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Research on the Confirmation and Implementation of Restoration Plans in Environmental Civil Public Interest Litigation

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Abstract
Ecological and environmental restoration constitutes a fundamental institutional arrangement for remedying environmental damage. In environmental civil public interest litigation, courts typically confirm restoration plans formulated by specialized agencies, requiring liable parties to implement these plans. A core component of such plans is the ecological and environmental restoration objective, judicially confirmed to specify the required standard or extent of restoration. The paper employs empirical research methods to analyze typical cases, identifying issues such as unrealistic restoration objectives, lack of legal norms for judicial confirmation and supervision. Innovative suggestions are proposed: categorizing restoration objectives legislatively, optimizing judicial confirmation procedures by balancing technical and legal considerations and enhancing public participation, and improving supervision mechanisms for the implementation of restoration plans.

Keywords
Environmental Civil Public Interest Litigation, Ecological and Environmental Restoration Objective, Ecological and Environmental Restoration Plan, Judicial Confirmation

1 Introduction

Ecological and environmental restoration is integral to environmental legislation worldwide. In China, courts increasingly mandate liable parties to restore damaged ecosystems through environmental civil public interest litigation. This paper focuses specifically on remediation responsibilities borne by polluters in such litigation, excluding state-led ecological projects or criminal restitution. "Restoration" defines both the form of environmental civil liability and its remedial objectives, encompassing objective setting, plan formulation, judicial confirmation, implementation, and supervision. The restoration objective is central, determining the scope of liability. Legally, it must integrate environmental science with socioeconomic factors, requiring judicial confirmation. Courts may base decisions on expert evaluations or independent discretion. Restoration plans are comprehensive action programs designed to achieve these objectives, detailing measures, timelines, and methodologies. In litigation, restoration plans are typically commissioned by the procuratorate from specialized agencies and submitted to the court. Regarding the judicial confirmation of restoration plans, Judges primarily review the plan's legality, encompassing aspects such as effectiveness, reasonableness, the purpose of protecting public health and safety, and technical feasibility. If the court finds the scheme proposed in the expert opinion questionable, or if credible grounds for amendment are presented during cross-examination by the plaintiff and defendant, the court may make appropriate adjustments to the plans.

The existing legal norms concerning restoration objectives and plans are relatively scarce, and most are general, principled provisions stated in broad terms. Specifically: the Interpretation of the Supreme People's Court on Several Issues Concerning the Application of Law in the Trial of Environmental Civil Public Interest Litigation Cases (hereinafter referred to as the "Interpretation on Environmental Civil Public Interest Litigation") stipulates the restoration objective as the "state and function before the damage occurred". The Administrative Provisions on Ecological and Environmental Damage Compensation (hereinafter referred to as the "Administrative Provisions") stipulates two categories of restoration objectives "the baseline level of ecological and environmental conditions prior to damage" and "the acceptable level of ecological and environmental risk". The Supreme People's Court's Working Rules for the Trial of Environmental Public Interest Litigation Cases (Trial Implementation) stipulates the main contents of restoration plans and provides that courts may consult expert opinions when confirming restoration plans and may include restoration plans in the judgments. The Reform Plan for the Ecological and Environmental Damage Compensation System (hereinafter referred to as the "Reform Plan") stipulates that major matters involving public interests in the preparation of restoration plans and the results of restoration shall be made public and subject to public supervision.

Surveying the existing research, scholars primarily focus on the legal concept and nature of ecological and environmental restoration, the scope of restoration and specific restoration methods. Relatively few scholars focus on the setting of restoration objectives and the confirmation procedure for restoration plans. Regarding restoration objectives, most studies are based on purely natural science perspectives, basically not involving environmental jurisprudence, or they focus on administratively-led ecological restoration, not involving environmental justice. As for restoration plans, existing research mainly concentrates on the

implementation of the plans, including implementation procedures and supervision. Fewer scholars pay attention to the judicial confirmation of restoration plans, and explore the critical roles judges play in the restoration system, such as exercising reviewing, discretion, confirming as well as the principles and procedures governing how they perform these roles. There is also a lack of comprehensive research covering the entire process of restoration plans, from formulation and confirmation to implementation and supervision.

