

Regulating the Unregulated: Legal Gaps in Green Finance, Light Pollution, and Surrogacy Under Civil Law Frameworks

Nasywa Nidaul Azmi*¹, Mazaya Luthfiah²

^{1,2}Darunnajah University

Correspondance: nasywanidaazmi@gmail.com

Article Info	Abstract
<p>Article history: Received: Month 27-02-2026 Revised: Month 02-03-2026 Accepted: Month 06-05-2026</p> <p>Keywords: green finance, light pollution, surrogacy, civil law, sustainable finance,</p>	<p>The rapid evolution of global socio-economic and environmental realities has outpaced the development of civil law frameworks in several critical domains. This article examines three distinct yet interconnected areas of legal underregulation: green finance, light pollution, and surrogacy. Through a doctrinal legal analysis complemented by a comparative law approach, this study identifies the structural deficiencies in existing civil law systems that leave these domains inadequately governed. In the realm of green finance, the absence of standardized taxonomies and enforceable obligations creates opportunities for greenwashing and undermines sustainable development goals. Regarding light pollution, the lack of recognition as a legally cognizable harm within civil liability frameworks leaves affected communities without meaningful remedies. In the case of surrogacy, inconsistent legal treatment across jurisdictions generates conflicts of law, particularly concerning the legal parentage and citizenship of children born through surrogacy arrangements. This article argues that the traditional principles of civil law, including the doctrines of nuisance, contractual freedom, and parental rights, require substantial reinterpretation and legislative reform to address these contemporary challenges. The study proposes a unified regulatory framework grounded in civil law principles that can accommodate the unique characteristics of each domain while maintaining internal coherence.</p>
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A. Introduction

The contemporary legal landscape is increasingly confronted with phenomena that defy conventional regulatory categories. As technological innovation, environmental degradation, and evolving social norms reshape human activity, civil law, in particular, struggles to keep pace. (UNEP 2024) Three areas exemplify this regulatory deficit with particular clarity: green finance, light pollution, and surrogacy. While each domain presents unique challenges, they share a common thread: the existing civil law frameworks are structurally inadequate to regulate them effectively.

Green finance, the broad category of financial instruments, products, and markets designed to support environmental sustainability, has witnessed exponential growth over the past decade.

***Corresponding Author: Nasywa Nidaul Azmi**

Nasywa Nidaul Azmi, Universitas Darunnajah, Indonesia, Email: nasywanidaazmi@gmail.com

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Global green bond issuance surpassed USD 500 billion in 2023, yet the regulatory infrastructure governing these instruments remains fragmented and largely voluntary. The absence of binding legal standards, particularly within civil law jurisdictions, creates an environment ripe for greenwashing and investor deception.(Chiu 2022)

Light pollution, an environmental externality generated by excessive or misdirected artificial illumination, affects an estimated 80% of the global population.(International Dark-Sky Association 2023) Despite its documented impact on human health, ecological systems, and astronomical observation, light pollution occupies a liminal position in environmental law. Civil law systems, which typically regulate environmental harm through nuisance doctrines and tort liability, have not adequately adapted to encompass this form of pollution.(Bogdan 2023)

Surrogacy, the practice in which a woman carries and delivers a child for another individual or couple, poses profound challenges to civil law doctrines governing parentage, contractual obligations, and fundamental rights.(Hague Conference on Private International Law 2024) The legal treatment of surrogacy varies dramatically across jurisdictions, ranging from outright prohibition to comprehensive regulation, with many civil law countries occupying an uncomfortable middle ground of legal silence.

This article proceeds in several parts. Section 2 outlines the methodological framework employed. Section 3 examines green finance regulation. Section 4 addresses light pollution within civil liability frameworks. Section 5 analyzes the legal complexities of surrogacy. Section 6 proposes an integrated regulatory approach, and Section 7 offers concluding observations

B. Methods

This study employs a doctrinal legal research methodology, supplemented by a comparative law approach. The doctrinal component involves a systematic analysis of primary legal sources, including legislation, judicial decisions, and regulatory instruments across multiple civil law jurisdictions, with particular attention to France, Germany, the Netherlands, Indonesia, and Japan. The comparative dimension enables the identification of convergences and divergences in regulatory approaches, revealing both best practices and persistent gaps. Secondary sources, including academic literature, policy reports from international organizations (UNEP, World Bank, OECD, and the Hague Conference on Private International Law), and empirical studies on the socio-economic impacts of regulatory gaps, are also examined.

