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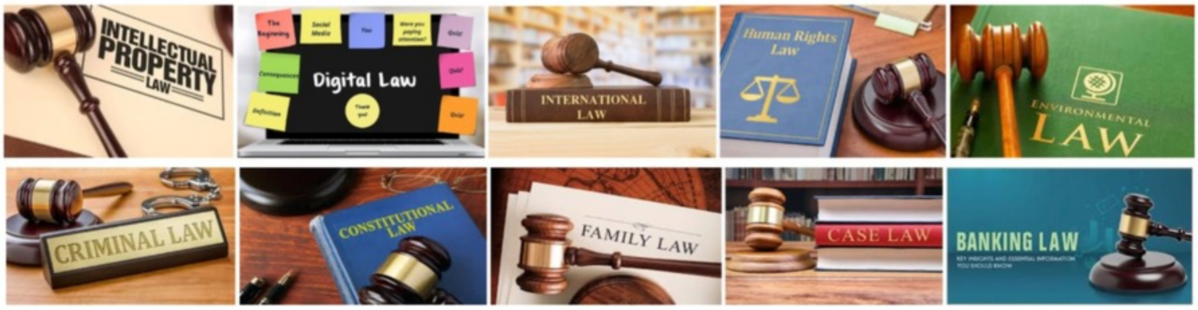

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Book Review

Legal Framework of Green Hydrogen Production and Hydrogen Economy for Sustainable Development by Ibrar Ahmad, Jamil Afzal and Siraj Ahmad

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Legal Framework of Green Hydrogen Production and Hydrogen Economy to Sustainable Development provides a detailed interdisciplinary analysis of legal, regulatory, and technological aspects of the hydrogen economy, with special attention to green hydrogen as one of the pillars of sustainable development(Ahmad, Afzal et al. 2025). The book places hydrogen in the context of the overall energy transition in the global setting, emphasizing its strategic role towards decarbonized goals, energy security, and net-zero engagements through international climate frameworks like the United Nations Framework Convention on Climate Change. Authors identify grey hydrogen, blue hydrogen, turquoise hydrogen, pink hydrogen, black hydrogen, and green hydrogen; this categorization has made it clear that the sustainability of hydrogen with regard to the environment does not lie in the molecule, but in the production process.
The book especially highlights the use of green hydrogen as the most sustainable avenue due to its ability to use water electrolysis through renewable energy like solar and wind energy, and thus, zero direct greenhouse gases are emitted. The technical discussion has gone as far as to major electrolysis technologies, such as alkaline Water Electrolysers (AWE), Proton Exchange Membrane (PEM) Electrolysers, alkaline Anion Exchange Membrane (AEM) systems, and Solid Oxide Electrolysers (SOEC)(Sebbahi, Nabil et al. 2022). The authors evaluate each of the technologies based on efficiency, scalability, costs, and compatibility with renewable energy systems of energy. They also consider other complementary production methods, including solar-powered electrolysis, wind-powered electrolysis, production of hydrogen by biology, and thermochemical cycles.
The combination of engineering and legal analysis allows the legal and policy experts to grasp the technological facts behind the regulatory frameworks, which is impossible without reading the book. In this technical foundation, the book moves to a discussion of hydrogen as a clean energy source that can decarbonize inefficient to electrify industry and hard-to-electrify industries. Hydrogen is also proposed as a storage energy to the intermittent energy sources in renewable energy, and thus to balance the grid and store energy throughout the seasons. These characteristics make hydrogen one of the main elements of energy systems in the future, instead of an additional fuel.
One of the major contributions that the book has made is the comparative and international legal analysis. It discusses the problem of regulatory fragmentation among different jurisdictions and the necessity of harmonized standards and certification systems, as well as the assurances of origin. The institutions like the International Renewable Energy Agency, the International Energy Agency, and the World Trade Organization are examined in influencing global hydrogen markets, trade regulations, and standards of sustainability(Lentschig, Patonia et al. 2025). Among these problems, the authors identify the irregular technical specifications, investment protection, carbon border adjustments, and cross-border hydrogen trade regulations. The book is logically and progressively structured. It starts with technical backgrounds of hydrogen production, and goes to a comparative legal analysis, regulatory frameworks, and international governance structures formulating the hydrogen economy. The presence of this interdisciplinary organization makes the work more coherent.

Content Analysis

Chapter 1 presents a more technical review of the hydrogen production route, which entails grey, blue, turquoise, pink, black, and green hydrogen(Ahmad 2025). The scientific descriptions of the Steam Methane Reforming (SMR), Methane Pyrolysis, and the Electrolysis Technologies (PEM, AWE, SOEC) are clearly stated. Notably, the authors associate technological differences with environmental consequences, which enables legal scholars to understand the technical facts about regulatory disputes. The next chapters shift to the topic of hydrogen as a sustainable energy carrier, looking at how it can be used in heavy industry, transport, and grid balancing. A comparative legal approach is also especially robust, and it considers international agencies like the International Renewable Energy Agency, the International Energy Agency, and trade regimes under world trade organization. The fact that the discourse of certification schemes, guarantees of origin, and harmonization of regulations expresses its consciousness of the problem of emerging global governance. The critical analysis of the hydrogen strategy in Germany presented in Chapter Five contributes some practical value, particularly in weighing the economic rights of the countries against environmental sustainability(Ahmad 2025). The comparative aspect of the book is also enhanced by the fact that international conventions and regional treaties are also discussed.

Critical Analysis: Strengths and Limitations

The main strength of this book is that it is interdisciplinary, as it has integrated law, policy, and engineering, which allows obtaining a comprehensive view of the hydrogen economy both through regulation and technological lenses. The technical depth and credibility of the analysis are further improved by the cooperation between legal scholars and a chemical engineering researcher, especially when describing the hydrogen production pathways, which include electrolysis, steam methane reforming, and methane pyrolysis. This shows a high level of comparative legal acumen since the book places hydrogen regulation in the context of the international regulatory bodies and agencies such as the International Renewable Energy Agency, International Energy Agency, and the World Trade Organization, therefore, throwing the aspect of certification, harmonization, and international trade into perspective. The other strength that is worth mentioning is its policy relevance: the topic of carbon capture, origin guarantees, regulatory fragmentation, and international collaboration directly caters to the modern issues of attaining net-zero targets. The gradual and systematic development of the technical basis of the comparative and international legal analysis makes it more coherent and easily comprehended, and the global approach of encompassing the developed and developing economies makes it more applicable. The book effectively balances between theoretical legal literature and real-life energy transition issues, and thus is a worthwhile addition to the literature on hydrogen governance and sustainable development.

Although of great importance, the book has several limitations that have modest implications on its overall impact. The possible weaknesses include editorial inconsistency: some parts have grammatical errors, stylistic anomalies, and redundant explanations, especially in the discussion of hydrogen production processes like SMR and carbon capture, which can be more strictly refined in terms of structure. Moreover, the book is quite broad in its comparative analysis, and although the author refers to such institutions as the International Renewable Energy Agency and the International Energy Agency, the analysis is sometimes only descriptive and not necessarily critical, which restricts involvement in the doctrinal aspects of competing regulatory frameworks. The inclusion of additional empirical data, quantitative comparisons of policies, or specific case studies of other countries, other than selected examples of nations, could also strengthen the work or make it more analytically robust(Levi-Faur 2004). Moreover, the normative framework may be formulated in a more stringent way by suggesting more distinct model legal principles or reform avenues for aligning hydrogen governance on a global scale.

Contribution to Scholarship

The book makes a positive contribution to the new area of hydrogen law and governance. Although a lot of the literature is either engineering-based or policy-based, this book is an attempt to fill the gap between doctrinal legal analysis and technical knowledge of energy systems. It assists in the expanding discussion of sustainable energy transitions, energy justice, and harmonization of world regulations. Because of the quickly developing hydrogen markets, particularly in the framework of energy security and decarbonization, the book can be considered a valuable background resource for scholars, regulators, and graduate students of environmental law, energy law, and sustainability studies.

Compared to the rest of the academic literature on the topic of hydrogen and energy transition, this book stands out due to its legal-technical nature. A significant portion of the current literature on hydrogen, and especially literature published by agencies like the International Energy Agency and the International Renewable Energy Agency, has had a tendency to emphasize the eventuality of techno-economic feasibility, cost trends, and the deployment of infrastructure as the main concern and regulatory challenges as secondary issues. Likewise, engineering literature is focused on the efficiency of electrolysis, carbon capture effectiveness, and integrating systems, whereas environmental law literature also tends to discuss the issue of climate governance broadly without a specific focus on hydrogen-based production routes. In comparison, the book provides a comparison between doctrinal legal study and technical descriptions of hydrogen production processes, providing a systemized scrutiny of the coordination of regulations, certification, trade, and sustainability management. It offers a different perspective, putting hydrogen into comparative and international legal conditions, and thus addressing a significant gap between engineering literature and normative regulatory literature.

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Global AI Governance Assessment for AI-Generated Content for a Globalized Digital World

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ABSTRACT

AI-generated content has rapidly transformed the global information environment, challenged traditional legal systems, and exposed important gaps in international law. Through a doctrinal, comparative, and normative analysis of national laws, international conventions, bilateral agreements, and soft-law instruments adopted between 2000 and 2025, the study examines emerging regulatory models. The analysis identifies both convergence and divergence in global approaches, particularly regarding transparency, human oversight, accountability, and risk-based regulation. The findings also reveal a need for international consensus that AI systems must remain under meaningful human control and that transparency and rights protection are essential. However, significant tensions persist in enforcement mechanisms, regulatory philosophy, and geopolitical priorities, creating risks of fragmentation and regulatory arbitrage. The future of AI governance will depend on whether states can move beyond fragmented experimentation toward principled coordination. The challenge is not to eliminate diversity in regulatory models, but to anchor that diversity within shared minimum standards grounded in human dignity, accountability, and the rule of law. If international law can successfully adapt to the realities posed by AI-generated content, it will not only manage technological disruption but also reaffirm its relevance in the digital age.

Keywords: Artificial Intelligence; AI Governance; AI-Generated Content; International AI Law; Globalized Digital World

1. Introduction

AI-generated content has become a globally significant phenomenon, radically changing how information is created, shared, and used internationally(Stanikza, 2025). These days, automated media, deepfakes, generative text, and synthetic images travel instantly across digital networks, impacting public trust, economic activity, political discourse, and individual rights simultaneously in several jurisdictions(Ghiurău & Popescu, 2024). The territorial foundations of international law, which are still primarily based on human agency, state sovereignty, and geographically bounded responsibility, are directly challenged by this borderless nature. AI-generated content highlights significant gaps in current international legal frameworks as it increasingly impacts freedom of expression, privacy, reputation, and democratic processes globally(Ahmad, 2026).

The existing literature has discussed AI-generated content from a variety of angles in a disorganized way. In an effort to fit AI outputs into pre-existing human-centric legal categories, legal studies have concentrated on specific issues like copyright, authorship, liability, and intermediary responsibility(Vijendran et al., 2025). While policy and ethics literature promote values such as accountability, transparency, and human monitoring through soft-law tools and governance guidelines, parallel work in human rights law highlights threats to privacy, nondiscrimination, and freedom of expression. Despite their worth, these research are still not well-integrated. A strong international legal approach to AI-generated content is lacking because doctrinal legal approaches frequently ignore the structural transformation brought about by generative and autonomous systems, while ethical frameworks frequently lack enforceability(Romero Moreno, 2024).

In order to close that gap, this article makes the case that AI-generated content should be viewed as the beginning of the creation of international AI law rather than as a collection of discrete regulatory issues. The current study contributes in three main ways.

- First, it views AI-generated content as a multifaceted legal issue that exposes basic flaws in international law concerning jurisdiction, attribution, and accountability.

- To find new trends of convergence and divergence in AI governance, it also provides a comparative study of national, regional, and global regulatory approaches.
- Third, it makes the argument that controlling AI-generated content offers a useful and moral starting point for developing a solid, rights-focused framework for international AI law that can adapt to the realities of a globalized digital world.

2. Methodology

This study analyzes different legal sources, including UNESCO Recommendations, OECD guidelines, AI regulations, international treaties, conventions, bilateral agreements, and policy documents relevant to AI-generated content and human rights. The instruments examined cover the period from 2000 to 2025, to ensure the analysis reflects recent developments. Sources were selected based on their direct relevance to AI governance, human rights protection, and the regulation of AI-generated content. Selection prioritized texts that explicitly address accountability, transparency, human oversight, and risk management in AI systems, providing both contemporary regulatory insights and comparative perspectives from jurisdictions with established digital governance frameworks.

2.1 Analytical Framework

The study employs a combined doctrinal, comparative, and normative framework. Doctrinal analysis interprets key provisions of national, regional, and international instruments on AI accountability, transparency, human oversight, and risk management. Comparative analysis identifies similarities and differences across jurisdictions, including Pakistan, China, the EU, and Japan, as well as international frameworks such as UNESCO, OECD, and the Council of Europe, highlighting convergent principles and divergent governance models. Normative analysis evaluates the adequacy of these frameworks in addressing human rights challenges posed by AI-generated content, identifying gaps and areas for improvement.

