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Double-Faceted Environmental Civil Liability and the Separate-Regulatory Paradigm: An Inspiration for China

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Abstract: The recognition of the intrinsic value of the environment and natural resources contributed to the establishment of liability for damage to the environment per se, which, coupled with the traditional environmental tort liability, constitute the double facets of environmental civil liability. Although the two facets share some common characteristics, their distinct focuses indicate that they cannot be fully covered by tort law or environmental law systems alone. As a result, an international trend toward the regulatory approach to environmental civil liability, which is referred to in this article as the “separate-regulatory paradigm”, is emerging. In such a pattern, as followed by the United States (US) and the European Union (EU), environmental tort liability and liability for environmental damage are mainly regulated by tort law and environmental statutes, respectively. However, China, relying substantially on its civil law system to address liability for environmental harm, seems to deviate from this paradigm. This article analyzes the significance of the separate-regulatory paradigm and argues that it has profound implications for China. This article suggests a separate statutory liability scheme that moves beyond the existing Chinese civil law framework to achieve the full recovery of environmental damage.

Keywords: environmental civil liability; separate-regulatory paradigm; environmental tort; environmental damage; China



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1. Introduction

Effectively deterring environmental degradation and adequately remediating environmental harm are among the most pressing and arduous tasks confronting modern industrial society. One frequently used regulatory tool to facilitate this task is the environmental liability regime [1–3]. Civil liability, as distinct from administrative liability and criminal liability, involves compensation and the restoration of damages, and constitutes an essential part of this regime. In this article, environmental civil liability refers to non-contractual liability that covers not only traditional tort liability but also regimes under which the environmental saboteur is required to clean up, repair, restore the environment and provide corresponding compensation.

At the outset, in jurisdictions such as the US and China, environmental civil liability focused exclusively on personal and property damage arising from environmental degradation [4]. However, with the evolution of environmental ethics, the anthropocentric outlook has come to be regarded as seriously insufficient, and the intrinsic value of the environment and natural resources has been gradually recognized [5] (p. 148). Consequently, damage to the environment and natural resources per se was included in the application of liability law [6–10]. This development gives rise to the double facets of environmental civil liability, including the traditional environmental tort liability and liability for environmental damage, with the former focusing on personal injury and property damage [11–13] while the latter focuses on damage to the environment itself (environmental damage) [14,15]. Although the two facets are similar in certain respects, they are widely divergent in their types of harm, remedy mechanisms, compensation standards, etc., meaning that they cannot be fully covered by tort law or environmental law systems alone. In response, a

common pathway across different jurisdictions has emerged, which is referred to in this article as the “separate-regulatory paradigm”. In such a pattern, as followed by the US and the EU, environmental tort liability and liability for environmental damage are mainly regulated by tort law and environmental statutes, respectively.

In contrast, China, with a civil law tradition clearly distinguishing between private law and public law, seems to depart from the separate-regulatory paradigm and, instead, overly relies on its private law to remedy environmental damage. Its newly passed Civil Code (a typical private law) contains clauses on both environmental tort liability and liability for environmental damage, but it has not adopted a comprehensive environmental statute specifically addressing liability for environmental damage, such as the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) [6] of the US and the Environmental Liability Directive (ELD) [7] of the EU. Against this backdrop, an important problem that remains to be resolved is whether the new environmental liability regime established by the Chinese Civil Code is sufficient for the effective remediation of the environment, and if not, whether the liability regimes of the US and the EU can provide a feasible and valuable reference? This article therefore tries to address this problem by delving into the separate-regulatory paradigm practiced by the US and the EU, and especially its theoretical and practical significance, so as to assess whether it is illuminative and provides an alternative avenue for the environmental liability scheme in China.

This article employs a comparative law methodology, which is playing a crucial role in the study of our increasingly globally linked world [16]. The confrontation with similar types of environmental stress has triggered similar legal responses among different jurisdictions [17] (p. 562). It further contributed to the internationalization of environmental legal norms [18], exemplified, for instance, by the spreading of the American legal style [19]. Thus, this article probes into the environmental liability framework of the US and the EU, analyzing their similarities and differences and reflecting on their implications for China. Difficulties, of course, exist in applying such a methodology given the different legal systems adopted by these jurisdictions. However, this does not negate its feasibility and value. China and the vast majority of EU Member States (with the exception of Ireland) are civil law countries, and the fact that the US has a common law system does not preclude its legal interactions with China. Transplantation, international harmonization and transnational communication have contributed to cross-national environmental law and policy convergence [17,18,20]. This is also happening between the civil law and the common law systems, with their converging treatment of most legal issues [21,22]. In fact, just like CERCLA has exerted an impact on the ELD, the American legal style is spreading to other jurisdictions, including both common law and civil law countries [19,23–25]. The historical development of Chinese environmental law also suggests American influence [18] (pp. 627–629), which further evidences the feasibility of legal interactions between Chinese and other legal systems and thereby the value of this research.

This article first explores the two-sided nature of environmental civil liability. Then, it illustrates the global trend toward a separate-regulatory paradigm by tracking the legislative and judicial practices of the US and the EU, and analyzes the theoretical and practical significance of this paradigm. Next, it sets out the evolving normative development of Chinese legislation on environmental civil liability, examines why China has deviated from global patterns, and the relative strengths and weaknesses of such an approach. Finally, it suggests a preferable alternative for China, with a clearer boundary between its civil law and environmental law, through civil law mainly regulating environmental tort liability and an environment statute exclusively focusing on damage to the environment itself.

2. Double Facets of Environmental Civil Liability

2.1. From “Damage to Human Beings” to “Damage to the Environment”

Compensating for harm has been consistently considered as the domain of tort law [26] (p. 12), and tort liability is premised on setbacks to a person’s interests and rejecting damage to natural objects as actionable harm [27] (p. 822). Traditionally, therefore,

tort law only covered environmentally mediated harm to human use, and environmental civil liability only concerns damage to human beings [4]. This legal distinction reflects anthropocentric value judgments that place human interests at the center of the world and regard the natural environment as having only instrumental value to humans [28] (p. 86).