Therefore, this paper analyzes the restoration system within environmental civil public interest litigation empirically by combing through judicial cases, reflects on the problems of the system related to restoration objectives and plans, so as to provide innovative suggestions for resolving practical issues in environmental adjudication. Conducting research on ecological restoration liability rules from this new perspective holds significant implications for the theory and practice of ecological restoration jurisprudence. This research is conducive to maximizing the role of the environmental civil public interest litigation system in ecological civilization construction and upholding the environmental jurisprudence philosophy centered on ecological and environmental restoration.

2 Examination of Judicial Practice Concerning Restoration Objectives and Plans

2.1 Existing Problems in the Setting of Restoration Objectives

Relying on the China Judgments Online database, this paper conducted searches using keywords such as “environmental civil public interest litigation”, “restoration to original condition” and “ecological restoration” . By analyzing the restoration objectives set in individual cases, it is concluded that the restoration objectives in judicial practice are primarily divided into two major categories: the “functional state standard” and the “scientific and technological standard”. The functional state standard requires restoring the ecosystem to its function and state before the damage occurred. The scientific and technological standard primarily includes baseline levels, environmental quality standards, and others. Among these, restoration objectives proposed by professional institutions using the scientific and technological standard and subsequently adopted by the courts can be regarded as the courts’ indirect application of that technical standard. By comparing the categorization of restoration objectives in legal norms with the application of restoration objectives in practice, the problems existing in the setting of restoration objectives can be identified.

Table 1 Types of restoration objectives in judicial practice

Type	Specific Classification	Case Number	Judgment Summary
Function and State Standard	Targeting only the function before the damage occurred	(2015) Nan Min Chu No. 38	Restoring the function of 28.33 acres of damaged forest land.
		(2019) Yue 1882 Min Chu No. 1390	Restoring 88.36 acres of destroyed land and restoring ecological functions within five years.
		(2019) Chuan 15 Min Chu No. 114	Determining that the Defendant’s total replanting is conducive to achieving the restoration of local ecological functions as soon as possible.

Function and State Standard	Targeting only the state before the damage occurred	(2019) Min 07 Min Chu No. 177	Restoring the vegetation of the forest land within the scope of the destroyed 10.2 acres, and does not include restoring its function.
		(2019) Min 07 Min Chu No. 198	Restoring the vegetation of the forest land within the scope of the destroyed 0.51 acres, and does not include restoring the function of the forest land.
	Both function and state	(2021) Yue Min Zhong No. 1711	Alternative restoration methods can be used to determine the scale of restoration by establishing the equivalence between the discounted amount of ecosystem services lost due to environmental pollution and the discounted amount of ecosystem services restored by the restoration action.
Scientific and Technological Standards	Directly applicable scientific and technological standards	(2019) Yue Min Zhong No. 925	Restoring the contaminated land parcel to the ecological baseline condition of the site as determined by the monitoring data of the control point in the Environmental Damage Assessment Report.
		(2018) Yue 01 Min Chu No. 505	Repairing the water quality of the fish pond in question to the Class II standard of the Environmental Quality Standard for Surface Water (GB3838-2002).
	Indirect application of scientific and technological standards	(2019) Xin 29 Min Chu No. 25	The specific restoration standards are subject to the restoration standards determined by the Restoration Plan formulated by the Forestry and Grassland Bureau of Yuli County.
		(2019) Lu 03 Min Chu No. 118	Completing the disposal and restoration work by a deadline in accordance with the solid waste disposal program and time schedule demonstrated by the experts.

2.1.1 Mechanical Application of the "Function and State" Objective

In practice, courts mostly directly set "the function and state before the damage occurred" as the restoration objective, in accordance with the provisions of the Interpretation on Environmental Civil Public Interest Litigation. While using this objective may seem conducive to achieving the most ideal outcome, doubts remain regarding its rationality and feasibility in the following aspects:

First, whether "the function and state before the damage occurred" can be accurately determined. To achieve this objective, it is necessary to ensure that the prior function and state of the object are traceable. Ordinary objects possess relatively stable states and fixed scopes, making the application of this objective more feasible. However, the ecosystem possesses its own particularities: various elements within the ecosystem interact, maintaining material cycles, energy flows, and information transfer. The nature of the ecosystem means that its original function and state require reliance on real-time monitoring and data archiving. Yet, constrained by technological levels and economic costs, real-time monitoring has not been achieved for some ecosystems, making it difficult to ascertain the function and state under specific time

periods. Although China has enacted the Measures for the Management of Environmental Protection Archives, a system for archiving ecological and environmental monitoring data has not been universally established. For instance, current official soil data mainly consists of records regarding usage and area, while data on land environmental quality, pollutant background value, etc., is lacking. Although China has issued the China Marine ecological and environmental Bulletin and some localities have published marine regional environmental data, real-time marine environmental monitoring mechanisms have not been established in some areas.