2.2 Limitations

The study is limited by the availability of updated legal instruments and literature on AI governance, particularly in jurisdictions where regulations are emerging. Comparative analysis is restricted to jurisdictions with accessible and translated legal texts. The research focuses on legal and regulatory frameworks and does not include empirical data on enforcement or practical application.

3. Critical Analysis of AI Regulatory Frameworks

3.1 European Union's AI Act

The European Union's AI Act stands as a key regulatory framework, representing the world's first comprehensive attempt to establish a strong, legally binding set of rules governing the development, market placement, and use of AI systems(Laux, 2024). Formally adopted in 2024, this landmark legislation transcends a mere technical directive; it is a profound political and legal statement that seeks to codify a distinctly European approach to technological governance. Its foundational objective is to foster innovation and capitalize on the economic potential of AI while rigorously justifying associated risks and safeguarding the Union's fundamental rights, democratic values, and the rule of law. The regulatory architecture of the AI Act is constructed upon a risk-based arrangement, creating a four-tiered pyramid of obligations(Laux et al., 2024). At its apex, it imposes an outright prohibition on AI practices believed to pose an unacceptable risk, such as hidden manipulative techniques or real-time remote biometric identification in publicly accessible spaces for law enforcement, with narrow exceptions. The core of the regulation focuses on high-risk AI systems, which include those used in critical infrastructures, education, employment, and essential public services. These systems are subject to strict preliminary conformity assessments, rigorous data governance protocols, mandatory human oversight, and requirements for robustness, accuracy, and cybersecurity(Kusche, 2024). For limited-risk AI systems, such as those interacting with humans or generating synthetic content, the Act mandates specific transparency obligations, most notably the requirement for users to be informed they are engaging with an AI. Minimal-risk applications are largely left unregulated, though encouraged to adhere to voluntary codes of conduct. Enforcement is supported by a robust governance structure, including the establishment of a European AI Office and a scientific advisory panel, with substantial financial penalties for non-compliance. By establishing this extensive normative ecosystem, the EU AI Act aims to function as a global standard-setter, shaping international norms and ensuring that AI development progresses in alignment with a human-centric, trustworthy, and accountable paradigm(Ebers et al., 2021).

3.2 Italy-AI Law for Public Administration

Italian Law Decree No. 148 of 2023 (converted into Law No. 215 of 2023) establishes a comprehensive and principle-based governance model for the development, procurement, and deployment of artificial intelligence systems within the nation's public administrative bodies(Corea et al., 2023). This regulatory framework represents a significant and proactive effort by the Italian legislature to establish a clear national trajectory for AI in the public sector, which both anticipates and aligns with the broader ethical and regulatory principles of the European Union's AI Act. The law is fundamentally structured around a risk-based classification of AI applications, explicitly prohibiting systems considered to pose an unacceptable risk to citizens' rights and democratic processes. It mandates strict requirements for transparency and explainability, particularly for AI used in decision-making processes that affect individuals. This includes the obligation for public administrations to clearly communicate when a citizen is interacting with an AI system and to provide accessible explanations for any algorithmic-driven decisions that impact them. Furthermore, the decree protects the principle of human oversight, requiring that final decisions, especially in sensitive areas, remain under meaningful human control and judgment. Operationally, the law creates a coordinated governance structure. It designates the Agency for Digital Italy (AgID) as the central hub for guidance and oversight, supported by a dedicated AI Task Force. A critical innovation is the establishment of a regulatory "Sandbox," a controlled environment where public administrations can test innovative AI solutions in collaboration with private developers under regulatory supervision, fostering safe experimentation(Nikolinakos, 2023).

3.3 Colorado AI Act

The Colorado Artificial Intelligence Act (CAIA), formally enacted as Senate Bill 24-205, constitutes a pioneering and distinctive piece of state-level legislation within the United States, establishing a comprehensive regulatory framework aimed specifically at mitigating algorithmic discrimination by developers and deployers of high-risk artificial intelligence systems. As one of the first statutes of its kind to be passed into law, it diverges significantly in scope and mechanism from the European Union's horizontal AI Act, focusing not on broad market regulation but on establishing direct duties of care and transparency to protect consumers, particularly in consequential domains such as employment, housing, healthcare, and financial services(Musthafa & Arundhati, 2025). The law's core innovation is its imposition of a proactive obligation on developers to employ reasonable care to avoid algorithmic discrimination, defined as differential performance disadvantaging individuals based on protected characteristics, across the AI system's lifecycle. This duty extends to deployers, who must implement risk management policies and use systems in accordance with provided documentation. Notably, the CAIA mandates a suite of public transparency measures, including the publication of statements summarizing the types of high-risk systems deployed, their purposes, and the data governance and risk mitigation strategies employed. Furthermore, it grants consumers a critical right to appeal and receive an explanation for an adverse algorithmic decision, coupled with the right to opt out of automated decision-making in favor of a human alternative in many circumstances. Enforcement is vested primarily in the state's Attorney General, with a statutory requirement for the publication of governance guidelines, eschewing a centralized ex-ante conformity assessment in favor of an ex-post enforcement model grounded in consumer protection law(Murtazashvili et al., 2025). The Act thus represents a pragmatic, operational, and rights-centric approach to AI governance at the sub-national level, seeking to balance innovation with accountability by creating enforceable standards for fairness and transparency, and positioning consumer awareness and recourse as fundamental pillars of a trustworthy AI ecosystem.

3.4 The UK's AI regulatory strategy

The United Kingdom's approach to artificial intelligence governance, as articulated in its policy paper "A pro-innovation approach to AI regulation (2023)" and subsequent government responses, establishes a deliberate and distinctive regulatory philosophy. Diverging from the European Union's comprehensive legislative model, the UK strategy is explicitly context-driven, sector-specific, and anchored in a principle-based framework designed to foster innovation and maintain strategic agility(Kazim et al., 2021). This model defers the creation of a centralized, AI-specific regulator or sweeping new legislation in the near term, opting instead to empower and coordinate existing regulatory bodies such as the Financial Conduct Authority, the Health and Safety Executive, and the Equality and Human Rights Commission to interpret and apply core principles within their domains. These cross-sectoral principles, which include safety, security, transparency, fairness, accountability, and contestability, are intended to provide consistent directional guidance while allowing for sectoral nuance(Charlesworth, 2025). The government's role is envisaged as one of central coordination, providing support through functions such as risk monitoring, regulatory sandboxing, and the development of technical standards and guidance. This approach is underpinned by a significant central investment in AI safety, notably through the establishment of the AI Safety Institute, which focuses on frontier model evaluation and national security considerations. Critically, the UK framework is presented as repetitive and adaptive; reserving the possibility of future statutory intervention should the principle-based, regulator-led model prove insufficient. This positions the UK's strategy as a conscious experiment in agile governance, seeking to balance the mitigation of tangible risks with a strategic aim to cement the country's position as a global leader in AI development and commercialization(McDougall, 2023). It is a model that prioritizes evolutionary adaptation over pre-emptive codification, placing significant trust in the capacity of a networked regulatory ecosystem to manage technological disruption effectively.

3.5 Japan-Act on Advanced Information and Communications Technology Society Promotion

The Advanced IT Society Promotion Act (enacted in 2000 and subsequently amended) represents a foundational and enabling piece of legislation within Japan's digital governance architecture. Unlike prescriptive regulatory frameworks emerging in other jurisdictions, this Act is fundamentally strategic and facilitative in nature. Its primary objective is not to impose specific restrictions on technologies like artificial intelligence, but to establish a coherent national infrastructure and policy process for systematically promoting the development and integration of advanced information and communications technology (ICT) across all sectors of society and the economy(Dirksen & Takahashi, 2020). The Act operates through two key institutional mechanisms. First, it establishes the Strategic Headquarters for the Advanced Information and Communications Technology Society, chaired by the Prime Minister, thereby elevating ICT policy to the highest level of cabinet coordination. Second, it mandates the creation of a comprehensive Basic Plan (revised approximately every five years) that outlines national priorities, strategic goals, and specific promotion policies for fields including digital infrastructure, public service digitization, and emerging technologies. This iterative planning process provides the overarching policy direction within which more specific guidelines, such as Japan's Social Principles of Human-Centric AI (2019) and its AI Governance Guidelines, are developed and implemented(Persson et al., 2021). This Act provides the legal and administrative backbone for Japan's national digital strategy. It frames AI not as a standalone regulatory target, but as an integral component of a broader "Society 5.0" vision, where advanced ICT and cyber-physical systems are leveraged to drive economic growth and solve social challenges. Consequently, Japan's approach to AI governance is deeply contextualized within this Act's mandate, emphasizing innovation, public-private partnership, and societal integration over ex-ante regulatory classification(Kasinathan et al., 2022). The Act thus reflects a distinctive governance philosophy: one that prioritizes strategic promotion and agile, principle-based guidance within a stable, top-down policy framework, aiming to cultivate a competitive and pervasive advanced IT ecosystem.

3.6 China-Interim Administrative Measures for Generative Artificial Intelligence Services

The Interim Administrative Measures for Generative Artificial Intelligence Services, enacted by the Cyberspace Administration of China (CAC) and six other regulatory bodies and effective as of August 15, 2023, constitute a seminal and highly proactive regulatory intervention in the global landscape of artificial intelligence governance(Yuan et al., 2025). As one of the world's first comprehensive national regulations specifically targeting generative AI, these Measures articulate a distinctively holistic framework that seeks to balance vigorous support for technological innovation with unambiguous requirements for ideological security, social stability, and state-defined ethical alignment. The "Interim" designation signals a regulatory stance of adaptive observation, allowing for future refinement in response to the technology's rapid evolution. The regulatory architecture is predicated on a licensing and filing regime for service providers, establishing clear lines of accountability. Its substantive core is a set of intertwined obligations that mandate the alignment of generated content with "socialist core values," requiring the prevention of the production of content deemed subversive, discriminatory, or threatening to state security and public interests. Technically, the Measures impose rigorous requirements on training data quality, including mandates for lawful sourcing, respect for intellectual property, and the mitigation of bias, while also emphasizing the need for transparency through measures such as the clear labeling of AI-generated content(Zhang, 2024). Fundamentally, the Measures reflect a governance philosophy that views powerful generative models as both critical economic assets and potential vectors for systemic social risk. This dual imperative manifests in a regulatory approach that encourages industrial development and R&D within a firmly delineated "red line" boundary. Consequently, the framework serves a dual purpose: it functions as a domestic rulebook to shape a "healthy" and "orderly" development ecosystem for Chinese tech firms, while simultaneously positioning China as a decisive contributor to the international dialogue on AI governance, advocating for a model that prioritizes sovereign control.

3.7 Singapore National AI strategy (NAIS)

The National AI Strategy (NAIS) of Singapore functions as the nation's central, forward-looking policy blueprint, designed to systematically harness artificial intelligence as a transformative force for its economy and society. Initially launched in 2019 and substantively refreshed in 2023, the strategy articulates a vision that extends beyond technological adoption, aiming to position Singapore as a global leader in developing and deploying scalable, impactful AI solutions from within a trusted and responsible ecosystem. The refreshed strategy is architected around three systemic enablers: activity, talent, and infrastructure. It identifies 15 high-potential, cross-sectoral AI projects in domains such as finance, healthcare, and education, intended to catalyze tangible economic value and address complex national challenges(Khanal et al., 2024). Concurrently, it commits to building peaks of excellence by tripling the AI talent pool and accelerating translational research, while strengthening foundational enablers like secure data access frameworks and advanced computing infrastructure. This entire edifice is underpinned by the nation's established philosophy of pro-innovation and trusted use, operationalized through soft-law instruments like the Model AI Governance Framework and the AI Verify toolkit. Fundamentally, the NAIS is an outcome-oriented and phased master plan. It represents a dynamic, whole-of-nation effort that aligns government, industry, and research institutions toward the strategic goal of deeply and beneficially embedding AI across Singapore's social and economic fabric(Frana, 2024). The strategy is not a static declaration, but a coordinated action plan aimed at ensuring the nation's competitive resilience and sustained growth in the digital age, moving from capability-building to widespread, impactful adoption by the end of the decade.

3.8 South Korea’s AI Law

South Korea’s AI Basic Act, promulgated in early 2025 and taking effect in January 2026, represents one of the earliest comprehensive national AI frameworks, merging innovation policy with regulatory oversight in a unique way(Kim, 2024). Unlike risk-averse models that emphasize prohibition, the Act seeks to balance economic competitiveness and public trust by consolidating disparate AI bills into a unified legal structure that promotes R&D, supports startups, and mandates periodic national AI master plans while imposing specific obligations on developers and deployers of high-impact and generative AI systems. Notably, the legislation requires clear identification and watermarking of AI-generated content, risk assessments for systems affecting fundamental rights, and transparency measures that are designed to mitigate misinformation and deepfakes, an approach that directly engages with international concerns about AI-generated content. However, the law has drawn criticism for vague definitions and potential compliance burdens, with stakeholders warning that those ambiguous standards could hinder innovation and create regulatory uncertainty despite the government’s efforts to temper enforcement through a grace period and guidance mechanisms(Park et al., 2024). From an international law perspective, South Korea's framework illustrates an early attempt to bridge domestic AI governance with transnational regulatory norms, highlighting the tension between fostering technological growth and protecting human rights in an era of rapidly evolving AI capabilities.