However, with industrial expansion and a steep increase in human-produced disasters, the human-centered perspective became a primary target of critique and was often considered to be the root cause of problems created by human action within the ecosphere [29]. Environmentalists advocate that the environment has intrinsic value and should be protected for its own sake [30] (pp. 25–26). According to Aldo Leopold's land ethic, humanity is but one part of a dynamic ecosystem and "a thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise" [31] (pp. 224–225). Plumwood further argues that the human-centered perspective is anti-ecological and ignores human's interconnectedness with and dependency upon non-human nature [32] (pp. 105, 122).

The efforts of environmentalists contributed to changes in environmental values that are increasingly reflected in the legal system [6–10]. It was gradually realized that the requirement of property and personal injury as the basis for tort actions was not in line with the broader objectives of environmental repair [33]. In response, national and supranational liability regimes emerged that recognize damage to the environment as a separate category of compensable damage distinct from the traditional category of damage to property and personal interests [6–10]. For instance, large quantities of environmental statutes enacted by the US Congress since the 1970s no longer merely focused on damage to human beings, but placed more emphasis on the protection of the natural environment. There exist specific liability statutes such as the CERCLA of 1980 and the Oil Pollution Act (OPA) of 1990 [34] that explicitly address damage to the environment and natural resources, notwithstanding their different scopes of application. These environmental statutes are transformative, representing "a radical break from the western legal tradition" because they respond to damage to natural systems that are traditionally not recognized as having legal personalities [35] (p. 225).

2.2. *A Comparison of the Two Facets of Liability*

Recognizing damage to the environment itself reflects a more sophisticated understanding of the relationship between humans and the environment. It leads to two similar but different species of environmental civil liability: environmental tort liability and liability for environmental damage. The former relates to property damage or personal harm that happens to be environmental in nature, while the latter concentrates on harm to the environment per se and aims to achieve environmental cleanup and restoration [14,36]. The scope of liability for environmental damage may vary in different legal systems depending on the definitions of environmental damage. For example, in the US, environmental damage is related to the cleanup costs associated with the inflicted harm and to "damages for injury to, destruction of, or loss of natural resources, including the reasonable costs of assessing such injury, destruction, or loss" [6] (art. 9607(a)(4)(c)). The EU's ELD defines environmental damage as "a measurable adverse change in a natural resource or measurable impairment of a natural resource service which may occur directly or indirectly" [7] (art. 2). In China, it means an adverse change in environmental and biological elements and the degradation of ecosystems composed of these elements due to environmental pollution and ecological destruction [37]. Despite different definitions, generally speaking, liability for environmental damage focuses on environmental protection and does not address damage to human health, or private economic interests, which is, by contrast, the very focus of traditional environmental tort liability. The two facets of environmental liability may share a set of characteristics that make them correlated, but their unique features remain distinguishable.

The two facets of liability are similar in certain respects. First, they both involve, although are not confined to, the long latency of harm. Environmental harm, whether to human beings or to the environment, is often far removed in time and space from the actions

that cause them. It may take years, or even decades, for hazardous pollutants to accumulate in the environment or people's bodies to threshold amounts that have an adverse effect, and it may take an additional period of time before the effect turns into detectable and legally recognizable harm [38] (p. 400). In addition, the migration of pollutants may remove environmental harm from the place where hazardous pollutants are released, of which the migration of river water contamination is a typical example. Second, environmental cases are frequently characterized by their complex causation. The long-latent character of environmental harm makes it difficult for the plaintiff, as is often required in liability cases, to establish a causal link between the defendant's conduct and the environmental harm suffered. When the problems of onerous scientific proof, indeterminate defendants and high costs are involved, the complexities are compounded [38] (p. 400).

Another dimension that makes the two facets of liability intertwined is that they usually arise consecutively, and their scope sometimes overlaps. Since environmental torts are environmentally mediated injuries to humans, the environment itself serves as a medium through which humans may suffer harm, indicating that damage to humans usually happens after damage to the environment occurs. Furthermore, when individuals and collectives have property and other legally enforceable rights over certain parts of the environment, interference with those natural objects may give rise to the intersection of environmental tort liability and liability for environmental damage.

Despite those similarities, it is possible and necessary to distinguish the two facets of liability. First, they are premised on different types of harm. Tort law has traditionally demanded property and personal injury as a prerequisite to imposing liability and offering recovery. Liability for environmental damage, however, only requires setbacks to the environment and natural resources to satisfy a cause of action, irrespective of whether damage to persons exists or not. Accordingly, monetary damages are usually satisfactory means of remedying property and personal injury, while the most desirable remedy for environmental damage is restoring or replacing the injured environment and resources. Even if compensation is provided for environmental damage, the compensation standard is quite different from that in environmental tort cases.

In addition, to impose two facets of liability, different types of lawsuits with different standing requirements may be involved. Take the Chinese practice as an example. In order to hold the environmental offender accountable for property and personal injury, the victim must bring an environmental tort action, and to establish standing, he must have suffered a direct injury in the case [39]. To impose civil liability for environmental damage, however, the legally viable choice would be environmental public-interest litigation initiated by qualified social organizations and public authorities or environmental damage compensation litigation by authorized governmental authorities. Similarly, in the US, apart from the traditional environmental tort litigation, there also exist cost recovery actions and natural resource damages litigation under CERCLA for environmental damage.

3. The International Trend toward a Separate-Regulatory Paradigm

Obvious distinctions between the two facets of environmental liability indicate that liability for environmental damage cannot easily fit within traditional regimes of tort liability. As a result, an international trend toward a separate-regulatory paradigm is emerging, with tort law and environmental law regulating environmental tort liability and liability for environmental damage, respectively. The practices of the US and the EU are exemplars of this paradigm.

