liability of operators might be mitigated.

Article 74: the owner of lost or dumped ultra-hazardous objects shall be liable for the harm caused by such objects. When the owner put into the hands of a keeper such objects, the keeper is liable for the harm. When the owner also contributes to the harm, they are jointly liable.

Article 75: when occupying ultra-hazardous objects unlawfully and causing harm to others, the unlawful occupant shall be liable. When the owner or the keeper can not prove that they have exerted a high duty of care, they are jointly liable with the illegal occupant.

Article 76: for the injured entering into ultra-hazardous activity areas or storage places with ultra-hazardous objects without any permission, the keeper's liability for the harm might be mitigated or exempted as long as he has taken safety measures and fulfill the duty of warning.

Article 77: for the liability of ultra-hazardous activities, when there are laws limiting the amount of damages, these laws shall prevail.

Appendix 2: Translation of Article 74 of the Opinions of the Supreme People's Court on Several Issues Concerning the Application of the Civil Procedure Law of the PRC of 1992

Article 74: in the dispute, the claimant has the burden of proof for his own claim. Nevertheless, in the following cases, the defendant has the burden of proof when he denies the claims made by the plaintiff:

1) Patent infringement claims with respect to the product manufacturing method patent;
2) Claims concerning harm from ultra-hazardous activities;
3) Claims for damage compensation from environmental pollution;
4) Claims concerning harm caused by the falling, collapse or of buildings or objects in the building;
5) Claims with respect to harm caused by domestic animals;
6) Relevant laws stipulating that defendants shall bear the burden of proof.

Appendix 3: Translation of Section 3 of Article 4 in the Rules of Evidence in Civil Lawsuits by the Supreme People's Court of 2001

Article 4: for the following tort cases, the burden of proof is stipulated as:

Section 1: …

Section 2: …

Section 3: for the claims for damages compensation from environmental pollution, the injurer has the burden of proof on the stipulated situations of exemption and non-existence of causation between the activities and the harm inflicted.