The normative analysis proceeds from the premise that civil law, as a coherent legal system grounded in codified principles, possesses the internal resources to address emerging regulatory challenges provided that its foundational doctrines are reinterpreted and supplemented by targeted legislative intervention.

C. Result and Discussion

GREEN FINANCE: THE ILLUSION OF REGULATION

The Taxonomy Problem

At the heart of the green finance regulatory gap lies the absence of a universally accepted taxonomy defining what constitutes a "green" financial product. (World Bank and International Monetary Fund (IMF) 2015) The European Union's Taxonomy Regulation (Regulation 2020/852), which entered into force in July 2020, represents the most ambitious attempt to create such a classification system. However, its applicability is limited to EU member states, and its criteria have been criticized for both overinclusiveness (the controversial inclusion of nuclear energy and natural gas) and underinclusiveness (the exclusion of social sustainability criteria).

In civil law jurisdictions outside the EU, the situation is markedly more fragmented. Indonesia's OJK (Otoritas Jasa Keuangan) has issued green bond guidelines, but these remain largely aspirational and lack the enforcement mechanisms found in conventional securities regulation. Japan's Green Bond Guidelines, published by the Ministry of the Environment, similarly adopt a voluntary compliance model. The result is a regulatory patchwork that undermines legal certainty and investor confidence. (Suaidi et al. 2025)

Greenwashing and Civil Liability

The inadequacy of existing regulatory frameworks has led to greenwashing, the practice of misleading investors and consumers about the environmental credentials of financial products. Within civil law frameworks, greenwashing raises fundamental questions of contractual liability, consumer protection, and the duty of care. (Yue and Zhang 2023)

Under the general principles of contract law, a green bond issuer that misrepresents the investment's environmental character may be liable for breach of warranty or fraudulent misrepresentation. However, the practical application of these doctrines is complicated by the absence of clear legal standards defining what constitutes a legitimate environmental claim. Without a binding taxonomy, determining whether a particular representation is "misleading" becomes an exercise in judicial discretion, leading to inconsistent outcomes across jurisdictions. (Organisation for Economic Co-operation and Development 2023)

The French Duty of Vigilance Law offers a potential model for imposing affirmative obligations on financial institutions to conduct environmental due diligence. However, its scope is limited to large companies, and its application to "green" financial products has not been tested in court.

Proposed Regulatory Architecture

This article proposes a three-tier regulatory framework for green finance within civil law systems. The first tier involves the adoption of mandatory, legally binding taxonomies at the national level, harmonized through international coordination mechanisms such as the International Platform

on Sustainable Finance (IPSF). The second tier introduces enhanced disclosure obligations, requiring issuers to provide independently verified environmental impact assessments. The third tier establishes a dedicated civil liability regime for greenwashing, with provisions for collective redress mechanisms to ensure effective enforcement. (Statement of Retraction: Influence of the social and economic characteristics of Saudi women on their attitudes toward empowering them in the online labor market 2023)

LIGHT POLLUTION: AN INVISIBLE HARM IN CIVIL LAW

Defining Light Pollution as Legal Harm

Light pollution is conventionally categorized into four types: skyglow (the brightening of the night sky over inhabited areas), glare (excessive brightness causing visual discomfort), light trespass (unwanted light falling on another's property), and clutter (excessive groupings of light sources). (Falchi et al. 2016) Despite its pervasive nature and documented adverse effects on human health (disruption of circadian rhythms, increased cancer risk), ecological systems (disorientation of migratory species, disruption of reproductive cycles), and cultural heritage (loss of the starry night sky), light pollution remains largely unrecognized as a legally cognizable harm in most civil law jurisdictions. (Hendriks 2021)