3.1. The United States: From Common Law to Environmental Statutes

Before the advent of effective environmental statutes in the US in the 1970s, the common law system served as the primary vehicle for addressing environmental problems for centuries [40] (p. 89). Common law theories frequently used in environmental torts include nuisance (private nuisance and public nuisance), trespass, negligence and strict liability for abnormally dangerous activities [41]. Nuisance, *inter alia*, is most widely used

due to its broad latitude covering pollution of air, water or land by almost any means. A private nuisance is an unreasonable interference with the private use and enjoyment of land, such as polluting the air or releasing hazardous substances on another's land [27] (p. 822). A public nuisance refers to "an unreasonable interference with a right common to the general public", and a typical example in the environmental context is pollution of public waterways [27] (p. 821 B). Trespassing law protects the right to exclusive possession of land, and physical intrusion of land by pollutants without permission constitutes a trespass [27] (p. 165). Negligence and strict liability for abnormally dangerous activities remain substantially broader since they are not limited to harm to interests of land. Conduct is negligent if it creates an unreasonable risk of harm to others due to the breach of a duty of care, such as the release of hazardous substances into the environment, or the failure to warn or reduce the associated risk of harm [27] (pp. 321–322). Strict liability for abnormally dangerous activities recognizes a liability for personal or property injury without requiring evidence of fault [27] (p. 520). Examples include drilling oil wells or operating refineries in thickly settled communities [42], or factories emitting smoke, dust or noxious gases amid a town [43].

Tort law paradigms have been fairly effective in remedying harm to personal and property interests. Nevertheless, following a human-centered approach, the tort system necessitates that the plaintiff had suffered a direct injury to establish standing and maintain an action [13] (p. 915). Actions alleging harm to the environment itself were historically treated by the US courts with strong skepticism and were often unsuccessful due to a lack of standing [44,45]. As a result, the tort system was a "blunt instrument" for tackling harm to the environment [36] (p. 750), and "cannot be relied upon to serve as society's primary environmental law strategy" [46] (p. 283).

The insufficiency of tort law in ensuring an optimal level of environmental safety served as a significant catalyst for the increase in environmental statutes and regulations [46], [47] (p. 160) [48] (p. 149). In addition, appalling environmental incidents, increasing environmental awareness, surging environmental movements and leading environmental groups were further contributing factors [49] (pp. 1–24) [50] (p. 4). Since the National Environmental Policy Act, environmental statutes have proliferated [51], outgrowing common law doctrines and constituting the largest proportion of American environmental law today.

Among all the environmental statutes, CERCLA is particularly prominent as a comprehensive liability act. Unlike purely prospective and regulatory statutes with a focus on ex ante regulation and pollution prevention, CERCLA establishes a far-reaching liability framework and provides remedies for contaminated sites and injured natural resources after environmental damage has already occurred. On the one hand, CERCLA stipulates response actions and a cost-recovery mechanism under which government entities may compel potentially responsible parties (PRPs) to clean up contaminated sites, or government entities and private parties may sue a responsible "person" to recover cleanup costs. On the other hand, CERCLA imposes liability for damage to natural resources by authorizing federal, state, territorial and tribal governments to seek compensation for natural resource damages (NRD) resulting from the release of such contaminants as hazardous substances. NRD compensation is intended to restore the natural environment to its baseline condition and compensate the public for the interim lost use from the time of contamination until restoration, as well as the reasonable costs of assessing NRD [52] (p. 154).

CERCLA expanded traditional notions of liability by including harm to the environment and natural resources in the liability regime. It is thus considered as "a landmark development in the evolution of environmental liability" [53] (p. 294) and one of "the seven statutory wonders of U.S. environmental law" [54] (p. 1010). Although the enforcement of CERCLA has its limitations, notably due to being underfunded [55], for the past decades it has produced impressive results. It has addressed contamination at 3876 sites across the country and obtained about \$38.9 billion in private party commitments for cleanup work

and over \$46.3 billion in recovered costs from past cleanups [56], fulfilling its mission of protecting human health and the environment.

Common law doctrines have now been supplemented, or in some cases supplanted, by environmental statutes in the US [57]. It is worth noting, however, that they retain considerable vitality and remain the exclusive mechanism to resolve certain environmental injuries, especially when courts consider damage to property and personal rights, or review environmental regulations and enforce compliance with them [47] (p. 128). Therefore, tort law and environmental statutes are not two opposing mechanisms, but rather two distinct systems with different objectives [58]. That is, tort law provides corrective justice to injured individuals, while environmental statutes provide prospective regulation and impose liability for environmental damage. Likewise, CERCLA does not preempt the tort system but intends to operate in tandem with it [6] (arts. 9614(a)–(b)). They constitute two parallel liability regimes responding to damage to the environment and damage to individuals, respectively. Accordingly, it can be concluded that the US has adopted a separate-regulatory approach to environmental civil liability.

3.2. The European Union: An EU-Wide Framework for Environmental Liability

The public-law-oriented liability system of CERCLA is pioneering and has been highly influential for similar liability schemes elsewhere [24] (p. 727), of which the ELD of the EU is a good example.

Since the signing of the Single European Act in 1986, the European Communities (now the European Union) officially embarked on the journey to harmonize laws among Member States and resolve policy discrepancies [59]. Environmental law and policy is clearly one element of these harmonization efforts, and environmental liability is an important part of European environmental law and policy [60] (p. 35). Early EU environmental liability provisions are scattered across such legal documents as the Product Liability Directive passed by the Council of the European Communities in 1985. This Directive regards pollutants as a type of product, and imposes liability for excessive emissions based on defective products causing harm to property and personal interests [61]. Therefore, in addition to tort liability in Member States' legal systems, the early EU environmental liability regime only covers traditional damage to individuals, with no response to damage to the environment.

In 1989, the Proposal for a Directive on Civil Liability for Damage Caused by Waste was drafted. It put forward the concept of "impairment of the environment", which was different from traditional personal and property damage [62]. In 1993, The Green Paper on Remedying Environmental Damage further discussed the concept of "impairment of the environment" and pointed out the importance of a clear definition of this concept [63]. The 2000 White Paper on Environmental Liability further proposed a more comprehensive liability scheme embracing both "traditional damage" and "environmental damage" [64]. In April 2004, the ELD was adopted. It sets up an EU-wide framework for environmental liability to prevent and remedy environmental damage that "cannot be sufficiently achieved by the Member States" [7]. In the process of the development and elaboration of the liability regime, such external factors as the Lugano Convention adopted by members of the Council of Europe had some influence [65,66] (p. 257). However, it was the US CERCLA that played a decisive role in shaping the regulatory approach of the Directive [53] (p. 295).