4. Critical Analysis of International Conventions and Treaties on AI

4.1 Council of Europe Framework Convention on AI (The AI Convention)

The Council of Europe Framework Convention on Artificial Intelligence, commonly termed the AI Convention or the Treaty of Strasbourg, represents a landmark multilateral treaty that establishes the first binding international legal framework for the development, design, and application of artificial intelligence systems grounded in the protection of human rights, democracy, and the rule of law(Afzal, 2024). Opened for signature in September 2024, this instrument extends beyond the Council of Europe's 46 member states, inviting global accession, thereby aiming to set a universal baseline for responsible AI governance. Unlike the sectoral or risk-based regulatory models of the European Union or the United States, the Convention adopts a fundamental rights-centric approach. Its primary objective is to ensure that all activities within the lifecycle of AI systems are conducted in a manner consistent with the conventions of the Council of Europe, including the European Convention on Human Rights. It imposes legally binding obligations on Parties to adopt necessary measures to mitigate risks, prevent adverse impacts, and promote responsible innovation. The framework is structured around core requirements for transparency, oversight, and accountability, mandating the establishment of effective remedies for individuals affected by AI systems. A critical feature of the Convention is its scope of application. It covers activities by both public authorities and private actors, albeit with certain flexibilities for the latter where appropriate, reflecting the need for broad yet adaptable governance(Stoyanova, 2025). The treaty also incorporates provisions for a follow-up mechanism to monitor implementation, ensuring its continued relevance. By creating a common international legal standard, the AI Convention seeks not only to prevent a regulatory race to the bottom but also to solidify a global consensus that the immense power of AI must be firmly anchored in the safeguarding of human dignity and democratic integrity. It stands as a cornerstone in the evolving architecture of international digital law.

4.2 OECD AI Principles

The OECD AI Principles, adopted in 2019 by the Organization for Economic Co-operation and Development and subsequently endorsed by numerous non-member countries, constitute the first intergovernmental standard on artificial intelligence. These principles establish a foundational international consensus around a human-centered and trustworthy approach to AI, built upon five complementary values: inclusive growth, human rights, transparency, robustness, and accountability(Lie, 2023). While non-binding, they provide a critical normative framework that guides national policies and corporate practices, advocating for investment in responsible AI innovation and the implementation of practical tools like risk management systems. Their ongoing development and monitoring are facilitated through the OECD AI Policy Observatory, solidifying their role as a global reference point for aligning technological advancement with democratic values and societal well-being(Smith, 2025).

4.3 UNESCO Recommendation on the Ethics of AI

The UNESCO Recommendation on the Ethics of AI, agreed upon by all member states in 2021, stands as the first truly global framework for guiding the ethical development and use of artificial intelligence(Bean et al., 2025). It roots itself firmly in a commitment to human rights, dignity, and sustainability, moving the conversation beyond technical compliance toward a broader vision of societal good. The agreement outlines core principles like fairness, transparency, and human oversight, and turns them into practical areas for national action from data governance and education to supporting international cooperation. Unlike many technical standards, it explicitly connects AI ethics to cultural diversity, environmental responsibility, and inclusive peace(Ganbaatar, 2025). This recommendation provides a shared ethical compass, urging governments and organizations worldwide to ensure that AI advances not just innovation, but the common good. It's less a rulebook than a foundational call to align technological progress with enduring human values.

4.4 G7 Hiroshima AI Process International Code of Conduct

The G7 Hiroshima AI Process International Code of Conduct, established in 2023, is a voluntary international framework designed to promote safe, secure, and trustworthy AI(Habuka & Osa, 2025). It provides a common set of principles for organizations developing advanced AI systems, focusing on risk mitigation, transparency, and security throughout the AI lifecycle. The code aims to foster global interoperability and complement binding national regulations by aligning industry practices across leading economies, thereby reducing fragmentation and building a shared foundation for responsible innovation(Maremonti, 2024).

4.5 UN Global Digital Compact

The UN Global Digital Compact is a proposed multilateral framework currently under negotiation through the United Nations to establish shared principles for an open, inclusive, and secure digital future(Rasche, 2009). The Compact aims to address key digital challenges, including artificial intelligence governance, data protection, digital commons, and connectivity. It seeks to align global efforts by bringing together governments, the private sector, and civil society under a common vision that emphasizes human rights, accountability, and sustainable development(Rasche et al., 2013). While not legally binding, the Compact is intended to provide a high-level political blueprint to guide international digital cooperation and ensure that digital technologies advance equitable progress worldwide.

4.6 Bilateral Treaties

The bilateral partnership between the United States and the United Kingdom in 2024 represents a focused, technical collaboration aimed squarely at frontier AI safety. This landmark memorandum of understanding commits both nations to aligning their scientific approaches and, where appropriate, pooling resources to develop robust methods for evaluating the most advanced AI models. The core operational mechanism is the joint work between their respective AI Safety Institutes, which will share expertise, conduct at least one joint testing exercise on a publicly accessible model, and collaborate on personnel exchanges(Birchfield, 2024). This partnership is strategically significant as it creates a dedicated channel for the world's two leading AI development hubs to establish shared scientific benchmarks for risk assessment. It focuses on pre-deployment evaluations of national security risks and severe societal harms, such as cyber threats and biochemical risks, thereby moving beyond principles into concrete, evaluative practice. While separate from broader regulatory dialogues, this bilateral effort strengthens the implementation of each country's existing strategy, the UK's pro-innovation framework, and the U.S. approach outlined in the Biden administration's Executive Order.

5. Governance Gaps and Clash of Regulatory Philosophy

The contrast between the European Union's AI Act and the United Kingdom's pro-innovation strategy exemplifies a fundamental divide in governance philosophy(Laux et al., 2023). The EU has embarked on a path of pre-emptive, detailed legislation, establishing binding ex-ante rules and conformity assessments for high-risk AI systems before they enter the market. This approach prioritizes legal certainty and aims to construct a unified, rights-based standard for its single market. In practice, it creates a structured environment designed to mitigate risk from the outset, though it may also impose considerable upfront compliance burdens on developers. Conversely, the UK has consciously deferred comprehensive legislation in favor of a context-driven, sectoral model. This model prioritizes regulatory agility and aims to avoid stifling innovation with premature or overly rigid rules. The inherent risk of this approach is one of fragmentation, where the interpretation of a core principle like "fairness" may vary significantly between different oversight bodies, leading to inconsistencies and potential gaps in protection.

China's Interim Measures for Generative AI introduce a dimension of governance that operates on a fundamentally different axis. While Western frameworks primarily focus on mitigating individualized harm, such as privacy violations or algorithmic discrimination, China's regulations explicitly prioritize state-defined social stability and ideological alignment. The rules mandate that generated content must reflect "socialist core values" and must not subvert state power or national unity(Zou & Zhang, 2025). This establishes content-based "red lines" that create a direct and profound conflict with Western liberal principles, particularly freedom of expression. A generative AI model engineered to comply with Chinese regulations is, by design, prohibited from engaging with broad categories of political, historical, or social discourse that would be permissible in other jurisdictions. For global technology platforms, this presents an almost intractable dilemma: whether to fragment their services by creating regionally specific AI models that adhere to local censorship laws, thereby contributing to a splintering of the global digital commons. This tension elevates AI governance from a technical regulatory challenge to a front in broader geopolitical and ideological competition, making meaningful global harmonization on content-related norms exceptionally difficult.

The coexistence of these divergent models generates systemic risks that extend beyond any single jurisdiction. One clear danger is that of regulatory arbitrage. The patchwork of strict (EU), flexible (UK), and facilitative (e.g., Singapore) regimes incentivizes forum shopping, where companies may choose to locate key research, development, or legal headquarters in jurisdictions with the most lenient or business-friendly rules. This strategic behavior can systematically undermine the protective objectives of stricter regulatory frameworks, as the global operations of a company may be governed by the lowest common denominator. Furthermore, these dynamic risks trigger a "race to the baseline". In contrast to regulatory paradigms where high standards in a leading market elevate global norms, a phenomenon observed in environmental regulation, the AI sector may experience the opposite. If a major economy successfully attracts capital and talent by adopting a highly permissive regulatory stance, it could place immense competitive pressure on other nations to dilute their own safeguards to retain their technological industries. This pressure threatens to erode the emerging global consensus on human-centric AI, potentially lowering universal standards for accountability, safety, and fundamental rights protection.

6. Discussion

The examination of bilateral agreements, international frameworks, and national laws reveals that AI-generated content is now viewed as a legal matter rather than just something that is technical. Legal reactions vary by jurisdiction, but they are all influenced by the common knowledge that AI-generated content can have an impact on people, public trust, and social order. As a result, several common legal issues have been reflected in the establishment of regulatory approaches that are not universal. The rejection of complete autonomy for AI systems is a fundamental feature that all frameworks under examination have in common. AI-generated content is constantly placed under human responsibility in binding laws, policy strategies, and ethical measures. Because current regulations on liability, rights protection, and remedies are built around human actors, legal systems still depend on human accountability. The enforcement of rights would be weakened, and legal uncertainty would result from allowing AI systems to function without human supervision.

Another common component is transparency. When content is created or influenced by AI, the majority of legal and policy instruments demand transparency. This requirement can take many different forms, such as explainability standards, user notification obligations, or labeling requirements. Because AI-generated content has the potential to deceive users, alter public opinion, and influence individual decision-making, there is a common emphasis on transparency. People are unable to appropriately evaluate information or contest detrimental results in the absence of clear disclosure. These frameworks are also united by the safeguarding of basic rights. Human dignity, nondiscrimination, privacy, and justice are just a few of the terms used to describe rights protection in both domestic and international legal frameworks. Human rights law and AI governance are directly linked by the Council of Europe AI Convention, and ethical guidelines from UNESCO and the OECD support similar ideals. Even regulatory frameworks that prioritize economic growth or state interests recognize the need to protect people from harm. The reason for this convergence is that AI-generated content has the potential to directly affect freedom of expression, equality, and reputation.

These methods are further connected by risk-based reasoning. While some frameworks only control certain high-impact applications, others formally categorize AI systems by risk. In both situations, the goal is to impose stronger control in areas where harm might be more likely. This common approach acknowledges that not all applications present the same degree of risk and represents a practical legal response to the various uses of AI-generated content. Cooperation and alignment are another shared characteristic at the international and bilateral levels. Coordination, common standards, and information sharing are emphasized in treaties, principles, and partnerships. AI-generated content quickly transcends national boundaries, leaving isolated domestic regulation inadequate, which is why this focus exists. Therefore, it is believed that international cooperation is essential in addressing regulatory gaps and minimizing cross-border harm. These shared characteristics demonstrate an increasing unity in legal thought despite variations in the strength of enforcement and the structure of the law. AI-generated content has to stay under human control, its use must be transparent and clear, risks must be controlled, and fundamental rights must be safeguarded, according to fundamental principles that states and international organizations are increasingly agreeing upon. Although it lays the groundwork for the future creation of more solid and unified AI governance, this new alignment does not completely eradicate regulatory diversity.

7. Conclusion

This article has demonstrated that generative systems challenge foundational assumptions of international law: that legal responsibility is human-centered, that harm can be territorially contained, and that regulation can operate effectively within national boundaries. The speed, scale, and transnational reach of AI-generated content expose gaps in attribution, jurisdiction, accountability, and enforcement that existing legal frameworks were not designed to address. At the domestic level, significant regulatory experimentation is underway. The European Union’s Artificial Intelligence Act adopts a comprehensive risk-based legislative model; the United Kingdom advances a principle-driven and sectoral strategy; China’s Interim Measures emphasize ideological alignment and state oversight; Singapore and Japan integrate AI governance within broader digital development agendas. These models reflect different political, legal, and cultural priorities. Yet despite their divergence, they converge on several core ideas: the rejection of full AI autonomy, the necessity of human oversight, the centrality of transparency, and the protection of fundamental rights.

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Role of Digital Public Infrastructure (DPI) in Strengthening AML/KYC for Developing Economies

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ABSTRACT

Digital Public Infrastructure (DPI) has emerged as a transformative framework for enhancing financial governance and strengthening regulatory compliance in developing economies. This paper examines the role of DPI in reinforcing Anti-Money Laundering (AML) and Know Your Customer (KYC) mechanisms, with particular focus on Pakistan. This study analyzes how Pakistan's evolving digital ecosystem, particularly the national digital identity system managed by the National Database and Registration Authority (NADRA) and digital payment initiatives led by the State Bank of Pakistan, contributes to strengthening AML/KYC compliance. The research employs a qualitative case study approach, reviewing policy documents, regulatory frameworks, and existing literature to evaluate the effectiveness of DPI-based systems in improving compliance mechanisms. The findings suggest that DPI significantly improves the efficiency, accuracy, and scalability of AML/KYC processes. However, challenges remain, including data privacy concerns, regulatory capacity gaps, and the need for stronger institutional coordination. The paper concludes that strategic investment in DPI, accompanied by robust legal safeguards and international cooperation, can substantially strengthen financial integrity frameworks in developing economies.