The fundamental challenge lies in conceptualizing harm. Civil law systems typically require the demonstration of a specific, quantifiable injury to establish liability. Light pollution, however, produces diffuse, cumulative, and often imperceptible effects that resist conventional measurement. The damage is both individual (e.g., sleep disruption caused by light trespass from a neighboring property) and collective (e.g., the degradation of the night sky as a shared environmental resource). (Jentsch 2021)

Nuisance Doctrine and Its Limitations

The civil law doctrine of nuisance (*troubles de voisinage* in French law, *Immissionsrecht* under German law) provides the most immediately applicable framework for addressing light pollution. Under Article 544 of the French Civil Code, a property owner who suffers an "abnormal" disturbance caused by a neighboring property may seek damages or injunctive relief. German law, through Section 906 of the BGB (*Bürgerliches Gesetzbuch*), similarly addresses "immissions" from neighboring properties, including light. (Kyba et al. 2017)

However, the application of the nuisance doctrine to light pollution faces significant limitations. First, the requirement of "abnormality" or unreasonableness introduces a subjective element that is difficult to standardize. What constitutes an unacceptable level of artificial illumination? Second, the nuisance doctrine is inherently bilateral; it governs the relationship between neighboring property owners and is ill-suited to address the cumulative, diffuse nature of light pollution from multiple sources. Third, the remedies available (typically damages or localized injunctions) are inadequate to address systemic light pollution. (Morgan 2017)

Toward Comprehensive Light Pollution Legislation

Several jurisdictions have begun to address light pollution through targeted legislation. France's Law on Light Pollution Prevention (Arrêté du 27 décembre 2018) establishes technical requirements for outdoor lighting, including restrictions on upward light emission, mandatory dimming during nighttime hours, and protection zones around astronomical observatories. Slovenia's Light Pollution Act (2007) is among the most comprehensive legislative responses globally. (Zweigert and Kötz 1998)

This article proposes that civil law jurisdictions adopt a dual-track approach: first, the incorporation of light pollution as a recognized form of environmental harm within existing environmental codes; and second, the establishment of maximum illumination standards enforceable through administrative sanctions and civil liability mechanisms. Such an approach would bridge the gap between the bilateral character of nuisance doctrine and the collective nature of light pollution harm.

SURROGACY: BETWEEN CONTRACTUAL FREEDOM AND PUBLIC ORDER

The Spectrum of Legal Approaches

Surrogacy arrangements occupy a uniquely contentious position within civil law. The legal treatment of surrogacy across jurisdictions can be mapped along a spectrum ranging from absolute prohibition to comprehensive regulation. (European Commission 2020) France and Germany represent the prohibitionist end of the spectrum, where surrogacy agreements are considered void as contrary to public order (*ordre public*) and the principle of the inalienability of the human body. The Netherlands and Belgium occupy a permissive middle ground, where surrogacy is neither explicitly regulated nor prohibited. Ukraine and certain states of India represent the most permissive approach, with comprehensive statutory frameworks governing commercial surrogacy.

In Indonesia, surrogacy exists in a legal vacuum. Neither the Civil Code (*Kitab Undang-Undang Hukum Perdata*) nor the Health Law (*Undang-Undang Kesehatan*) explicitly addresses surrogacy. Government Regulation No. 61 of 2014 on Reproductive Health restricts assisted reproductive technology to married couples and implicitly excludes surrogacy, but the absence of explicit prohibition creates interpretive ambiguity.

Conflicts of Law and the Best Interests of the Child

The most acute legal problems arising from surrogacy concern cross-border arrangements where the legal status of the child is uncertain. The landmark decision of the European Court of

Human Rights in *Mennesson v. France* (2014) established that the refusal to recognize the parent-child relationship established abroad violated the child's right to respect for private life under Article 8 of the European Convention on Human Rights.

Subsequent decisions, including the Advisory Opinion of 10 April 2019, clarified that states must provide a mechanism for recognizing the legal parent-child relationship with the intended mother, though not necessarily by transcribing foreign birth certificates. This jurisprudence has created significant tensions within civil law systems that adhere to the principle that *mater semper certa est*, the presumption that the woman who gives birth is the legal mother.