The pivotal influence of CERCLA on the ELD contributes to their similarities. In particular, they both adopt a public law compensation scheme that applies exclusively to environmental damage, excluding traditional damage to private property or persons [7] (preamble, paras. 11,14; art. 3.3). As with CERCLA, the Directive adopts a public law compensation scheme, though with civil-law aspects. It grants exclusive powers to the "competent authority" in Member States to implement the liability provisions against the operator whose activities have caused environmental damage or created an imminent threat of such damage [7] (preamble, para. 15). In terms of specific liability, the Directive requires that the responsible operator take necessary preventive or remedial measures

in case of damage or an imminent threat of such damage. In cases where a competent authority acts by itself or through a third party in the place of an operator, the operator should bear the costs incurred thereby [7] (preamble, para. 18). Besides, the operator should also bear the costs of assessing environmental damage or an imminent threat of such damage [7] (preamble, para. 18). In addition, the Directive provides three levels of remediation for environmental damage: primary, complementary and compensatory remediation [7] (Annex II).

There are also key differences between CERCLA and the ELD. In contrast to CERCLA, the ELD does not apply retroactively [7] (art. 17), and its strict liability is more limited. Under the ELD, strict liability only applies to high-risk occupational activities listed in Annex III, while operators of other occupational activities are liable only if they're at fault or negligent [7] (art. 3.1). The Directive does not establish a Superfund as in CERCLA to effectively cover clean-up and restoration costs, but simply encourages the use by operators of appropriate insurance or other financial security instruments. Furthermore, the definitions of environmental damage and responsible persons are also different under CERCLA and the ELD. Under CERCLA, natural resources are defined as 'land, fish, wildlife, biota, air, water, ground water, drinking water supplies, and other such resources', while under the ELD, natural resource means protected species and natural habitats, water, and land. CERCLA imposes status liability on a potentially responsible party who falls within one of the four categories, while a liable person under the ELD is the operator of an occupational activity or the person who has been delegated 'decisive economic power over the technical functioning of such an activity' [6] (art. 9607) [7] (art. 2).

With its general framework and broad language, much of the actual impact of the Directive is left to its transposition within Member States. It requires that Member States bring into force the laws, regulations and administrative provisions necessary to comply with this Directive by 30 April 2007 [7] (art. 19). The Directive also leaves much discretion to Member States, allowing them to maintain or adopt more stringent provisions in relation to the prevention and remedying of environmental damage [7] (art. 16.1). Although only four Member States completed this task as scheduled, the Directive was transposed into the national law of all Member States by July 2010 [67] (pp. 31–116).

Overall, leaving aside the debate over its advantages and drawbacks [68,69], like CERCLA, the Directive emphasizes the importance of compensating for damage to the environment itself and spurs EU Member States to upgrade their national laws in this area. It may also facilitate the fulfilment of broader EU policy objectives, such as promoting the implementation of the polluter-pays principle and boosting private compliance with EU environmental law [70]. The effectiveness of the ELD is hampered by several obstacles, such as implementation discrepancies among Member States [71–73], but its added value and positive impact on the development of environmental policies in the EU has already been proven [74] (pp. 29–38). From April 2007 to April 2013, approximately 1245 confirmed incidents had triggered the application of the Directive regime throughout the EU [71]. Besides, the Commission has adopted a Multi-Annual Work Programme for 2017–2020, with the intention of tackling the implementation challenges in a structured and systematic way so that the ELD can deliver better on its original objectives, that is, to prevent and to remedy environmental damage based on the polluter-pays principle and thus to contribute to a better environment by preserving the natural resources (biodiversity, water, land) in the EU [75].

It should be noted that the Directive does not affect rights of compensation for traditional damage to private property and persons granted under Member States' tort liability schemes or under any relevant international agreement regulating civil liability [7] (paras. 11, 14, 29; art 16.2). Thus, the EU now also has a separate-regulatory approach concerning environmental civil liability.

4. The Significance of the Separate-Regulatory Paradigm

This separate-regulatory paradigm is strongly backed up by its significance in maintaining a clear line between tort law and environmental law, providing remedies tailored to the natural environment, and bypassing the logical difficulties in incorporating environmental damage into the tort system. The failure of tort law to fashion an effective remedy to the damaged environment in complex environmental issues such as climate change further illustrates such significance.

4.1. *Providing Particularized Remedy to the Natural Environment*

There is a long-standing doctrinal debate on the role of tort law and environmental law in achieving environmental objectives. The current scholarly consensus is that environmental law has developed to cope with the complexities of modern environmental harm inadequately handled by tort law, and tort law has become relegated to a “gap-filling” role [2,36,76,77]. Generally speaking, the fundamental purpose of tort law is corrective justice through a compensation system for vindicating individual rights [78,79] (p. 919), while prevention and deterrence are core principles underlying most environmental law [36] (p. 745). However, the emergence of liability schemes such as CERCLA and ELD bestows on environmental law the new objective of providing corrective justice to the environment rather than to individuals, which gives rise to the separate-regulatory paradigm of environmental liability. Therefore, concerning the objectives of tort law and environmental law, the separate-regulatory paradigm respects clear boundary lines and refrains from distorting tort law for alleged environmental damage based on goals outside of the tort system [11,36,80]. Besides, under the public liability scheme of CERCLA and the ELD, the environmental authorities can choose to clean up and implement the remedy themselves and reclaim the costs later, which ensures a more timely and effective remedy for the damaged environment, especially in cases where responsible parties are unidentifiable or insolvent. This is why in the US and elsewhere, the separate-regulatory paradigm is increasingly accepted, and it has become a minority view to regard tort law as an efficacious environmental risk regulation mechanism [81] (pp. 49–53).

The practical significance of the separate-regulatory paradigm lies in its recognition of the distinctions between the two facets of liability, and in its provision of particularized remedies for the damaged environment and natural resources. As already pointed out, effective remedy mechanisms available under the two sets of liability systems are quite distinct. The remedies most commonly awarded for environmental torts include injunction and monetary damages. Damages, in particular, are regarded as an appropriate means to compensate for the economic loss and emotional distress caused in property and personal injury cases. By contrast, the most desirable remedy for environmental damage is restoring or replacing the injured environment and resources instead of pecuniary compensation. It is difficult to put a price tag on the natural environment, and monetary damages are often considered insufficient for restoring the environment to its original, pre-injury condition. Alternatively, even if pecuniary compensation is awarded on rare occasions, especially in cases where the defendant is unable to restore the impaired environment, or where restoration is not feasible, the compensation standard applied is quite different from that in tort cases. Put simply, compensation for environmental damage is usually based on the costs of restoring or replacing the damaged environment and natural resources, the interim losses during restoration and the costs for the assessment of the damage [6] (art. 9607(f)). In contrast, damages in environmental torts hinge on the loss of economic value or emotional distress suffered by the victim. Therefore, the separate-regulatory paradigm fully takes into account the specificities of environmental damage that could not be easily addressed through the classic private law structures of tort law and provides appropriate remedies accordingly.