Keywords: Digital Public Infrastructure; AML/KYC; Developing Economies; Pakistan

1. Introduction

The integrity of the global financial system is continuously challenged by the unlawful flows of money generated from criminal activities, corruption, and the financing of terrorism(Gaviyau and Sibindi 2023). To combat this, countries worldwide have adopted strict regulatory frameworks centered on Anti-Money Laundering (AML) and Know Your Customer (KYC) protocols(Rusman and Budianto 2025, Afzal 2026). These measures require financial institutions to verify the identities of their clients, understand the nature of their transactions, and report any suspicious activity to the authorities(Sterling 2015). However, for developing economies, implementing these standards is particularly hard. These nations often struggle with deeply rooted informal economies, a lack of reliable identification documentation among large segments of the population and limited technological resources within their regulatory bodies(Centeno and Portes 2006, Meagher 2013). This creates a significant compliance gap, where the rigorous standards set by international bodies like the Financial Action Task Force (FATF) clash with the practical realities on the ground.
Scholars and policy analysts have widely documented the challenges developing countries face in meeting international AML/KYC standards(Thommandru and Chakka 2023, Gaisina and Finger 2025). A significant body of literature highlights the "de-risking" phenomenon, where global banks sever ties with local financial institutions in high-risk jurisdictions, further isolating them from the global financial system(També Bearpark and Demetis 2022, Pilkington 2024). Other studies have focused on the limitations of traditional, paper-based KYC methods, which are not only costly but also highly prone to forgery and human error in contexts where documentary infrastructure is weak(Malhotra, Saini et al. 2022, Mansoor, Antora et al. 2023). More recently discussion has shifted toward the potential of technology, with research exploring the role of biometrics, blockchain, and digital identity in creating stronger and more inclusive AML frameworks. The concept of Digital Public Infrastructure (DPI), comprising national digital ID, real-time payment systems, and data exchange platforms, has been identified by institutions(Mazzucato, Eaves et al. 2024, Dhiman and Madan 2025). The World Bank and the Bank for International Settlements serve as a foundational layer that can address these long-standing challenges by enabling remote, secure, and instant identity verification(Paleti 2025).

Despite this growing global interest in DPI as a tool for financial governance, there remains a noticeable gap in the literature. Especially when it comes to in-depth, empirical case studies from developing nations that are in the phase of building and implementing such infrastructure. Much of the existing research remains theoretical or focuses on the technological aspects in isolation, without examining the complex balance between DPI, regulatory enforcement, and real-world financial crime outcomes. This paper seeks to fill that gap by focusing on Pakistan, a country that offers a unique and timely laboratory for investigation. Pakistan has developed world-class DPI assets, most notably its national identity system managed by NADRA. Its simultaneous struggle to exit the FATF grey list and expand financial inclusion presents a critical paradox worth exploring. This research is therefore essential for providing evidence-based insights that can guide policymakers in Pakistan and other emerging economies seeking to join digital transformation for a more secure and equitable financial future.

2. Conceptual Framework: DPI and AML/KYC

2.1 Digital Public Infrastructure

Digital Public Infrastructure (DPI) refers to a set of shared digital systems that are secure, interoperable, and designed to enable the delivery of public and private services at a population scale(Clark, Marin et al. 2025, Sakyi-Nyarko, Ahmad et al. 2026). Unlike siloed digital tools or platforms developed by individual private sector entities, DPI is typically built and governed as a public good, allowing both government agencies and private enterprises to build innovative services upon it. Drawing on frameworks developed by institutions such as the World Bank and the Bank for International Settlements, DPI can be understood as resting on three foundational pillars. The first is a "digital identity system", which provides a unique, verifiable, and often biometrically secured identity to every resident or citizen(Akhison 2025). The second is a "real-time payment system", which enables instant, low-cost digital transactions between individuals, businesses, and government entities(Oleti 2025). The third is a "consent-based data exchange layer", which allows individuals to securely share their personal data across different service providers with their explicit permission. Together, these three layers create a digital fabric upon which an inclusive and transparent financial ecosystem can be built. India's "India Stack" is perhaps the most cited example of such infrastructure, but other nations, including Pakistan with its NADRA-led digital identity system, are actively developing similar architectures tailored to their national contexts.

2.2 How DPI Enhances AML/KYC

The integration of DPI into a country's financial regulatory framework fundamentally transforms how AML/KYC compliance is conducted, shifting it from a manual, document-heavy, and often irregular process to one that is digital, continuous, and verifiable in real-time(Akbar, Hussain et al. 2025, Islam 2025). This enhancement operates through several distinct mechanisms. First, DPI enables ‘‘biometric and cryptographic identity verification’’. When a national digital ID is linked to biometric data such as fingerprints or iris scans, financial institutions can verify a customer's identity with near-absolute certainty. This eliminates the risk of identity fraud associated with forged paper documents and ensures that each individual is who they claim to be. In Pakistan, for example, banks can verify a customer's identity against NADRA's database in seconds, a process that previously required physical document inspection and manual verification(Abro, Maitlo et al. 2025). Second, DPI facilitates ‘‘interoperability and data sharing’’. With a secure data exchange layer, financial institutions can access verified customer data from government sources such as tax records or utility bill histories with the customer's consent. This not only streamlines the onboarding process but also enables more sophisticated risk profiling. A customer's transaction patterns can be cross-referenced with other official data to identify irregularities that may indicate money laundering or other illicit activities.

Third, DPI supports ‘‘continuous monitoring and auditability’’. Traditional KYC is often a point-in-time exercise conducted when an account is opened, after which customer information may become outdated. DPI-enabled systems allow for ongoing verification, where any changes in a customer's status, such as a change of address or legal name, can be automatically updated across all linked financial accounts. Furthermore, every verification and transaction leave a digital trail that can be audited by regulators, creating a transparent and tamper-evident record of compliance. Fourth, DPI promotes ‘‘financial inclusion’’, which indirectly strengthens AML/KYC regimes. When individuals are brought into the formal financial system through accessible digital wallets and mobile banking platforms, their transactions become visible to regulators and subject to monitoring. This reduces the size of the informal economy, where cash-based transactions often serve as a veil for illicit financial flows. By lowering the cost of compliance and customer onboarding, DPI makes it economically viable for financial institutions to serve low-income and rural populations who were previously excluded(Gandhi and Kak 2025, Harish, Sharma et al. 2025). Likewise, DPI enables ‘‘regulatory innovation’’ through tools like "supervisory technology" or SupTech. Regulators can leverage the data generated by DPI systems to conduct real-time monitoring of the financial sector, identify emerging risks, and target their enforcement efforts more effectively. The State Bank of Pakistan, for instance, may implement data analytics tools to better understand money laundering risks across the banking system.

3. Methodology

This study employs a qualitative case study research design to examine the role of Digital Public Infrastructure (DPI) in strengthening AML/KYC frameworks in developing economies, with a specific focus on Pakistan. A case study approach is appropriate as it allows for an in-depth, contextually grounded exploration of a contemporary phenomenon within its real-world setting.

3.1 Data Collection Sources

Data was gathered from diverse secondary sources to ensure comprehensiveness and triangulation. Academic literature was sourced from Google Scholar, JSTOR, and Scopus using keywords such as "Digital Public Infrastructure," "AML/KYC," "digital identity," and "Pakistan". This provided the conceptual foundation for the study. Government and regulatory publications were collected from the official websites of the National Database and Registration Authority (NADRA), the State Bank of Pakistan (SBP), and the Financial Monitoring Unit (FMU). These included annual reports, AML/KYC regulations, and branchless banking guidelines. International organization reports from the Financial Action Task Force (FATF), Asia/Pacific Group on Money Laundering (APG), World Bank, and IMF were reviewed to understand Pakistan's compliance status and international benchmarks. News media and investigative journalism from Pakistani publications such as Dawn, The News International, and The Express Tribune were consulted to identify notable money laundering cases and their implications. Industry and think tank reports on digital finance and financial crime in Pakistan supplemented the analysis with practitioner perspectives.

3.2 Time Frame and Selection Criteria

The study primarily focuses on materials published between January 2020 and December 2025. This five-year window captures the most recent developments in Pakistan's digital transformation and FATF-related compliance efforts. Foundational documents published before 2020 were included where necessary for context. Selection was guided by principles of authority, relevance, and credibility, prioritizing peer-reviewed articles, official documents, and reports from recognized organizations.

3.3 Limitations

This study has certain limitations due to time and constraints. Reliance on publicly available secondary data means internal perspectives of regulators and financial institutions may not be fully captured. The rapid evolution of both DPI and financial crime means some findings may become outdated. The single-country focus, while allowing depth, limits generalizability to other contexts. Nevertheless, the rich detail of the Pakistani experience offers valuable insights for comparative research and policy learning in other developing economies.

4. Case Study of Pakistan

Pakistan offers a compelling rationale for selection as a case study due to its unique convergence of demographic scale, digital momentum, and regulatory pressure. As the world's fifth most populous country, including a young and increasingly technologically proficient population, Pakistan presents both significant challenges and opportunities for implementing AML/KYC frameworks(Arif, Gul et al. 2022, Liaquat 2025). Critically, Pakistan possesses one of the developing world's most sophisticated national digital identity systems, operated by NADRA, which has issued over millions of biometrically secured Computerized National Identity Cards (CNICs) that enable real-time identity verification for financial services(Malik 2022, Mohsin 2025). Furthermore, Pakistan's recent experience on the FATF Grey List (2018-2022) created intense regulatory pressure to strengthen its AML/CFT regime, accelerating the integration of digital infrastructure into compliance processes. The combination of a large unbanked population, world-class digital identity assets, and recent FATF-driven reforms makes Pakistan an ideal case study for examining how DPI can simultaneously enhance financial integrity and expand financial inclusion.

4.1 Role of NADRA in Pakistan

The National Database and Registration Authority (NADRA) serves as the cornerstone of Pakistan's Digital Public Infrastructure and plays a pivotal role in enabling robust KYC compliance across the financial sector(Rehman 2026). NADRA is particularly valuable for AML/KYC purposes because of its integration of biometric data, including fingerprints and photographs, into each identity record, creating a verifiable and tamper-resistant link between an individual and their legal identity. It provides a centralized verification platform, accessible to banks, microfinance institutions, and digital wallet providers through secure Application Programming Interfaces (APIs). This allows financial institutions to verify a customer's identity against the government's official database in real-time, eliminating the need for manual document inspection and reducing the risk of identity fraud. The Biometric Verification System (BVS), launched in collaboration with the State Bank of Pakistan, enables banks to authenticate customers through fingerprint scans at the point of account opening, ensuring that the person presenting themselves is the legitimate cardholder. NADRA facilitates enhanced due diligence for higher-risk customers. When a financial institution identifies a customer or transaction that requires additional scrutiny, NADRA's database can be queried for supplementary information, such as family lineage, address history, or death records, helping to build a more comprehensive risk profile. This capability proved particularly valuable during Pakistan's FATF-mandated reforms, where authorities needed to demonstrate that beneficial ownership information and customer identities could be reliably verified. NADRA supports ongoing monitoring and updating of customer information(Baloch 2025). Through its automated systems, NADRA can notify financial institutions when a customer's CNIC expires, is renewed, or is cancelled due to death or a change in legal status. This enables banks to keep their customer records current, a key requirement of international KYC standards.

4.2 Digital Wallets in Pakistan

Digital wallets have emerged as a transformative force in Pakistan's financial landscape, particularly in advancing both financial inclusion and KYC compliance(Iqbal and Noman 2025, Malik, Khan et al. 2025). Operated under the State Bank of Pakistan's Branchless Banking Regulations, digital wallets such as JazzCash, Easypaisa, Keenu, and SadaPay allow users to perform financial transactions through their mobile phones without requiring a traditional bank account. As of 2024, these platforms collectively serve over 50 million active users, many of whom were previously unbanked and outside the formal financial system(Butt 2025, Shoaib, Shoaib et al. 2025). The KYC process for digital wallets operates on a tiered model, balancing accessibility with regulatory compliance. At the lowest tier, users can open a wallet with basic, simplified due diligence, allowing small-value transactions to promote financial inclusion. For higher transaction limits, wallets require biometric verification through NADRA's database, ensuring the customer's identity is authenticated against the national registry. This integration enables digital wallet providers to onboard customers remotely while maintaining compliance with AML regulations.