Second, whether the ecological environment before the damage occurred was in a good state. When applying this objective, the court generally assumes that the ecological environment before the damage was in a good and ideal state. However, before the damage occurred, the ecological environment might have been damaged by a non-party, or its function might have been impaired or its quality degraded due to non-human factors. Persistently requiring the liable party to restore the environment to a good state in such cases may lead to excessive liability.

Third, whether achieving "the function and state before the damage occurred" is realistic. Due to the unique characteristics of the ecological environment, some damage is irreversible once caused, such as permanent damage to ecological and environmental functions. For example, rare marine species are highly likely to become extinct under the marine ecological destruction. In such cases, ordering the liable party to undertake restoration based on this type of objective lacks practical significance. Simultaneously, constrained by factors like technical feasibility and economic levels, not all damage can be fully restored.

Fourth, whether restoration to "the function and state before the damage occurred" is necessary. In some circumstances, the cost required to restore the environment exceeds the value inherent in the environment itself, or restoration to the original state does not align with future land-use planning. Mechanically applying this objective can easily lead to resource waste or failure to meet actual needs. Taking the case of Jiangling County People's Procuratorate v. Fengdeng Chemical Plant Soil Pollution Liability Dispute as an example, in this case, a large quantity of sulfuric acid stored by Fengdeng Chemical Factory flowed out of the plant, polluting nearby land. The court required the chemical factory to restore the land to its original function and state. However, achieving this objective might require excavating all soil for gradual degradation, which not only requires a long remediation period, but also has a cost far exceeding the value of the soil.

The mechanical application of this restoration objective stems primarily from two causes: First, the long-standing influence of the traditional civil law concept of "restitution". Second, the excessive judicial focus on regulating actual harm. Restoring the ecological environment cannot be equated with restoration to original condition. It emphasizes the systemic and holistic nature of the ecological environment and does not refer to mechanically copying the original appearance. Instead, it requires the comprehensive application of biological, chemical, physical, and other scientific and technological means, while also necessitating the coordination of interests of many parties.

2.1.2 "Acceptable risk level" is basically abandoned

Among the effective cases retrieved, no court has set the "acceptable risk level" as an restoration objective. According to the Recommended Methods for Identification and Assessment of Environmental Damage (Second Edition) (hereinafter referred to as the "Recommended Methods (II)"), the acceptable risk level refers to the level of risk to human health or ecosystems deemed acceptable based on cost-effectiveness and technical feasibility, taking into account scientific, economic and social factors. This objective has a certain degree of contingency, focusing on reducing the degree of environmental pollution and preventing excessive accumulation of pollutants. It should be distinguished from the restoration objective of "baseline level", which is more fundamental, emphasizing the restoration of the balance and stability of the whole ecosystem and the ecological service functions it provides. The Administrative Provisions explicitly stipulate the "acceptable risk level" restoration objective. However, judicial practice has overlooked the rationality and feasibility of this objective, rendering its normative function and value unrealized.

2.1.3 Vague and Overly General Setting of Restoration Objectives

The restoration objective determines the degree and scope of restoration liability. A normative restoration objective should not be abstract to grasp, but should be quantifiable to a certain extent, possessing characteristics such as being measurable, monitorable, and assessable. It generally takes the specific index or value of one or more environmental elements as the requirement. Vague and overly general restoration objectives make it difficult to externalize ecological and environmental restoration into concrete liability, and in this case, judicial relief for ecological and environmental damage is difficult to achieve. For instance, some courts ordered defendants to restore contaminated soil and groundwater to meet the standard of "safeguarding the social public interest in ecological and environmental protection", but the specific meaning of this standard is unclear. Some courts ordered defendants to restore the soil to the "acceptance standard of a third-party institution", but it is uncertain whether this acceptance standard refers to soil quality standards or other standards. In other cases, expressions such as "meeting environmental protection requirements" and "meeting the requirements of the environmental department" have also appeared. Currently, there is a lack of specific legal norms regarding quantitative methods of restoration objectives, leading to significant differences in the setting and expression of restoration objectives in different judgments.