4.2. Theoretical Difficulties for Tort-Based Environmental Remediation

The significance of the separate-regulatory paradigm can be further illustrated by the unsound theoretical attempts to graft environmental damage onto the tort system. Three representative academic approaches have been proposed for this end, but they are inconsistent with either legislation or judicial practice due to departing too far from established legal theory or reflecting far-fetched or flawed reasoning.

First, some scholars propose to remediate the damaged environment through the tort system by treating natural objects as legal property, so that the right-holders could seek remediation for those natural objects through tort suits [82]. This approach is partly feasible, because many parts of the environment such as soil, rivers or forests may also serve as the objects of property rights. Nevertheless, the efficacy of this approach in remediating the environment is quite limited. On the one hand, this approach is based on the premise that damaged natural objects can be translated into legal property, but this is not always the case in reality. Some parts of the environment such as the air, endangered species, wetlands and wild rivers do not have a specific rightsholder, and thus are unable to be protected through tort claims. On the other hand, even when those natural objects can be protected as property, the most frequently used remedy in property cases is monetary damages based on lost economic value instead of restoration, especially when the costs of repair or restoration largely outweigh the market value of the property [83]. Under such a scenario, the commonplace remedies under a separate liability scheme for damage to the environment, including primary, complementary and compensatory remediation, become unavailable under the tort system.

The second approach attempts to achieve environmental remediation through tort law by regarding the cleanup and restoration costs paid by environmental protection authorities as a type of economic injury in tort law, so that those authorities are conferred standing to sue for environmental damage through tort actions [84] (p. 57). This approach is flawed in three aspects. To begin with, the so-called economic burden placed on governmental authorities can also be eliminated through administrative penalties without going through convoluted tort proceedings. Besides, liability for environmental damage is not limited to cleanup and restoration costs, but also includes interim losses, which can hardly be taken as an economic loss suffered by the government. Therefore, this tort-based approach cannot provide a full remedy for the injured natural environment. Furthermore, although this approach may rationalize the standing of environmental authorities in tort actions, it fails to explain the standing of authorized social organizations and the procuratorate to sue for environmental damage, as is practiced in China.

Besides, some efforts have been made trying to remediate the damaged environment by conferring legal rights and status to nature, so that the natural environment could seek remediation just like humans [85] (pp. 220–260). A frequently cited authority for this proposition is Professor Stone's argument, which makes natural entities the bearers of legal rights and allows them to have standing in the court [86]. Undoubtedly, granting enforceable rights to nature itself reflects a progressive understanding of the relationship between humans and nature and may offer a breakthrough in overcoming standing barriers for the remedying of ecological harm, but it is not without problems. First of all, Professor Stone's argument on the rights of nature (RoN) has not been unanimously accepted [87]. Second, the success rate all over the world for RoN cases seems to be quite low [88]. Take the practice of Ecuador as an example. It is the world's first country to include RoN in its constitution, but the wide variation in outcomes between its extant RoN cases reveals "the problems inherent in a formulation of nature's rights based on a universal subject" [89], and also indicates that for RoN to produce real environmental impact, certain obstacles such as politicization must be overcome first [90] (p. 138). The utility of the RoN approach in remedying environmental damage is further questioned if one considers the constitutional challenges to the regional and local RoN bylaws in the US [88]. Even *Colorado River Ecosystem v. The State of Colorado*, famous for being the first RoN case in the US, was withdrawn after a few months [91]. Third, even if the RoN approach is

effective to a certain degree, it cannot persuasively demonstrate that tort law alone is sufficient for environmental remediation, for the majority of existing RoN cases are not based on tort law, but on constitutional law or administrative law. What is more important is that the legislation on RoN, such as that of Ecuador and New Zealand, is founded in a specific political context, and is considered as “a historically contingent experiment in the ongoing pursuit of greater indigenous political authority” with no environmental results embedded in it [89] (pp. 446, 452). Therefore, although existing RoN endeavours may inform international efforts, whether and to what extent other countries will have the same development is doubted, and it at least seems quite difficult in the near future for RoN to be recognized in legislation or judicial practices in China, for it severely contradicts its prevalent legal theory, especially in terms of legal entities [92].

4.3. The Tensions between Torts Doctrines and Climate Change Litigation

Apart from the above theoretical endeavors, environmental activists have practically used tort law as a promising vehicle to address complex environmental issues such as climate change [93–97]. However, potential obstacles exist in such tort suits, including the political question doctrine, standing, causation and implied preemption to merit adjudication [98,99]. Even if the plaintiffs have overcome judicial hurdles of standing, proof of harm and causation in climate change tort litigation, the remedy they seek can only provide little, if any, remedy for the environment [93,95,100]. This is what necessitates a public law remedial scheme for the environment itself [36], thus rationalizing the separate-regulatory paradigm.