Digital wallets contribute to AML/KYC objectives in several ways(Hasan, Talukder et al. 2024, Oludoyi 2025). First, they create a digital transaction trail for millions of individuals who previously operated entirely in cash, bringing previously invisible economic activity under regulatory oversight. Second, the biometric verification requirement at account opening prevents the creation of fake or anonymous accounts. Third, these platforms employ transaction monitoring systems to detect suspicious patterns, such as unusually large cash-ins or rapid movement of funds, which are reported to the Financial Monitoring Unit. However, challenges persist; the tiered KYC model, while inclusive, creates potential loopholes where multiple low-limit wallets could theoretically be used to circumvent transaction limits. Additionally, agent networks responsible for onboarding customers in rural areas have occasionally been implicated in fraudulent verifications.

4.3 Mobile Banking in Pakistan

Mobile banking represents the more sophisticated tier of Pakistan's digital financial ecosystem, offering full-fledged banking services through smartphone applications(Bouza, Hlayhel et al. 2024, Harichandana 2025). Unlike digital wallets, which are often linked to branchless banking accounts, mobile banking is provided by traditional commercial banks such as HBL, National Bank, UBL, and Meezan Bank, allowing existing account holders to conduct transactions, manage accounts, and access financial services remotely. From an AML/KYC perspective, mobile banking applications serve as a critical compliance touchpoint. When customers are onboarded through mobile apps, banks are required to perform the same level of due diligence as they would for in-person account opening. This is achieved through integration with NADRA's verification systems, where customers submit photographs of their CNICs and perform liveness checks or video calls to confirm their identity. Some banks have begun experimenting with e-KYC (electronic KYC) solutions, allowing fully paperless account opening subject to biometric verification. Mobile banking strengthens AML compliance through several features. Transaction monitoring algorithms analyze customer behavior in real-time, flagging unusual patterns such as high-value transactions inconsistent with a customer's profile, rapid movement of funds across multiple accounts, or transactions with high-risk jurisdictions. Many mobile apps now incorporate geo-location tracking and device fingerprinting to detect anomalies, such as a transaction attempted from a location inconsistent with the customer's registered address. Additionally, mobile banking platforms generate auditable digital records of all customer interactions, providing regulators with transparent evidence of compliance. The COVID-19 pandemic significantly accelerated mobile banking adoption in Pakistan(Ahmed, Naz et al. 2022). The State Bank of Pakistan actively encouraged digital onboarding during lockdowns, issuing temporary relaxations while maintaining KYC rigor through biometric verification. This period demonstrated that mobile banking could serve as both a tool for financial inclusion and a robust platform for regulatory compliance.

5. Implementation of AML/KYC

5.1 Current Status of Implementation

AML/KYC implementation in Pakistan operates through a multi-layered regulatory architecture. The primary regulators include the State Bank of Pakistan (SBP), which oversees banks, microfinance institutions, and digital financial services; the Securities and Exchange Commission of Pakistan (SECP), responsible for non-banking financial institutions, insurance companies, and capital markets; and the Financial Monitoring Unit (FMU), which serves as the country's financial intelligence unit, receiving, analyzing, and disseminating Suspicious Transaction Reports (STRs) to law enforcement agencies. Financial institutions in Pakistan are required to conduct Customer Due Diligence (CDD) at multiple levels: at the time of account opening, during occasional transactions above prescribed thresholds, and on an ongoing basis for existing customers. The integration of NADRA's biometric verification system has made identity authentication more reliable, with over 60 million biometric verifications conducted by financial institutions annually(Malik 2022, Dommari and Mishra 2024). Suspicious transaction reporting has also increased substantially, with the FMU receiving thousands of STRs and currency transaction reports (CTRs) each year, enabling more effective analysis and dissemination to investigative agencies.

5.2 Alignment with International Standards

Pakistan's AML/KYC framework is designed to align with the FATF's 40 recommendations, which constitute the international standard for combating money laundering and terrorist financing. The country's progress in this regard has been evaluated through mutual evaluation reports conducted by the Asia/Pacific Group on Money Laundering (APG), a FATF-style regional body. Regulators have adopted a risk-based approach to AML/KYC, requiring financial institutions to assess the money laundering and terrorist financing risks associated with different customer categories, products, and delivery channels. Higher-risk customers, such as Politically Exposed Persons (PEPs) or those from high-risk jurisdictions, are subject to Enhanced Due Diligence (EDD). Mechanisms for implementing United Nations Security Council sanctions related to terrorism and proliferation financing have been enhanced. Pakistan has established procedures for freezing assets of designated individuals and entities without delay, in compliance with FATF requirements. Pakistan has improved its mechanisms for international cooperation, including mutual legal assistance and extradition, enabling more effective cross-border collaboration in money laundering investigations.

5.3 Notable Legislation in Pakistan

The Anti-Money Laundering Act, 2010 (as amended), is the primary legislation governing AML/CFT in Pakistan(Usman Kemal 2014). It criminalizes money laundering, establishes the legal framework for confiscation of proceeds of crime, and provides the legal basis for the FMU's operations. The Act has been amended multiple times, most significantly in 2015 and 2020, to incorporate international standards and address FATF-identified deficiencies. Key amendments expanded the definition of money laundering, strengthened provisions for provisional attachment of property, and enhanced the powers of investigating agencies.

The Anti-Terrorism Act, 1997, legislation addresses terrorist financing offenses and provides the legal framework for implementing UN Security Council sanctions related to terrorism(Parvez and Rani 2015). It criminalizes the collection and provision of funds for terrorist purposes and establishes procedures for the seizure and forfeiture of assets linked to terrorism.

The State Bank of Pakistan has issued comprehensive AML/CFT regulations for banks, microfinance banks, and development finance institutions(Hassan, Hussain et al. 2022). These regulations, updated periodically, detail the specific requirements for customer due diligence, record-keeping, suspicious transaction reporting, and internal controls. They mandate the use of biometric verification for account opening and require institutions to implement transaction monitoring systems.

The Securities and Exchange Commission of Pakistan has issued similar regulations for non-banking financial institutions, including modarabas, leasing companies, insurance companies, and capital market intermediaries(Cheema, Shah et al. 2006). These regulations require these entities to establish AML/CFT compliance programs and report suspicious transactions to the FMU.

The Companies Act, 2017, includes provisions requiring companies to maintain records of their beneficial owners and to provide this information to regulators upon request. It supports the implementation of transparency requirements for legal persons(Gul and Khan 2023, Khan and Akhtar 2024).

NADRA Ordinance, 2000, is concerned with identity management. This ordinance provides the legal basis for NADRA's collection and maintenance of biometric data and its use for verification purposes by third parties, including financial institutions(Hashmi 2021, Hasan and Junejo 2022).

Pakistan Telecommunication (Re-organization) Act, 1996, is legislation, along with regulations issued by the Pakistan Telecommunication Authority, that governs the digital infrastructure that supports mobile banking and digital wallets, including data protection and cybersecurity requirements(Shahid, Shou-lian et al. 2007, Authority 2018).

6. Reported Notable Cases

6.1 The Axact Fake Degrees and Money Laundering Scandal

One of the most high-profile cases illustrating the intersection of financial crime, digital operations, and AML/KYC challenges in Pakistan is the Axact scandal(Hashmi 2022, Hashmi 2023). It unfolded prominently between 2015 and 2018. Axact, a Pakistani software company based in Karachi, operated a sophisticated global network selling fake academic degrees online through hundreds of fictitious universities(Ezell 2023). The case is particularly relevant to this study because it involved digital platforms, cross-border financial flows, and exposed significant gaps in Pakistan's AML framework at the time.

Axact, led by its CEO Shoaib Sheikh, ran a global fraudulent scheme that generated hundreds of millions of dollars by selling fake diplomas, degrees, and accreditations to customers worldwide through elaborately designed websites posing as legitimate educational institutions. The company employed thousands of people in Pakistan who posed as admission officers and academic counselors, targeting primarily customers in the Middle East, Europe, and the United States. Proceeds from this illegal activity were routed through complex financial channels, including shell companies, offshore accounts, and digital payment platforms, making them difficult to trace. The scandal broke in May 2015 when the Federal Investigation Agency (FIA), acting on a tip-off and media investigations by outlets such as The New York Times, raided Axact's headquarters in Karachi. Authorities seized documents, computers, and records revealing the scale of the operation. Subsequent investigations uncovered that those millions of dollars had been funneled through informal money transfer networks known as hundi/hawala, as well as through legitimate banking channels using falsified documentation. What transformed this from a simple fraud case into a significant money laundering prosecution was the method by which Axact disguised and integrated its illicit proceeds.

Following the raid, the FIA registered multiple First Information Reports (FIRs) against Shoaib Sheikh and other key executives under provisions of the Pakistan Penal Code, the Cyber Crime Law, and the Anti-Money Laundering Act,

2010. The case was investigated jointly by the FIA and the Financial Monitoring Unit, which analyzed transaction data obtained from banks and digital payment processors. In 2018, a special court in Islamabad convicted Shoaib Sheikh and 22 other accused persons, sentencing them to prison terms and imposing heavy fines. The court also ordered the confiscation of assets acquired through the proceeds of crime, including properties and bank accounts. However, in 2019, the Islamabad High Court suspended the sentences and ordered a retrial, citing procedural irregularities. As of 2025, the case continues to wind through Pakistan's legal system, with some convictions upheld and others under appeal.

6.2 The Sindh Bank and Omni Group Scandal

One of Pakistan's most significant money laundering cases involved the Omni Group, a business conglomerate owned by the family of former President Asif Ali Zardari, and its alleged use of Sindh Bank to facilitate illicit financial flows(Jafri 2017, Gul and Khan 2023). The case emerged from investigations by the National Accountability Bureau (NAB) and the Federal Investigation Agency (FIA) following the 2018 general elections, which brought a new government committed to anti-corruption enforcement. Allegations centered on the use of fake bank accounts to launder billions of rupees through suspicious transactions. Investigators claimed that Sindh Bank was used to facilitate transactions for the Omni Group without proper due diligence. The scheme allegedly involved routing funds through a network of front companies and benami (proxy) accounts, with the proceeds used for political purposes and personal enrichment.

The case prompted a wide-ranging investigation by NAB and the FIA, resulting in the arrest of several key suspects, including Omni Group executives and bank officials. In 2021, an accountability court convicted Abdul Ghani Majeed, a key Omni Group executive, and others, ordering confiscation of assets and imposing prison sentences. However, higher courts later suspended some convictions, and the case remains entangled in legal appeals. The State Bank of Pakistan also took regulatory action, imposing fines on Sindh Bank for AML compliance failures and ordering remedial measures. The scandal exposed weaknesses in the banking sector's oversight of politically exposed persons (PEPs) and the need for enhanced due diligence.

6.3 The Securities and Exchange Commission of Pakistan (SECP) Beneficial Ownership Enforcement

While not a traditional criminal prosecution, a notable enforcement action by the Securities and Exchange Commission of Pakistan (SECP) in 2023 demonstrates the application of AML/KYC principles in the corporate sector. SECP, acting on intelligence from the Financial Monitoring Unit, investigated multiple shell companies suspected of being used for money laundering through real estate purchases(Haidar, Saeed et al. 2025, RAZA and Siddiqui 2025). The investigation revealed that several companies registered with SECP had submitted false information about their shareholders and directors, concealing the identities of the true beneficial owners. These companies had been used to purchase high-value properties in Islamabad and Lahore, with funds traced to sources outside Pakistan. The transactions were structured to avoid triggering reporting thresholds, a technique known as smurfing or structuring.

6.4 Hawala/Hundi Network Dismantlement in Peshawar

In 2022, the Federal Investigation Agency (FIA), in coordination with the State Bank of Pakistan, dismantled a major hawala/hundi network operating in Peshawar, near the Afghanistan border(Ali, Malik et al. 2025). The network had been facilitating the transfer of billions of rupees to and from Afghanistan, Iran, and Gulf countries, bypassing formal banking channels entirely. The investigation began when the Financial Monitoring Unit detected anomalies in the transaction patterns of several small businesses in Peshawar's currency market. Using data analytics and human intelligence, investigators identified a network of hawala dealers operating through seemingly legitimate businesses such as general stores, travel agencies, and exchange companies. The network processed an estimated 50 billion rupees annually, with funds originating from both legal trade and illicit activities, including drug trafficking and smuggling. The FIA raid resulted in the arrest of 15 key operatives and the seizure of records, cash, and assets worth millions of rupees. Cases were registered under the Anti-Money Laundering Act and the Foreign Exchange Regulation Act. Convictions were obtained against several operatives, though some remain at large across the border. The State Bank of Pakistan used the case to issue new guidelines for exchange companies and money changers, requiring enhanced due diligence and real-time reporting of large transactions. The case also informed Pakistan's strategy for formalizing cross-border trade with Afghanistan, including pilot projects for digital settlement systems.

7. Challenges Faced by Pakistan

7.1 Data Privacy and Security Concerns

The centralization of biometric and personal data within NADRA's database, while enabling robust identity verification, also creates significant privacy and security vulnerabilities. Several high-profile data breaches have raised public concern, including incidents where personal data of Pakistani citizens was reportedly found for sale on dark web forums. Furthermore, the absence of a comprehensive data protection law in Pakistan exacerbates these risks. While a Personal Data Protection Bill has been under consideration for several years, it has yet to be enacted, leaving citizens without clear legal recourse in cases of data misuse. Financial institutions that access NADRA's database for KYC purposes also store customer data on their own systems, creating additional points of vulnerability. The tension between accessibility for legitimate compliance purposes and protection against unauthorized access remains unresolved.