2.2 Existing Problems in the Confirmation and Implementation of Restoration Plans

2.2.1 Lack of Legal Norms for the Confirmation of Restoration Plans

Researching from a comparative law perspective reveals that other countries have relatively well-developed legal norms concerning liability for ecological and environmental restoration. For instance, the United States enacted the Comprehensive Environmental Response, Compensation, and Liability Act. It provides detailed regulations on restoration liability and its procedures. However, there is no specialized legislation on ecological and environmental restoration in China, and there are also legislative deficiencies in the procedures related to restoration liability. Therefore, the judicial confirmation for restoration plans lacks clear legal norms. In practice, judges participate in environmental rule of law through case-by-case ecological

and environmental restoration. However, where are the boundaries for judges exercising their discretionary power during confirming restoration plans? Should judges conduct only a procedural review of restoration plans formulated by specialized institutions, or should they conduct both procedural and substantive reviews? Are there relatively objective criteria for evaluating restoration plans? Does the judicial confirmation of restoration plans fall within the scope of public participation? This series of questions lack specific provisions.

2.2.2 Imbalance between the Technical and Legal Aspects of Restoration Plans

Some courts over-rely on technical expertise of ecological and environmental restoration, directly adopting restoration plans formulated by professional institutions, conducting only a formal review without a substantive review. However, to what extent do restoration plans reflect restoration objectives in the legal sense? Do they possess scientific validity, fairness, and feasibility? Can they fully represent the demands of different stakeholders? All of these require judges to conduct comprehensive and holistic evaluations. Directly adopting restoration plans may lead to an overemphasis on the scientific and technical aspects of the plan, failing to achieve an effective balance between its technicality and legality. If judges do not pay attention to the legal framework of the quantitative methods within the restoration plan and adopt it directly, then the trial power subject to the appraisal power will lead to certain risks, such as unclear reasoning lacking persuasiveness, or the restoration plan being unfair to the liable party. Therefore, courts cannot blindly follow the appraisal, they should conduct legal reviews on whether the appraisal methods are scientific and whether the technical standards and norms used are valid.

2.2.3 Inadequate Supervision System for the Implementation of Restoration Plans

After a court renders a judgment, if the liable party fails to carry out the restoration according to the methods and schedule specified in the restoration plan, it not only fails to ensure the timely restoration of the damaged ecological environment but also easily gives rise to new ecological and environmental problems. Therefore, there is a need to establish a supervision and evaluation system for the implementation of restoration plans. However, current laws and regulations do not provide clear stipulations. Ecological and environmental restoration involves many scientific and technical issues, placing higher professional requirements on supervisory body. Yet, there is a lack of corresponding laws and regulations clearly stipulating the supervisory body and their qualifications. Although the Reform Plan stipulates that the effectiveness of restoration should be subject to public supervision, it does not specify other potential supervisory body, making the range of supervisory body insufficiently comprehensive and diverse. Simultaneously, there is also a lack of norms concerning supervision methods, procedures and their specific application scenarios, making it difficult to provide legal guidance for supervision. Legislative loopholes may significantly diminish the effectiveness of judgment enforcement, thereby affecting the achievement of restoration objectives.

3 Optimization Pathways for Restoration Objectives, and the Confirmation and Implementation of Restoration Plans

3.1 Establishing a Categorized Framework for Restoration Objectives

To accurately determine to what state the damaged ecological environment should and can be restored, it is necessary to establish a categorized division of restoration objectives at the legislative level. It is suggested that legislation should divide the restoration objectives into two major categories encompassing three specific objectives (Figure 1): The first category is the basic restoration objectives, including "the function and state before the damage occurred" and the "baseline level" (the two standards are similar). The second category is contingent restoration objectives, namely the "acceptable risk level". Depending on the risk receptor, it can be further subdivided into the "acceptable level of human health risk" and the "acceptable level of ecological and environmental risk". At the same time, the legislation should clearly stipulate the specific application of each restoration objective, so as to avoid the awkward situation where one type of objective is unreasonably overused while another is neglected. When choosing restoration objectives according to the above categories, the courts should also take into account factors such as technical feasibility, legal compliance, acceptability of the restoration timeline, future use planning, and sustainability of the restoration. Furthermore,with regard to the problem of vague and overly general restoration objectives and the lack of a unified quantitative method, restoration objectives can be determined in terms of the amount of ecological environment resources or ecological services. The former is determined by comparing the quantity of lost resources with the discounted amount of resources to be restored by restoration actions. The latter is determined by comparing the loss of services with the discounted quantity achieved through restoration actions.