The clumsiness of tort law to deal with climate change has been substantiated not only by the judicial practices of the United States, but also by that outside the U.S. Thus far, the vast majority of climate cases, filed against governments for their administrative inaction (accounting for 90% in the US and 76% outside the US) [101] or against private actors for GHG emissions, are based on international law, constitutional law, human rights law, environmental protection law, commercial law, consumer law, etc., with only 12 cases on tort law outside the US [102,103]. For the very small number of tort-law-grounded climate change cases, they are still premised on harm to humans [100], absent of which they cannot provide a direct remedy to the damaged environment itself, let alone the fact that not all of them have been successful. Among the 12 tort-law-grounded cases, only in *Milieudefensie et al. v. Royal Dutch Shell plc.* were the requests of the plaintiff upheld by the court, relying on “the unwritten duty of care” under Dutch tort law [104], and this case is likely subject to appeal and may have the same outcome as the *Urgenda* case where both the Hague Court of Appeal and the Dutch Supreme Court declined to base its decision on tort law [105,106]. The other cases further highlighted the tensions between torts doctrines and climate change litigation. For instance, in *Luciano Lliuya v. RWE AG*, where Para. 1004 of the German Civil Code was referred to by the plaintiff, the court dismissed all the plaintiff’s requests [98]. In the most recently decided case *Smith v. Fonterra Co-operative Group Ltd.*, the Court of Appeal of New Zealand firmly concluded “as a matter of principle and policy” that tort law was not “an appropriate vehicle for addressing the problem of climate change”, which it described as being “quintessentially a matter that calls for a sophisticated regulatory response at a national level supported by international co-ordination” [107]. Even in the widely considered to be ground breaking *Urgenda Foundation v. State of the Netherlands* where the government’s obligation to reduce Dutch GHG emissions was upheld, both the Hague Court of Appeal and the Dutch Supreme Court declined to anchor the ruling in tort law [105,106]. In another recently hotly discussed case *Sharma and others v. Minister for Environment*, although the Australian Federal Court established the defendant’s common law duty of care, it declined to issue an injunction against the coal mine under challenge [100]. Similarly, in the Belgian case *VZW Klimaatzaak v. Kingdom of Belgium & Others*, while finding the defendants breached Article 1382 of the Civil Code, the Brussels Court of First Instance declined to issue an injunction ordering the government to set the specific emission reduction targets, which

they concluded were a matter for the legislative and executive bodies to decide [108]. These cases substantiated academic commentary on the seemingly insurmountable doctrinal barriers of tort law faced by plaintiffs of climate cases [109].

Tort suits may have implicit regulatory effects, such as deterring wrongdoing, spreading risk, attracting public attention and catalyzing governance, which seem to give tort law a “public life” [81] (pp. 48–65). Nonetheless, those regulatory effects are not the core function of tort as a private law system, but just the ancillary impacts. The nature of tort law in adjudicating claims of specific victims against specific wrongdoers [81] (p. 57) makes it a clumsy mechanism to cope with climate change, which is characterized by its diffuse origin and diffuse effects [110] (pp. 834–844). Just as the critics of climate change lawsuits have argued, tort law is ill-suited to address problems “this inducibly global and interconnected in scope” [111] (p. 21), and is “an expensive, haphazard, and inexpert apparatus for the identification, assessment, and regulation of risk” [81] (p. 51).

Therefore, when the tort system is unequipped or ill-suited to provide a remedy for environmental damage, courts and legislators should understand and respect its limits instead of stubbornly relying on it. Under such circumstances, the separate-regulatory paradigm becomes a feasible alternative.

5. The Chinese Pathway for Environmental Civil Liability

In contrast with the developments in the US, the EU and some other countries, the environmental liability system in China, generally speaking, adheres to a private-law-oriented approach. As such, its civil law, or more accurately its tort law, plays a pivotal role in providing liability and compensation for environmental harm, while environmental law is mainly responsible for prospective regulation. Such a pathway is confusing not only because it departs from the global trend toward a separate-regulatory paradigm, but also because it breaks with China’s civil law tradition that assigns different functions to public law and private law. The latter is, however, understandable to some extent considering China’s ambition to boost ecological civilization by “greening” its civil law [112].

5.1. *The Normative Development of the Environmental Civil Liability Regime in China*

Before the 2010s, the environmental civil liability system in China was single-faceted. It only responded to property and personal injury resulting from environmental degradation, taking no account of damage to the environment itself. On the one hand, most liability provisions in China’s environmental laws and regulations were about administrative liability, such as detention or penalties for violation of environmental laws and regulations. The comparatively few laws and regulations on civil liability covered only property and personal injury. On the other hand, China’s civil law system, ranging from the 1986 General Principles of the Civil Law [113] to the 2009 Tort Law [114], underlines the protection of private rights and interests and excludes environmental damage from its scope of application. As a result, there were no rules on liability for environmental damage during this period.

The 2012 Civil Procedure Law made a breakthrough in recognizing damage to the environment in the name of protecting the “environmental public interest”. Article 55 allows “legally mandated administrative organs and relevant organizations” to initiate environmental public-interest litigation even though they do not have a direct interest in the case [115]. However, there were no further clarifications on the standing requirements, which adversely impacted the application of this provision in judicial practice [116] (pp. 375–376). The 2014 Environmental Protection Law promulgated two years later has been regarded as another landmark development as it further clarified the standing requirements of social organizations as stipulated in Article 55 of the 2012 Civil Procedure Law [117]. Subsequently, to facilitate better implementation of these provisions and to address ambiguities in certain terms, the Supreme People’s Court (SPC) issued a series of judicial documents, including two judicial opinions, one judicial interpretation and a series of model and guiding cases in the following 3 years [116] (pp. 377–378). Moreover,

in 2017, the Civil Procedure Law was revised, and Article 55 thereof further granted the procuratorate, along with social organizations and administrative organs, the standing to sue in environmental public-interest litigation [118].

Since 2015, China has embarked on building a compensation system for damage to the ecological environment. To be specific, from 2015 to 2020, a series of administrative and judicial documents were released, which authorize provincial and prefecture-level governments, their designated departments or institutions and the departments entrusted by the State Council to exercise ownership of natural resource assets, and to require the responsible persons to compensate for ecological environmental damage through consultation or litigation [37,119–123]. In 2018, the Law on Prevention and Control of Soil Contamination was passed, which contains four provisions on liability for restoration and compensation of soil contamination [8] (arts. 45–48). This compensation system is separate from environmental public-interest litigation, for they both require different types of qualified plaintiffs, and are based on different rationales. Specifically, the former is based on state ownership of natural resources and the latter is based on qualified plaintiffs acting as representatives of the environmental public interest [116] (p. 387). Nonetheless, they both respond with environmental restoration and compensation, and constitute the main liability mechanisms for environmental damage in China at present.