7.2 Regulatory Capacity and Enforcement Gaps

While Pakistan's legal and regulatory framework for AML/KYC has improved substantially, the capacity of regulatory agencies to enforce these rules consistently and effectively remains constrained. The State Bank of Pakistan, despite its technical expertise, faces challenges in supervising a rapidly expanding digital financial sector. The proliferation of digital wallets, mobile banking apps, and agent networks has outpaced the regulator's ability to conduct on-site inspections and monitor compliance in real-time. Similarly, the Financial Monitoring Unit, while strengthened during Pakistan's FATF engagement, operates with limited human and technological resources relative to the volume of suspicious transaction reports it receives. Analysis and dissemination of intelligence to law enforcement agencies often face delays, reducing the effectiveness of AML efforts. Prosecution rates for money laundering offenses, while improving, remain low compared to the volume of reported suspicious transactions, reflecting weaknesses in the criminal justice system's handling of complex financial crimes.

7.3 Informal Economy and Hawala/Hundi Networks

The most formidable challenge to Pakistan's AML/KYC regime is the sheer scale of its informal economy. Estimates suggest that a significant portion of Pakistan's economic activity occurs outside the formal financial system, with cash transactions dominating in rural areas, wholesale markets, and many service sectors. This informal economy provides fertile ground for money laundering, as illicit funds can be commingled with legitimate cash-based businesses and moved through informal value transfer systems such as hawala/hundi. These informal networks operate on trust and relationships, leaving no paper trail or digital record for regulators to monitor. They are particularly prevalent in cross-border trade with Afghanistan and Iran, where formal banking channels are limited or subject to sanctions. Even as DPI brings more Pakistanis into the formal financial system, the parallel informal economy continues to offer an alternative channel for those seeking to avoid scrutiny. Addressing this challenge requires not only technological solutions but also broader economic reforms to incentivize formalization and deter informal transactions.

7.4 Financial Inclusion Versus Regulatory Rigor

Pakistan faces an inherent tension between the goals of financial inclusion and regulatory rigor. The tiered KYC approach adopted for digital wallets allows millions of previously unbanked individuals to access basic financial services with simplified due diligence. While this promotes inclusion, it also creates potential loopholes. Multiple low-limit wallets could theoretically be used to circumvent transaction monitoring, and the agents responsible for onboarding customers in remote areas have occasionally been implicated in fraudulent verifications. Striking the right balance remains challenging. If KYC requirements are too stringent, they exclude the very populations that digital financial services aim to serve. If they are too permissive, they create vulnerabilities that can be exploited for money laundering. Pakistan's regulators must continuously calibrate this balance, drawing on data and risk assessments to adjust requirements as the financial landscape evolves.

7.5 Technological Infrastructure Gaps

While Pakistan's DPI has advanced significantly, gaps in technological infrastructure persist, particularly in rural and remote areas. Internet connectivity remains unreliable in many regions, with frequent disruptions and slow speeds hampering real-time verification and digital transactions. Electricity shortages further compound these challenges, as both bank branches and agents may be unable to process transactions during power outages. Digital literacy is another significant barrier. A substantial portion of Pakistan's population, particularly among older adults, women, and rural communities, lacks the skills and confidence to use digital financial services effectively. This not only limits the reach of DPI-enabled AML/KYC but also creates opportunities for fraudsters who exploit users' unfamiliarity with technology. Addressing these gaps requires sustained investment in infrastructure and education, alongside the development of user interfaces that are accessible to populations with limited literacy.

7.6 Political Interference and Institutional Independence

High-profile money laundering cases involving politically exposed persons have repeatedly raised concerns about political interference in investigations and prosecutions. This undermines public confidence in the AML regime and allows politically connected individuals to evade accountability. Ensuring the independence of institutions such as NAB, FIA, and the FMU from political influence remains an ongoing challenge. While legal protections exist, their effectiveness depends on the broader political environment and the commitment of successive governments to uphold the rule of law. International pressure, including FATF monitoring, has helped insulate these institutions to some extent, but domestic political dynamics continue to pose risks.

7.7 Evolving Nature of Financial Crime

The increasing sophistication of cybercrime, including phishing attacks, ransomware, and business email compromise, creates new channels for acquiring and laundering illicit funds.

8. Conclusion

This study examines the role of Digital Public Infrastructure in strengthening Anti-Money Laundering and Know Your Customer frameworks within developing economies, using Pakistan as a detailed case study. The findings reveal a nuanced picture. DPI has unquestionably strengthened Pakistan's AML/KYC capabilities in significant ways. The cases examined in this study demonstrate that while financial criminals continue to find ways to evade detection, they now face considerably higher hurdles than in the past. The research also makes clear that DPI is not a panacea. The challenges documented in this paper and the constantly evolving nature of financial crime all serve as reminders that technology alone cannot solve deeply embedded structural problems. When accompanied by robust legal safeguards, adequate regulatory capacity, effective inter-agency coordination, and sustained political commitment, DPI can dramatically enhance the efficiency, accuracy, and reach of financial integrity mechanisms. When these supporting elements are weak, however, even the most sophisticated digital infrastructure will fall short of its potential.

9. Recommendations

Based on the findings of this study and the challenges identified in Pakistan's DPI-enabled AML/KYC framework, the following recommendations are offered for policymakers, regulators, financial institutions, and international partners.

***Enact Comprehensive Data Protection Legislation*:** The absence of a dedicated data protection law creates significant privacy and security vulnerabilities. Pakistan should urgently enact the Personal Data Protection Bill with strong enforcement mechanisms, clear consent requirements, and meaningful remedies for citizens whose data is misused. This will build public trust in digital financial services and align Pakistan with international best practices.

***Strengthen Regulatory Capacity and Resources*:** The State Bank of Pakistan, Securities and Exchange Commission of Pakistan, and Financial Monitoring Unit require enhanced human and technological resources to supervise a rapidly expanding digital financial sector. This includes increasing staffing for on-site inspections, investing in advanced transaction monitoring systems, and providing specialized training for financial crime analysis.

***Develop a Unified Inter-Agency Data Sharing Platform*:** The persistence of data silos among regulatory and law enforcement agencies hampers the effective investigation of complex financial crimes. Pakistan should develop a secure, interoperable digital platform enabling real-time information sharing between SBP, SECP, FMU, FIA, NADRA, and the Federal Board of Revenue, with appropriate privacy safeguards.

***Invest in Digital Infrastructure and Literacy*:** Gaps in internet connectivity, electricity reliability, and digital literacy, particularly in rural areas, limit the reach of DPI-enabled AML/KYC. Sustained public and private investment in telecommunications infrastructure, coupled with nationwide digital literacy programs targeting women, older adults, and rural populations, is needed to ensure inclusive access.

***Enhance Cross-Border Cooperation and Border Management*:** Pakistan's porous borders and informal cross-border trade create significant money laundering vulnerabilities. Strengthened cooperation with neighboring countries, particularly Afghanistan and Iran, on information sharing and joint investigations is essential. Investment in digital customs systems and coordination between customs authorities and financial regulators can help detect trade-based money laundering.

***Insulate Financial Crime Investigations from Political Interference*:** The perception of selective justice in politically connected cases undermines public confidence and the effectiveness of the AML regime. Legal and institutional safeguards should be strengthened to protect investigative and prosecutorial independence, ensuring that all cases are pursued consistently regardless of the individuals involved.

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The Right to Water under the African Human Rights System: Normative Foundations and Enforcement Challenges

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ABSTRACT

Safe, sufficient water access remains a pressing human rights problem in Africa, where many people lack reliable access to water. This article primarily assesses the extent to which African regional human rights legal instruments enshrine water rights and evaluates how regional human rights bodies promote and enforce them. Therefore, the study explores the extent to which the right to water is entrenched in the African Charter-based framework, and appraises the jurisprudential developments and enforcement challenges affecting its realisation. To achieve these aims, the study utilizes a doctrinal and jurisprudential research approach, which relies on an analysis of primary regional human rights instruments and decisions of the African Commission and the African Court. The study found that although the water right is protected either explicitly or implicitly through the interpretation of related provisions, its enforcement is beset by various reasons.

Keywords: African Regional Human Rights System; Enforcement Mechanisms; Water Rights; Socio-Economic Rights; Water Justice

1. Introduction

Ensuring safe and adequate access to water is an absolute prerequisite for human survival, dignity, and development. Although the water right is not specifically articulated within the ambit of earlier generations of international instruments safeguarding human rights, it has garnered recognition over time as an important human right, by inferring it from the right to life, health, and an adequate standard of living (UN Committee on Economic, Social and Cultural Rights [CESCR], 2003). On the global scale, water rights were first formally recognised by the United Nations' General Assembly in 2010 (UNGA, 2010). In this landmark decision, the Assembly clarified that clean and safe water forms a critical basis for the preservation of life and the exercise of all other rights. In addition, countries have demonstrated their commitment to ensuring water access through international and continental political actions. The incorporation of water in the Sustainable Development Goals is a testament to this commitment (SDG, 2015). The African Union has demonstrated its political commitment to the availability of water and sanitation by including them in its Agenda 2063 and designating 2026 as the Year of Water (African Union Agenda 2063 and 2026 Year of Water Sustainability).

Despite the UN's formal recognition of water rights and international and regional political commitments, the realisation of water rights remains challenging. This is particularly true for Africa, where water scarcity, inadequate infrastructure, ecological degradation, and climate change have exacerbated the existing socioeconomic conditions (World Meteorological Organization, 2025). Let alone other African countries, the Republic of South Africa, which is Africa's leading economy, has found the right to water to be one of the most violated rights, along with the rights to food, education, health and social security (South African Human Rights Commission, 2024/2025). Therefore, addressing the current African water state of affairs demands strong regional human rights protection, standards and a strong enforcement mechanism.

Grounded on the above-mentioned situation in Africa, this article examines whether the existing African regional mechanisms for human rights protection provide an adequate legal protection to water rights and if institutional arrangements are in place to enforce them into action. Therefore, the study first examines the legal foundation of water rights in the continental human rights treaties developed by Africa. It then examines the status of the institutional continent's human rights protection, interpretation, and monitoring bodies to implement the water rights and identifies institutional and operational bottlenecks impeding the enforcement of these rights. Finally, the study wrapped up with succinct conclusions.

2. Conceptual and Theoretical Framework

Human rights laws sustainably acknowledge that Water rights are a basic to human dignity and survival, and broader development goals. Although the International Covenant on Economic, Social and Cultural Rights (hereinafter 'the ICESCR') is mute regarding water rights, the CESCR's General Comment 15 later clarified that water rights are implicitly derived from the covenant's Articles 11 and 12 (CESCR, 2003).In this comment, the Committee has defined the rights as a human entitlement, which is sufficient, safe, acceptable, physically accessible, and affordable for personal and household consumption. These comments, combined with the recognition of the water rights by the UN General Assembly, give the water rights a broad legal basis under international law. These instruments offer a high level of conceptual clarity and underscore the global consensus that water is a human right. However, the fact that both instruments are non-binding may limit their applicability.

The substantive elements articulated under the General Comment No 15 of the CESCR provide critical benchmarks for evaluating state compliance regarding the obligation to ensure water accessibility. "Availability" refers to the uninterrupted and adequate supply of water for consumption, sanitation, hygiene, and related domestic functions. "Accessibility" entails accessibility within physical reach, economic affordability, elimination of inequality, and accessing water-related information. Water should be safe for drinking and within reasonable physical reach of individuals, including the vulnerable. "Quality" entails that water be "safe for drinking, i.e., free from harmful contaminants, and of reasonable colour, odour, and taste" (CESCR, 2003). These elements provide clear frameworks for water rights, and mandates state to safeguard them as much as their available resources allow (ICESCR, 1966).

The other major theoretical debate relates to the derivative and autonomous nature of the water right. The right was customarily viewed as not standalone, but a derivative of other socio-economic rights. However, the General Assembly's recognition and the evolving CESCR comments indicate that the water right is gradually heading towards becoming a standalone right.

The water right exhibits mutual interdependence with all basic human entitlements. Particularly, the water right is inextricably linked to healthy ecology, life, health, and dignity. The absence of water access results in preventable diseases and undermines public health systems. It also undermines basic human dignity. Environmental degradation and water source pollution threaten the quality of water, thereby demonstrating the linkage between human rights protection and ecology.

Enforceability of water right is further influenced by the socio-economic rights justiciability argument. While it is argued that resource constraints negate judicial intervention, recent jurisprudence shows that courts are able to assess minimum core obligations and reasonableness of state responses (Liebenberg, 2010). The minimum core doctrine, which is supported by CESCR (2003), emphasises that states must guarantee essential minimum of rights irrespective of resource constraints, which enhances the practical feasibility of water rights within global and continental human rights regimes.