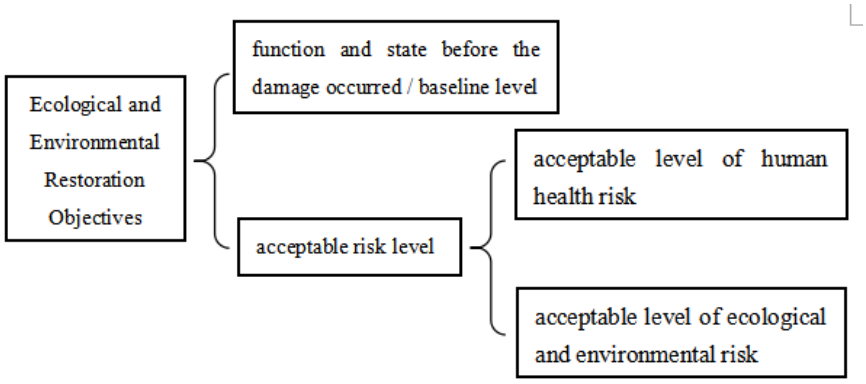

Figure 1 A Categorized Framework for Restoration Objectives

3.1.1 High-Value Ecological Environment Should Be Restored to the "Baseline Level"

Areas such as important ecological function zones, ecologically sensitive and fragile areas are designated as ecological red lines for mandatory strict protection due to their special ecological and environmental functions, the important values of which are mainly manifested in the provision of habitats for living creatures and the maintenance of biodiversity. When environmental pollution or ecological damage occurs within the ecological red line area, the liable party should be required to restore the environment to the baseline

level. Although in some cases, the cost of restoring the ecological environment to the baseline level far exceeds the value of the environment itself, which is not in line with the cost-benefit analysis method of legal economics, it seems more reasonable that the liable party should be judged to bear the damage. However, the scarcity of the ecological environment determines that its functional value cannot be simply replaced by other means. Efficiency is not the sole criterion for determining restoration objectives and restoration should not be viewed as a purely economic calculation. Instead, it should implement the concept of ecological civilization, adhere to the principle of coordinating economic and social development with environmental protection, and change to eco-centrism. Ecological environments should not be sacrificed for economic efficiency. Therefore, for environments preliminarily assessed as having special value, even if restoration is economically inefficient, the liable party should be required to restore them to the baseline level. For other environments, restoration to the baseline level should also be required when the restoration cost does not significantly exceed the environmental value. Restoring the ecological environment to the baseline level may seem to deny the economic rationality, in fact, it does not sever or oppose the relationship between the two. Rather, it appropriately adjusts this relationship, meaning that immediate, temporary economic benefits are relinquished for long-term ecological benefits and developmental interests.

The baseline level should be determined with the help of historical data, reference area data or dose-response relationship modeling in accordance with the Recommended Methods (II). Historical data and reference area data should be prioritized over relationship models. In cases of ecological damage, because the ecosystem may have changed over time, reference area data should be applied instead of historical data, otherwise it would be contrary to the objective law of ecosystem movement and change. If it remains difficult to determine the baseline level using the above methods, existing environmental quality standards may be adopted as the restoration objective.

3.1.2 Flexible Application of the Restoration Objective of "Acceptable Risk Level"

In cases where the ecological environment does not possess special value, restoring it to the baseline level of zero pollution and zero risk may be extremely difficult and involve prohibitively high costs. Therefore, China's ecological and environmental restoration should gradually shift towards a risk management model, flexibly applying the restoration objective of an acceptable risk level. The environmental pollution restoration practices of other countries also reflect this shift. Taking soil restoration as an example, the European Union's Environmental Liability Directive requires that land be remediated to a level that no longer poses a significant risk of adversely affecting human health. It can be seen that this restoration objective does not demand complete absence of risk or harm, but it aims to reduce risk to a tolerable and controllable reasonable level. This objective can be applied as a secondary restoration objective, preventing the situation where compensation for damages is applied simply because restoration to the original state is impossible.

Simultaneously, a distinction should be made between the "acceptable level of human health risk" and the "acceptable level of ecological and environmental risk". In the long-standing theory and practice of environmental risk, these two are often conflated. The former involves more social issues, while the latter better reflects objective laws. Corresponding to different environmental pollution receptors, the same harmful substance can pose risks not only to human health but also to the ecological environment. Taking soil remedia-

tion in the Netherlands as an example, it divides soil environmental risk into risk to humans and risk to the ecological environment.