The conferral of specific powers to claim reparations for environmental damage on public authorities and qualified social organizations by the Environmental Protection Law, the Law on Prevention and Control of Soil Contamination and administrative documents seemed to reflect China's propensity to depart from the private law paradigm for environmental damage liability, as already illustrated by CERCLA and the ELD. However, the paradox is that such publicly oriented aspirations were eventually put on hold by the newly passed Chinese Civil Code, which is a purely private law in nature. The Tort Liability Section of the Chinese Civil Code [9] stipulates environmental civil liability. In addition to traditional tort liability, it strives to establish a restoration-based approach to environmental damage within the private law system. Article 1234, *inter alia*, requires the "tortfeasor" to restore the damaged environment to its pre-injury condition within a reasonable period of time, or compensate for the cleanup and restoration costs incurred by public authorities. Article 1235 further provides a wide range of compensation, including for the interim losses from injury through recovery, permanent damage to the natural environment, costs for investigating and assessing environmental damage, cleanup and restoration costs, as well as reasonable expenses for preventive measures [9].

The Chinese legal framework for environmental civil liability depicted in Table 1 shows that the Chinese legal system has recognized and responded to the double facets of environmental civil liability so far. Its environmental tort liability system regarding traditional damage is relatively mature after nearly four decades of development. However, the liability regime for environmental damage remains fragmented, relying largely on scattered administrative and judicial documents and two articles in the Civil Code. Large portions of the substantive and procedural issues concerning liability for environmental damage still need to be clarified, such as the definition of environmental damage, the requirement of fault, the burden of proof of causation, the scope of response measures and the relationship between the civil environmental public-interest litigation system and the compensation system for damage to the ecological environment, etc. These intricate issues cannot be fully resolved within the private law system. Therefore, China has not established a comprehensive statute-based liability mechanism for environmental damage such as the US CERCLA or the EU ELD.

Table 1. The Chinese Legal Framework for Environmental Civil Liability.

	Environmental Law	Civil Law
	The 1979 Environmental Protection Law (For Trial Implementation)	The 1986 General Principles of the Civil Law
		
	The 1989 Environmental Protection Law	The 2009 Tort Law
Env'tl Tort Liability		
	Laws Relating to Specific Fields of Environmental Protection: Air Pollution Prevention and Control Law, Marine Environment Protection Law; Water Pollution Prevention and Control Law; Solid Wastes Pollution Prevention and Control Law; Soil Pollution Prevention and Control Law; Environmental Noise Pollution Prevention and Control Law, etc.	The 2020 Chinese Civil Code Arts. 1229–1233: Environmental Tort Liability
		
	Environmental Public-Interest Litigation System: Art. 58 of the 2014 Environmental Protection Law; Civil Procedure Law; The SPC judicial documents and model cases.	The 2020 Chinese Civil Code Arts. 1234–1235: Liability for Environmental Damage
Liability for Env'tl Damage		
	The Compensation System for Damage to the Ecological Environment: The 2015 Pilot Plan for Reform; the 2018 Reform Plan; Arts. 45–8 of Soil Pollution Prevention and Control Law; the 2019 SPC Provisions and Model Cases; the 2020 Notice of the Ministry of Ecology and Environment; the 2020 Opinion of the Ministry of Ecology and Environment, the Ministry of Justice, the Ministry of Finance, etc.	

5.2. A Preferable Alternative for China: A Separate Statutory Liability Scheme for Environmental Damage

The Chinese approach relying substantially on its civil law system to address liability for environmental damage has strengths and weaknesses. One argument for this approach is that the newly added provisions on liability for environmental damage in the Chinese Civil Code are remarkably innovative, as they constitute an indispensable part of the Chinese initiative to “green” its civil law, and reflect China’s relentless pursuit of ecological civilization [112,124]. However, there might be more to criticize about this approach. One downside is that simply mixing a public law mechanism, where public authorities pursue claims in the public interest, into the tort law system, where traditionally only individual stakeholders may bring a lawsuit, goes against the logic of the Chinese civil law tradition, which assigns distinct functions to private law and public law [125–127]. Besides, without a comprehensive and systematic environmental statute regulating liability for environmental

damage, it neglects the unique traits of this type of liability and fails to provide sufficient and particularized remedies for the damaged environment and natural resources.

In addition, although the Civil Code provides the basic norms of substantive law for the liability of ecological environmental damage, recognizing environmental harm as a specific type of damage in tort requires significant adjustments to traditional tort law rules and raises some controversial issues awaiting further clarification under the current legal framework. These issues may include but are not limited to the following:

- How to appropriately define “ecological environment damage”?
- Should the rules in terms of imputation, elements, burden of proof on causation and exemptions for ecological environment damage liability be the same as those of the traditional environmental tortious liability?
- Does the punitive compensation liability apply to the liability for damage to the ecological environment?
- How should civil environmental public-interest litigation and environmental damage compensation litigation, both of which are regarded to be based on Articles 1234 and 1235 of the Civil Code, be coordinated? This problem further concerns who will have standing to bring proceedings and how to ensure procedural compatibility when different types of lawsuits have been filed by different plaintiffs.
- What is the relationship between the responsibility for ecological restoration and compensation for damage to the ecological environment stipulated by Article 1234 and Article 1235?
- Can public authorities choose to clean up or remedy the environment themselves and reclaim the costs later, as practiced by CERCLA and the ELD?
- How should the damages paid by the defendant be managed and used?
- How should the ecological environment damage liability norms and those under public law be coordinated?

To fully resolve these issues, the interpretation and application of the environment damage liability clauses under the Civil Code is far from enough. It also calls for the future interpretation, application and systematic improvement of environmental laws and regulations in a post-Civil Code-era. Under such circumstances, to elaborately clarify these issues through the environmental law system, especially when the codification of Chinese environmental law is underway, may prove to be a feasible approach.

The growing support for a specified environmental liability regime, especially from environmental law scholars in China, reflects dissatisfaction with the existing legal framework [128–130]. It may also suggest an inexorable trend toward a public-law-oriented liability scheme for environmental damage by means of a comprehensive environmental code, or at least a specific environmental liability statute [128–133]. Such an approach sets liability for environmental damage apart from tort liability. It would accommodate more comprehensive and innovative rules on liability for, and the restoration of, environmental damage, while avoiding the incompatibility between the traditional tort system and the interests at stake in environmental damage cases. Therefore, it calls for co-efforts of and coordination between private law and public law to deliver full-fledged environmental protection in China [134].