3. Normative Foundations of the Water Rights in the African Human Rights System

Water right doesn't receive an explicit recognition in the African Charter on Human and Peoples' Rights (hereinafter 'the ACHPR'), though the charter remains an overarching rights instrument. Despite this omission, the normative basis for water rights is traceable to certain substantive articles of the same Charter and to other African regional instruments. According to the African Commission, water rights are implicitly derived from the rights to the highest attainable standard of physical and mental health and to a general satisfactory environment conducive to development under the ACHPR. This argument upholds that the water right is indispensable for enjoying these two rights.

Anchored in the normative framework of the ACHPR, the African Commission on Human and Peoples' Rights (hereinafter 'the African Commission') interpreted the water rights stemming from Articles 16 and 24 of the ACHPR. In *Social and Economic Rights Action Centre (SERAC) and Another v. Nigeria, th*e Commission found that the state's failure of averting environmental pollution and water-source contamination represents a breach of the right to healthy and satisfactory environment, as enshrined in the ACHPR. Therefore, these findings demonstrate that the water right is implicitly derived from the ACHPR.

Unlike the ACHPR, an explicit sanitation and water rights are recognized African Charter on the Rights and Welfare of the Child (hereinafter 'the African children's Charter'). Article 14 of the Charter obliges states to ensure that children in Africa get adequate nutrition and have access to safe drinking water. The Charter takes a lead in guaranteeing standalone water rights and acknowledging the heightened risk attached to water-related health problems. However, since the Charter only applies to children, the water rights protected therein cannot be transferred to other sections of society.

The Protocol to the African Charter on the Rights of Women in Africa (hereinafter referred to as 'the Maputo protocol') is another important framework for safeguarding the rights to water and nourishment on the continent. This protocol, under Article 15, entitles women in general and, specifically, vulnerable rural women to access adequate nutrition and clean water (the Maputo Protocol, 2003). The preferential recognition of water rights to women is encouraging, given that African women bear a disproportionate burden in accessing water.

Recourse to interpretative guidance of general comments buttresses the binding normative water rights. Within African jurisdiction, the African Commission's general comments on socio-economic rights elucidate state obligations to provide social services, including water. The same impressive progress in global human rights regimes supported developments in African regional water rights. In particular, the ICESCR and the CESCR's General Comment No. 15 are instrumental in elucidating the scope of water rights and the corresponding obligations of states.

4. Institutional Protection Mechanisms

The existence of institutional mechanisms capable of enforcing the water rights directly guaranteed by various human rights treaties or indirectly derived from them is crucial. The African Commission oversees the state parties' implementation of the rights that are contained in the ACHPR, thereby reviewing the state reports, as well as examining non-state communications such as those by individuals and NGOs (the African Charter, articles 45, 47 and 55). By anchoring these mandates, the Commission has broadened the scope of rights beyond those explicitly recognised therein. The *Social and Economic Rights Action Center (SERAC) and Another v. Nigeria*, presented above, is a typical example. This decision demonstrates the commission's readiness to expand the interpretation of the African Charter to the greatest degree possible, thus ensuring the effective enforcement of rights guaranteed in the African Charter and associated human rights standards. Despite this strength, the commission is hampered by enforcement bottlenecks, as its decisions are merely recommendatory. Therefore, its decisions lack binding legal force and thus rely on the state's cooperation.

The African Court on Human and Peoples' Rights (hereinafter 'the African Court') interprets regional normative instruments and issues decisions with legal force. However, some circumstances force the African Court to accept fewer cases than other continental humanitarian courts. The states' reluctance to ratify the establishment protocol of the court to avoid accountability, and the ratified states' unwillingness to agree on the court's competence to accept individual applications and several supply and cost-related bottlenecks (Frans Viljeon, 2013). Although the Court's case law on water rights remains in an incipient stage of development, it has delivered vital decisions. Its judgment in African Commission on Human and Peoples' Rights v. Kenya (the Ogiek case) laid a significant ground for safeguarding water rights on the continent. In this case, the court found a direct nexus between the indigenous peoples' right to ancestral lands, resources and the realisation of their water rights (the African Court, 2017).

An interplay between national courts and regional mechanisms for human rights is central to safeguarding human rights. The African human rights system operates under complementarity tenet, which requires pursuing all available local remedies before seeking recourse at regional mechanisms. The national courts are the primary enforcement organs. Where local law protects socio-economic rights, courts can deal directly with water-related grievances. Regional bodies are supervisory and normative bodies and guide the harmonization of local and regional law.

The National Human Rights Institution (NHRS) are indispensable actor in the human rights advancement. Recognized by the UNGA Paris Principles, the NHRIs contribute towards promoting awareness and monitoring the implementation of state obligations related to social as well as economic entitlements, including water and sanitation. Therefore, serving as an interface between local governments and regional bodies, NHRIs make positive contributions for advancement and enforcement of rights.

5. Jurisprudence on the Water Rights

The water, which was denied direct recognition in the ACHPR, has gained an implicit protection through the progressive interpretation of the treaty's provisions. The role of African regional institutions for human rights protection in the advancement of water rights is noteworthy. In particular, the analysis, decisions and interpretations of the African Court and Commission have been crucial to the emancipation and development of the right.

The case of Social and Economic Rights Action Centre (SERAC) and Another v. Nigeria is an instrumental decision in embedding water rights in Africa. The communication concerned severe ecological degradation caused by oil exploitation in the Niger Delta, which seriously compromised the Ogoni peoples' entitlement to health through pollution of land and water sources. In this communication, the commission found that Nigeria had breached the right to live in a sound and healthy environment in contrast to the respondent's obligation under the ACHPR (the African Commission [ACHPR], 2001). The commission particularly argued that Nigeria failed to take proactive preventive safeguards against pollution and safeguard its citizens from corporate malpractices. Although the commission neither found the violation of water rights in favour of the complaints nor articulated a standalone right thereof, its decision is notable as it established a nexus between safe drinking water, human health and environmental protection. More significantly, the Commission upheld that the respondent state bears dual responsibility: to respect rights by abstaining from interfering with them and safeguard individuals from third-party interference with the exercise of social and economic entitlements. Therefore, the findings of the SERAC are regarded as a pioneering milestone for the quasi-judicial review and amenability of the second-generation rights in Africa (Odinkalu, 2004).

Progressive decisions related to water rights have been issued by the African Court in addition to the above developments. The judgment on *the African Commission on Human and Peoples' Rights v. Kenya* formed a vital precedent in this regard (the African Court, 2017). In this case, the court examined whether forced eviction of Ogiek indigenous peoples from their traditional territory, the Mau Forest, constituted the applicant's alleged violation of human rights. Although the gist of the case concerned land, culture, religion, and natural resources, it also involves access to water, as the forced eviction of the homeland undermines their indigenous access to water. The African court

acknowledged indigenous communities' collective rights to natural resources and the intractable linkage between land and the survival of the community. The Ogiek case is a strong example of the AC's willingness to apply the African Charter dynamically in line with the evolution of human rights and evolving needs of the international community.
Apart from these cases, new emerging issues of water-related claims heard by the African Commission and Court reflect an increasing awareness of environmental justice and vindication of socio-economic entitlements. Communications involving issues of forced evictions, pollution, and provision of public services often touch upon issues of water pollution or denial of access. Although these issues are not raised under an explicit heading of "right to water," these disputes increasingly invoke Articles 16 and 24 of the African Charter and defer to interpretative guidelines of international jurisprudence, such as General Comment No. 15 of the Committee on Economic, Social and Cultural Rights (Committee on Economic, Social and Cultural Rights [CESCR], 2003).
Judicial construction of socio-economic rights within the African regional human rights system has moved it toward recognising their enforceability. Traditionally, socio-economic rights were viewed as programmatic and subject to progressive realisation, raising questions of judicial overreach and resource allocation. Nevertheless, the African Commission in SERAC rejected the non-justiciability of socio-economic rights, stating that states have an immediate obligation to protect the minimum standards required (ACHPR, 2001). Moreover, the African Court has been clear that the rights contained in the Charter must be interpreted holistically and in accordance with contemporary human rights norms (AfCHPR, 2017). This approach is consistent with the broader international trend that recognizes minimum core obligations and the justiciability of essential socio-economic rights (CESCR, 2003).
Nonetheless, challenges persist. The majority of these cases are based on derivative arguments that ground water access as a right with reference to other rights. Even as such an approach has helped incrementally, it might undermine clarity and enforcement. The non-explicit codification of water access as a right under the African Charter has further led to interpretive ambiguity. Despite these challenges, it has become clear that the cumulative interpretative framework of the Commission and the Court's landmark decision has led to the gradual development and consolidation of normative principles regarding water access as a fundamental human right. Through purposive interpretation and reference to international law, water has increasingly been affirmed as essential for human dignity, health, and environmental sustainability.

6. Enforcement Challenges

The enforcement of rights guaranteed by the African regional mechanism for human rights is a serious challenge. This could undermine Africa's efforts to establish continental treaties to protect and promote rights such as the water rights. In particular, the implementation of the water right is problematic, given that it is not explicitly enshrined in the continent's human rights treaty, ACHPR, and is inferred by interpretation from other rights. This may negatively impact legal certainty and the development of consistent jurisprudence, particularly when states dispute their obligations.
The fact that the implementation of social and economic rights is inherently resource-intensive and the pervasive resource constraints in Africa may render the enforcement of water rights challenging. Moreover, the gradual realisation of these rights under ICESCR, based on the mobilisation of available resources, may further delay their enforcement. However, the gradual realisation principle doesn't absolve the state from its duty to fulfil the essential minimum of water rights, as enshrined under General Comment 15. However, most African states are facing serious economic constraints in providing access to drinking water. Lack of resources is among the primary excuses advanced by the states for protracted dereliction of the water rights. Even though resource constraints are a legitimate concern, delaying the implementation of an immediate and minimum core obligation concerning the water rights is unacceptable within global international human rights regimes.
Another limiting aspect is state sovereignty and political resistance. The African mechanisms for human rights are based on respecting state sovereignty. In addition, the effectiveness of the regional human rights mechanisms always depends on the cooperation of the States when implementing their decisions. The states' perceptions of the regional mechanism for human rights as excessively overindulging in judicial scrutiny of socio-economic policies may breed the states' reluctance to both African Commissions' resolutions and the African court's rulings (Viljoen, 2012). Political sensitivities surrounding the governance of natural resources, land rights, as well as utilities may create a high level of political resistance.
Another issue that has been an ongoing problem is the absence of robust compliance and implementation mechanisms for quasi-judicial and judicial decisions. Although the decisions of the African Court carry a binding legal force, there are no strong enforcement mechanisms in place to put them into action. For instance, the African Court's dependence on the African Union Assembly to monitor compliance with its decisions demonstrates that there are no strong measures in place (African Court on Human and Peoples' Rights [AfCHPR], 2017). Moreover, there are no binding measures on the recommendations that come from the African Commission, and their implementation depends on the states themselves. In addition, delays in the implementation of the decisions, lack of reparations, and lack of reporting weaken the entire system. Therefore, any advancements that may be made by the jurisprudence may not be reflected in the water access.
The water service privatization and corporate accountability add complexity to this area. In most African countries, water services have been either partially or fully privatized as a result of structural adjustment programs and economic

reforms. While this has been seen as a way to ensure equitable and non-discriminatory delivery of water, it is challenged because it results in high tariffs, thus denying marginalized groups access to water services. However, international human rights instruments recognize that states have to reserve the right to regulate private companies to ensure that the privatization of water does not deprive individuals of their right to water (CESCR, 2003). In SERAC v. Nigeria, the African Commission maintained that states are duty-bound to protect individuals from third parties' harmful activities, including corporations. However, this has been complicated due to poor regulations, a lack of oversight capacity, and corruption. In addition, transnational corporations that deal with extractive industries also contribute to water pollution. These challenges, collectively, underscore the deficiencies of the African human rights structure. Notwithstanding the developments in jurisprudence, which underscore an emerging understanding of water as an indispensable precondition for the enjoyment of the right to health, dignity, and the environment, the enforcement gap remains significant. To overcome these challenges, it is necessary to better articulate the normative standards, strengthen institutional follow-up, as well as enhance domestic incorporation of regional norms, as well as state and non-state actor accountability. Otherwise, the transformative promise of the right to water in Africa will remain aspirational rather than actual.

7. Comparative and Regional Perspectives

A comparative analysis of regional systems of human rights would offer invaluable insights for further elucidating how the right to water can be interpreted, enforced, and enhanced in Africa. Although regional systems differ in their textual content and institutional arrangements, both the American and the European protection mechanisms offer valuable jurisprudential and institutional approaches that could be relevant to Africa.