Regarding their applicable circumstances, environments closely related to humans should be restored to the "acceptable level of human health risk". Long-term exposure to a damaged ecological environment can severely negatively impact human health. The closer the connection between an ecological environment and humans, the greater the probability of human exposure, and consequently, the greater the risk to human health when the environment is damaged. Therefore, the restoration of this type of ecological environment should place special emphasis on the control of risks to human health. For instance, environmental elements such as water, soil and air within urban and agricultural spaces relate to the most fundamental and vital health rights and interests of humans. When these elements are damaged, restoration to the "acceptable level of human health risk" should be required. Conversely, under the premise that the "acceptable risk level" is relatively lenient, if restoration to the "baseline level" is inadvisable and the environment is not closely related to humans, then requiring the liable party to restore it to the "acceptable level of ecological and environmental risk" is sufficient. For environments closely linked to humans, this linkage can be weakened by altering land-use planning, after which the liable party can be required to restore it to the "acceptable risk level".

The "acceptable risk level" can also be applied as a transitional restoration objective. Courts can draw on the provisions of the Recommended Methods (II) to require the liable party to first restore the ecological environment to the "acceptable risk level" and then to the "baseline level", or to restore it to the "acceptable risk level" concurrently with restoration towards the "baseline level". This stage-by-stage objectives setting not only makes the restoration liability more operable, guiding the liable party to follow nature laws to complete the restoration step by step, but also fully leverages the unique normative value of each type of restoration objective.

3.2 Optimizing the Judicial Confirmation of Restoration Plans

3.2.1 Achieving a Balance Between Technical and Legal Aspects of Restoration Plans

In judicial adjudication, judges should conduct both formal and substantive reviews of restoration plans formulated by specialized institutions based on environmental law principles, adopting them only after properly weighing the relationship between technical and legal considerations. Documents such as environmental technical standards and technical guidelines can provide conceptual tools and assessment methods for judicial practice. For example, the Recommended Methods (II) stipulates the factors to be considered in the "qualitative screening of basic restoration plans", which can be drawn upon by the courts in judicial practice. These factors primarily include the effectiveness of the restoration plan, its legality, its ability to protect public health and safety, technical feasibility, public acceptability, its capacity to reduce environmental exposure, and its potential to achieve environmental fairness and justice. It can be seen that the review and screening of restoration plans do not solely consider technical factors but also legal and social dimensions, involving a balancing of public interests and the interests of the liable party. The evaluation and balancing of these multiple factors are not completed by environmental technicians, but require judges to

exercise their legal expertise, making rational judgments based on normative requirements and policy needs to achieve synergy between technology and law.

The above considerations are only stipulated in some technical documents and lack legal force. Thus, legislative norms for judicial confirmation of restoration plans should be refined. Environmental technical standards should be transformed into specific adjudication methods within specialized legislation or judicial interpretations. And clear stipulations should be made regarding the general factors courts should consider when reviewing restoration plans. Only in this way can judges apply relevant norms in combination with specific cases while effectively guiding and constraining judicial discretion, to achieve specialization in environmental adjudication.

3.2.2 Enhancing Public Participation in the Judicial Confirmation of Restoration Plans

Existing regulations do not clearly specify whether public input should be solicited in the judicial confirmation of restoration plans, nor how such opinions should be adopted or addressed. This paper recommends that courts, when determining restoration plans, can refer to the public participation provisions in the environmental impact assessment system by publicly disclosing restoration plans and fully soliciting opinions from the public or stakeholders. For example, in the Wuxi Li Management Committee case, the court suggested that the defendant provide three alternative restoration plans. During the trial, the defendant publicized the afforestation plan online, and after extensively gathering public input, the court ruled that the defendant was obligated to re-green and solidify the soil. In the Changzhou pollution case, the court commissioned Jiangsu Changhuan Company to conduct an assessment and propose three restoration plans. The court then publicly posted these plans near the contaminated site and collected opinions through on-site questionnaires. And the public feedback served as a critical reference in determining the restoration plan.