Moreover, the feasibility and effectiveness of a specialized liability regime for environmental damage, in parallel with the few relevant provisions in the Civil Code, have been well illustrated by French practice. Like China, France also introduced “ecological prejudice” (*préjudice écologique*) into its Civil Code [10] (arts. 1246–1252), as a result of “a gradual gestation in French law” over a number of years [135]. The new provisions set strict liability for “ecological harm”, which is defined as “a non-negligible adverse effect on the elements or functioning of ecosystems or on the collective benefits that are drawn from the environment by man.” [10] (arts. 1246–247). Actions to repair ecological harm are open to any person who has the standing and interest to bring proceedings, include the state, the French agency for the environment, local authorities and environmental protection associations [10] (art. 1248). As regards its rules on remediation, it stipulates that repair of

the environment is the primary remedy in the case of ecological damage. Only where it is impossible for the responsible party to remedy the environmental harm will the judge require the responsible person to pay damages, and any damages paid to the claimant are to be used to restore the environment [10] (art. 1249). Besides, the legislation also provides for the prevention of future damage [10] (arts. 1251–1252).

The recognition of liability for ecological harm by the French Civil Code, however, does not negate its separate-regulatory approach towards environmental liability. On the one hand, France has established a more specific liability scheme for environmental damage by transposing the ELD into its Environmental Code. On the basis of this Code, the French Supreme Court in the 2012 Erika Case recognized environmental damage as a category of indemnifiable damage distinct from traditional damage to private interests [136–138]. On the other hand, due to the incomplete transposition of the EU liability regime and difficulties caused thereby for judicial practice, the 2017 revised French Civil Code added to the Tort Section a new chapter stipulating liability for ecological prejudice [139]. Those Civil Code provisions are supplemental to the Environmental Code in terms of liability for environmental damage, and add “an effective layer to the existing measures of environmental governance” [135] (p. 96). France, generally speaking, still adheres to the separate-regulatory paradigm, which is argued to be justified by French scholars [135] (p. 101).

The French practice of extending the role of civil law in environmental protection has asserted influence on China, which also introduced damage to the environment itself into the liability system of its Civil Code [140,141]. However, different from France, which already has an environmental code in place transposing the rules of the ELD, China has not made such progress. As explained earlier, the mere two articles on ecological environmental damage liability in the Chinese Civil Code left many issues unresolved, such as what constitutes harm, the issue of standing, as well as the choice and implementation of remedies, etc. Even French law is seeking to overcome the challenges that these issues present [135] (pp. 88–96). Such a situation leaves much space for the role of the environmental law system. It should be noted that although the ELD regime has never been brought in France since 2007 [71], this does not mean that the ELD, or more broadly, the public law liability scheme, has had no role in environmental protection, since the presence of the provisions would have a dissuasive effect on potential polluters, let alone the fact that the ELD regime has been more actively applied in other EU Member States [135] (p. 98, footnote 84). Besides, certain shortcomings of the ELD, such as its limited application of strict liability, limited scope of claimants and its problematic limitation period [135] (pp. 98–99), may happen to provide valuable lessons for China in enacting its environmental liability statute in the future.

Therefore, private law’s effectiveness in handling environmental problems is limited, and the separate-regulatory paradigm of environmental civil liability practiced in the US and the EU is inspiring to China, which urgently needs to remedy environmental damage but is not yet equipped with the necessary environmental statutes. A separate statutory liability scheme parallel with the existing civil law framework might be a more desirable pathway for China to achieve a full recovery from environmental damage in the future. In the design of such a public law liability scheme, the model of governmental authorities cleaning up first and reclaiming the costs later, as adopted by CERCLA and the ELD, may provide valuable lessons for more timely and effective remediation in particular.

6. Conclusions

Most modern environmental law still focuses primarily on human interests, but it increasingly recognizes the intrinsic value of the natural environment. Recognizing the intrinsic value of the natural environment regardless of its utility to humans, and establishing a specialized liability regime separate from the tort system to compensate for harm to the environment itself, reflects a more sophisticated philosophical understanding of the relationship between humans and the environment. In addition, it can help facilitate the cleanup and restoration of the damaged environment. For civil law countries such as

China, a further benefit of this approach would be respecting the traditional boundary between private law and public law, thus enhancing the coherence and legitimacy of the legal framework.

Dynamic interactions between legal frameworks within different jurisdictions facilitate cross-national environmental law and policy convergence. The US CERCLA and the EU ELD are exemplary liability regimes that depart from private law and the individual dimensions of environmental tort liability systems. These public law liability schemes originated from the legislature's dissatisfaction with the limited ability of the tort liability system to redress environmental harm and specifically cover damage to the environment and natural resources. Consequently, a growing convergence regarding the regulatory approach to environmental liability, which has created a public-law-oriented liability scheme coexistent with the traditional tort liability system, is evident. Such endeavors may transcend national boundaries and contribute to corresponding developments in other nations.

China, as a developing state beset by serious environmental problems, has much to learn from more mature environmental legal systems developed elsewhere. To be sure, the reliance on private law to regulate environmental civil liability reflects China's ambition to make the best of all available fields of law to cope with environmental problems, and this phenomenon has been intensified by China's initiative to "green" its civil law during the civil law codification endeavor. However, there can be no question that the civil law has reached the limits of its effectiveness in handling environmental problems, as manifested by the distinctions between the double facets of environmental civil liability, and by the incompatibility between the interests recognized in the traditional tort system and those at stake in environmental damage cases. Therefore, a new regulatory technique in environmental law is necessary to move beyond the existing civil law framework. Against this backdrop, the emergent separate-regulatory paradigm is inspiring. A separate statutory liability scheme exclusively focusing on damage to the environment may become a preferable alternative to trigger more effective remediation of environmental harm in China.

Admittedly, environmental protection is an intricate project with variance and uncertainties in law, politics, economy, culture, scientific development, etc. While other aspects such as effective law enforcement matter, this article focuses on the legislative perspective, or more specifically, on how to optimize China's environmental civil liability framework by acquiring insights from other jurisdictions. Future relevant studies could take a deeper dive through other different lenses.

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