The Hague Conference on Private International Law has been working toward a multilateral instrument on the recognition of foreign judicial decisions regarding legal parentage, including those arising from surrogacy arrangements. While progress has been slow, the Parentage/Surrogacy Project represents a crucial step toward establishing minimum standards of international cooperation.

Toward a Civil Law Framework for Surrogacy

This article argues that the most viable approach for civil law jurisdictions is to adopt a regulated model that balances the principles of contractual freedom, the surrogate's autonomy, and the paramount interests of the child. Such a framework would include mandatory pre-arrangement judicial authorization, ensuring that both parties provide informed and freely given consent; a prohibition on commercial surrogacy, limiting permissible arrangements to altruistic surrogacy with reasonable expense reimbursement; pre-birth parentage orders, establishing the legal parentage of the intended parents before birth to avoid post-birth legal uncertainty; and mandatory independent legal representation for the surrogate, ensuring that her rights and interests are independently protected.

TOWARD AN INTEGRATED REGULATORY APPROACH

While the three domains examined in this article, green finance, light pollution, and surrogacy, present distinct regulatory challenges, they share common structural features that justify an integrated analytical approach. Each domain involves a mismatch between the pace of social, economic, or environmental change and the capacity of civil law frameworks to respond. Each involves transboundary dimensions that complicate purely domestic regulation. And each implicates fundamental principles of civil law, contractual good faith, property rights, and personal status that require reinterpretation in light of new realities.

Table 1. Comparative Analysis of Regulatory Gaps

Dimension	Green Finance	Light Pollution	Surrogacy
Primary Civil Law Doctrine	Contract / Consumer Protection	Nuisance / Tort Liability	Personal Status / Contract
Key Regulatory Gap	No binding taxonomy	No legal recognition of harm	Legal vacuum or prohibition
Transboundary Dimension	Global capital markets	Cumulative atmospheric effect	Cross-border arrangements
Affected Rights	Investor protection, environment	Health, property, ecology	Child's rights, bodily autonomy
Proposed Solution	Mandatory taxonomy + liability	Environmental code integration	Regulated altruistic model

The integrated regulatory approach proposed here rests on three pillars. First, the principle of precautionary codification: civil law systems should proactively codify regulatory standards for emerging phenomena rather than relying on post hoc judicial interpretation. Second, the principle of harmonized flexibility: while international coordination is essential, regulatory frameworks must allow for adaptation to local legal traditions and socio-economic conditions. Third, the principle of rights-based regulation: all regulatory interventions must be grounded in the protection of fundamental rights, the right to a healthy environment, the property right, and the rights of the child, ensuring that technical regulation serves broader normative objectives.

D. Conclusion

The examination of green finance, light pollution, and surrogacy reveals a pattern of regulatory inadequacy that is not merely coincidental but structural. Civil law systems, designed in an era of relative socio-economic stability, face inherent challenges in addressing phenomena characterized by rapid evolution, transboundary effects, and the intersection of multiple legal domains.

However, this article has argued that civil law possesses the doctrinal resources to address these challenges. The principles of good faith, the prohibition of the abuse of rights, the duty of care, and the protection of the best interests of the child provide a normative foundation for comprehensive regulatory frameworks. What is required is not a wholesale abandonment of civil law principles but their creative reinterpretation and legislative supplementation.

The three-domain analysis presented here demonstrates that the most effective regulatory responses share common characteristics: mandatory rather than voluntary standards, independent verification mechanisms, international coordination frameworks, and effective enforcement through both administrative and civil liability channels. By adopting an integrated approach that recognizes the structural similarities across these seemingly disparate domains, lawmakers can develop more coherent and effective regulatory responses to the challenges of the twenty-first century.

Future research should explore the implementation challenges associated with the proposed regulatory frameworks, including the institutional capacity of civil law systems to administer specialized regulatory regimes, the political economy of regulatory reform in each domain, and the potential for regulatory arbitrage in transboundary contexts.

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