These attempts reflect the “public participation” principle in environmental law and should be further standardized, procedural and normalized. Practical experience ought to be solidified into legal norms, explicitly stipulating the scope and channels for public involvement. Additionally, referencing the Measures for Public Participation in Environmental Protection, courts should systematically categorize and analyze public input, and feedback the reasons for adoption or non-adoption to the public through judgments or other appropriate means. This would prevent the provisions of public participation from becoming formalities.

3.2.3 Improving Supervision of the Implementation of Restoration Plans

In traditional civil litigation, victims whose direct interests are harmed will naturally strive to protect their rights and closely monitor whether the infringer fulfills their obligations. However, in environmental civil public interest litigation, public interest representatives may fail to provide adequate supervision. Therefore, it is necessary to establish a statutory supervision system for restoration outcomes to ensure the implementation of restoration plans and the achievement of restoration goals.Regarding supervisory body, courts may struggle to oversee the monitoring and acceptance of restoration work due to heavy caseloads. In judicial practice, supervision is mainly carried out by competent authorities with ecological environment supervision functions, procuratorates and the public. Without the participation of professionals, the effectiveness of judgment enforcement may be significantly compromised. Thus, this paper recommends that the

judicial appraisal institutions should be included in the scope of the supervision subject. Appraisal institutions should play an ongoing role. After courts adopt restoration plans formulated by appraisal institutions and make judgments, it does not mean that the appraisal institutions' task has ended. They must continue to monitor the liable party's compliance with the plans. Since the restoration plans are based on existing materials and scientific methods, appraisal institutions are most familiar with them, and accordingly have greater authority to assess whether the liable party strictly adheres to the plans.

Table 2 Supervisory Subjects for Restoration Plan Implementation in Judicial Practice

Case Name	Supervisory Subjects
Huang Mouhui, Chen Mouand other 8 persons Illegal Fishing Criminal Incidental Civil Public Interest Litigation	Fisheries administrative department
Jiangxi Fuliang County People's Procuratorate v. A Chemical Group Co. Environmental Pollution Civil Public Interest Litigation	Local government and its environmental protection department, villagers
Shandong Heze People's Procuratorate v. Wang Mou and other 4 persons Cultivated Land Destruction Civil Public Interest Litigation	Dan County Natural Resources and Planning Bureau, Gaoweizhuang Town Government
Shandong Rongcheng Zhang Mou and other 14 persons illegally fishing aquatic products, disguise and concealment of proceeds of crime criminal incidental civil public interest litigation case	Procuratorate
China Environmental Protection Federation v. Wuxi Lihu-Huishan Scenic Area Management Committee Ecological Environmental Tort Case	Court
Guiyang Public Environmental Education Center v. Guizhou Qingzhen A Ceramics Co. Environmental Pollution Liability Case	Third-party Guiyang Ecological Civilization Foundation

Regarding supervision methods, regular or irregular monitoring and assessment may be conducted. For regular supervision, the frequency may vary depending on the specifics of the restoration plan. For irregular supervision, supervisory subjects can monitor and evaluate the implementation in a timely manner after actively discovering problems or receiving reports. In addition, current public participation remains limited, and efforts should be strengthened to improve local information disclosure capabilities by making restoration plans in specific cases publicly available. A unified information disclosure platform for ecological and environmental restoration should be established to enable real-time data uploads, regular progress updates and transparent acceptance results, so as to provide accessible channels for the public to supervise the restoration. Furthermore, drawing on the Measures for Public Participation in Environmental Protection, diverse methods such as press conferences and public briefings can be adopted to regularly report on the outcomes and problems of major restoration cases. Public satisfaction surveys on restoration effects should also be conducted to safeguard the public's right to know and participate.

4 Conclusion

Ecological and environmental restoration serves as the primary and foremost form of liability in environmental public interest relief. Scientifically and efficiently restoring damaged ecological environments through various means represents the most urgent demand of environmental adjudication. Ecological and environmental restoration is a systematic project encompassing technical, legal and social dimensions. In the future, placing liability for restoration onto a legalized and standardized track requires systematic stipulation in specialized environmental legislation. This entails establishing a categorized framework for restoration objectives, optimizing procedural norms for the judicial confirmation of restoration plans, and improving the supervision system for the implementation effectiveness of restoration plans. By continuously integrating the latest developments in judicial practice and advancing research on the confirmation and implementation of restoration plans in environmental civil public interest litigation, can we better implement the modern environmental judicial philosophy centered on restoration in practice, and realize the fairness and justice of environmental justice while promoting the construction of ecological civilization.

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