Through progressive interpretation, the Inter-American Court of Human Rights(hereinafter referred to as 'IACtHR') has been enhancing the protection of socio-economic rights, although they are not explicitly guaranteed in the regional human rights Convention. The court interpreted the right to life, personal integrity, property, and a healthy environment, also implicitly encompassing the water right, and thereby addressed the normative gap in the regional convention. In *Yakye Axa Indigenous Community v. Paraguay*, the court determined that the respondent state's failure to ensure the indigenous communities' access to a safe water source and basic conditions of subsistence was a violation of states' positive obligation to protect the right to life (IACtHR, 2005). In Lhaka *Honhat (Our Land) Association v. Argentina*, the Court defined that the water right forms a constitutive element of the right to a healthy environment, while reaffirming the state's positive duty to provide access to natural resources (IACtHR, 2020).

The European regional mechanism for human rights offers another alternative model. The European perspective is unique as the European Convention for Human Rights lacks an explicit provision on socio-economic entitlements, and the European Court for Human Rights (hereinafter referred to as 'ECtHR) is traditionally oriented on civil and political rights adjudication. Nonetheless, the court has inferred water rights through the provisions of rights enshrined in the convention. In *López Ostra v. Spain*, the court found that a grave environmental adulteration of living conditions can violate Article 8 of the Convention (ECtHR, 1994). Though this case is not directly concerning water rights, it indicates that severe environmental degradation that impacts water quality results in a breach of states' responsibility to the environment. Furthermore, the European Social Charter specifically protects socio-economic rights, including health and housing rights, and has been interpreted to include access to essential services (European Committee of Social Rights, 2018).

The African mechanisms for human rights protection should draw lessons from European and American models of regional human rights. Firstly, interpretation is a formidable tool to develop water rights out of express protection provided to related rights. Secondly, the recognition of minimum core obligations can clarify and enhance the effectiveness of provisions. Thirdly, the development of effective remedies and follow-up action can be crucial in translating judicial decisions into action. Finally, the integration of environmental, indigenous, and socio-economic considerations can be a powerful tool in providing more effective support for communities that are particularly vulnerable to water insecurity. By employing comparative approaches sensitive to regional realities, Africa can further entrench water rights in the legal and institutional mechanisms.

8. Strengthening Enforcement and Norm Development

The legal protection and practical enforcement of water rights in the African mechanism demand addressing the identified legal and institutional shortcomings. Therefore, first, to rectify the ACHPR's failure to specifically acknowledge the water rights and derive them from other rights, the regional human rights system should establish self-standing water rights. This will improve the enforcement and remove legal ambiguity that could be used by state actors to delay compliance.

Another important area for development is the expansion of jurisprudential interpretation. The significance of the African human rights bodies' interpretation and protecting socio-economic rights in general and water rights in particular is evidenced in the SERAC v. Nigeria case and the Ogiek case (African Commission, 2001; AfCHPR, 2017). Further development of jurisprudence that explicitly recognizes water as an autonomous right would help to solidify its normative status. Support for civil society-led strategic litigation, as well as capacity-building for judges and commissioners, would be useful in deepening judicial engagement with water rights.

Improving judicial accessibility to the African Court is also important. Many African people and communities are unable to access justice because of the procedures and costs involved in the process. Improving victims' direct access to the

Court, reducing procedural costs, and simplifying procedures would enhance access to justice, particularly for underprivileged communities, who are most affected by breaches of their right to water resources (Viljoen, 2012). Moreover, local courts should be encouraged to adjudicate water rights by using regional human rights frameworks, enabling the human rights frameworks of Africa to operate collaboratively.

Strengthening mechanisms for monitoring and follow-up is equally important. African states resist implementing the African Commission recommendations or the African court's decisions. For example, the Ogeik case, decided by the African Court in 2017, was not implemented by the Kenyan government, prompting the court to issue a new order in 2025 (AfCtHPR, 2025). Developing strong National Human Rights Institutions (NHRIs) is crucial for monitoring and verifying human rights and for pressuring states to comply with their positive obligations regarding water rights. In addition, publicising state reports on compliance and working with civil society organisations would encourage state action (UNGA, 1993).

Lastly, the enforcement of water rights necessitates integrating them into domestic normative frameworks. Incorporating the right to water into national legislation will provide constitutional protection, thereby facilitating its enforcement and prioritisation. National laws should establish minimum benchmarks for water quality, accessibility, and affordability. It should also establish a regulatory framework for both public and private water service providers. This integration will ensure a balance between regional obligations and domestic law.

9. Conclusion

This article examined the normative frameworks and their corresponding enforcement arrangements, as well as the implementation challenges of water rights within the African regional mechanisms for human rights. Although the African Charter fails to explicitly recognise water as an autonomous right, derivative protections under Articles 16 and 24, together with complementary instruments such as the African Children's Charter and the Maputo Protocol, provide a normative basis for water-related claims. Landmark jurisprudence, including *SERAC v. Nigeria* and the *Ogiek case*, has further reinforced these protections by interpreting socio-economic and environmental entitlements to include access to water. Comparative perspectives within the European and Inter-American regional mechanisms for human rights illustrate lessons to be learned from dynamic interpretation, recognition of minimum core obligations, and integrated environmental-socio-economic approaches. Despite these advances, significant normative and institutional gaps persist. The absence of explicit codification, resource constraints, political resistance, and weak enforcement mechanisms continues to hinder the effective realization of water rights. Privatization and limited corporate accountability exacerbate access disparities, while reliance on derivative interpretation leaves legal protections vulnerable to contestation. Monitoring and follow-up mechanisms are underdeveloped, reducing compliance and limiting tangible improvements in water access. Prospects for water justice in Africa depend on concerted legal, institutional, and policy reforms. Providing the legal recognition to water as a fundamental right, expanding jurisprudential interpretation, enhancing access to the African Court, integrating water rights into national constitutions, and strengthening monitoring and accountability mechanisms are essential steps. By adopting these measures, the African human rights system can translate normative acknowledgement into practical enforcement, ensuring safe and sufficient water access becomes a reality for all, particularly marginalized and vulnerable communities.

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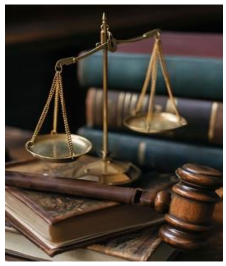

A Theoretical and Doctrinal Study of Investor Due Diligence in International Investment Arbitration

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ABSTRACT

Investor prudence obligations are crucial in international investment arbitration, yet their application faces challenges due to unclear and inconsistent standards set by arbitral tribunals. This inconsistency stems from the concept of investor prudence obligations being derived from the broader notion of prudential obligations, which primarily focus on States as the subjects of regulation. Consequently, applying these obligations to non-State actors, like investors, presents inherent difficulties. Moreover, the theoretical frameworks employed by arbitral tribunals often fail to address the specific needs of investor prudence obligations within this context. The obligations have evolved, influenced by the interactions between sovereign States and investors, leading to a shift in their functional positioning and boundaries. To enhance the normative expression of these obligations, it is essential to align them with the operational logic of existing jurisprudence. Key considerations should include the investor's identity, economic capacity, and the host country's social environment, which affect their control over risks. Additionally, tribunals should differentiate between various stages of legal relations, assessing both the investor's and host country's risk control capacities, to establish case-specific standards for prudential obligations.

Keywords: International Investment Arbitration; Investor Duty of Prudence; Investment Protection; Sovereign Interests; Predictability.

1. Introduction

In recent years, the question of how to balance host countries and foreign investors within the framework of international investment law has become central to the reform of international investment arbitration. With the rise of multinational enterprises, there is a growing consensus in the international community that investors must assume corresponding obligations when they enjoy the investment treatment given by the host country. The current general lack of normative provisions directly and explicitly regulating investors in investment treaties has resulted in arbitral tribunals often facing an awkward situation at the level of international law when deciding on the wrongful conduct of investors, instead having to apply the domestic law of the host country.[1]

To alleviate these difficulties, some arbitration tribunals have introduced the normative concept of investor prudence obligations in their decisions. At the application path level, most arbitral tribunals have incorporated investor prudential obligations into the regulated range of the entity's provisions by treaty interpretation. For example, the "compliance with the laws of the host country" clause requires that the investor's entire investment process be conducted in strict conformity with the rules and regulations of the host countries; otherwise, he or she will not receive the investment treatment he or she deserves. The protection of investors' reasonable expectations under the "fair and equitable treatment" clause is also a prerequisite for the fulfilment of the investor's prudential obligations. Such a paradigm of interpretation was also recognized by most arbitral tribunals in subsequent arbitral practice.

However, the consistency of the review model with the arbitral conclusion does not mean that the application of investor prudence obligations in international investment arbitration is clear enough. Quite the contrary, the reasons why the duty of prudence, as a legal norm that began in the field of public international law, could apply to non-State actors in the context of international investment arbitration, its legal construction and how the expression of the norm should be

[1] See Jean-Michel Marcoux, ***"Transnational Public Policy as an International Practice in Investment Arbitration"***, Journal of International Dispute Settlement, Volume 10, Issue 3, September 2019, pp 496 - 497.

determined were not exhaustively addressed in the award. Similarly, at the legal research level, there is a lack of attention and a single perspective on the application of prudential obligations in international investment arbitration.
On the one hand, the existing literature suggests that international law scholars have limited exploration of prudential obligations in the context of international investment law and are not sufficient to generate systematic thinking, either from the perspective of macro institutional construction or from the perspectives of micro rule interpretation. At present, on the other hand, most scholars choose to apply the public law paradigm and sovereign perspective to the normative study of prudential obligations. While such a model would restore to the greatest extent the essence of the duty of prudence at its inception, However, there is no doubt that with the increasing complexity of international relations and the wealth of legal subjects, the above research methods can no longer fully adapt to the development of international law or respond to the actual needs of international investment arbitration.
Thus, the conceptual ambiguity of the predicate level directly results in several inconsistencies and uncertainties in the application of investor prudence obligations at the real level. Fundamentally, the unique litigation structure of international investment arbitration and the complex structure of legal relations impose requirements for domain span and subjective conversion on the application of prudential obligations. Investor prudential obligations need to respond through functional differentiation, and existing analytical frameworks and arbitration practices fail to recognize the paradigm shift in the application of prudential duty.
Accordingly, this article will first comb through the birth and evolution of the concept of "prudential obligation", observe the evolution of its meaning in international law practice from a time perspective, and focus further on the specific application of "investor prudence obligation" in international investment arbitration and related disputes. This paper will use the vertical and horizontal differentiation of the function of "prudential obligation" in the context of international investment arbitration as logical starting points and elaborate on the changes in the function of investor prudence from the field of public law to the field of international investment law. On this basis, the traditional interpretation of its legal basis was revisited and amended and refined accordingly, proposing applicable standards that were consistent with the evolution of prudential obligations themselves and adapted to international investment arbitration.

2. Basic Meaning and Practical Development of Investor Prudence Obligation

2.1 Tracing the Implications of Investor Prudential Obligations

In fact, the investor prudential obligation was not a directly created legal concept, and its original normative reliance was on the broader term "prudential obligation", due diligence refers to the legal subject should do reasonable or legal obligation of care in legal relationship.[2] In the field of international law, the concept of prudential obligations dates back to the 17th century, when they were used to mediate conflicts between States, whereby any State must make due efforts and contributions to the settlement of disputes and must not further aggravate them.[3]

In the 19th century, war became an important part of international relations, the precautionary obligation at this time relates primarily to the rule of international law to which a neutral State is obliged to prevent its nationals from aiding or supplying arms and ammunition to a belligerent State.[4] Since then, such obligations have gradually been extended beyond the laws of war and linked to the sovereignty of States. In the Palmas Islands arbitration case of 1928, the tribunal stated that national sovereignty implied the obligation of the State to protect the rights of other States within its territory,[5] before the Permanent Court of International Justice in the Lotus case, Judge Moore said that a State must exercise due diligence to prevent crimes within its jurisdiction against another State or its citizens.[6] With the development of international law, the duty of care has been gradually extended to international law[7], international humanitarian law[8], cyberspace law[9], international law of the sea[10] and so on, it follows that the system of prudential obligations was designed to impose appropriate limitations on the exercise of State sovereignty. While recognizing the full enjoyment by States of their sovereignty, the abuse of sovereignty should be prevented.[11]

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[2] See Timo Koivurova and Krittika Singh, ***"Due Diligence"***, in Rüdiger Wolfrum (ed.), The Max Planck Encyclopedia of Public International Law (Oxford University Press, 2012), p 1.

[3] See Markus Burgstaller and Giorgio Risso, ***"Due Diligence in International Investment Law"***, (2021) 38 Journal of International Arbitration, p 697.

[4] See A. Ouedraogu, ***"La neutralité et l'emergence du concept de due diligence en droit international: l'affaire de l'Alabama revisité"***, (2011) 13 Journal of The History of International Law, p 307.

[5] See Island of Palmas (Netherlands v. United States of America), 2 RIAA 829, Award, 1928, p 839.

[6] See S. S. Lotus (France v. Turkey), Judgment, P. C. I. J., Ser. A, No. 10, 1927, para 269.

[7] See Medes Malaihollo, ***"Due Diligence in International Environmental Law and International Human Rights Law: A Comparative Legal Study of the Nationally Determined Contributions under the Paris Agreement and Positive Obligations under the European Convention on Human Rights"***, (2021) 68 Netherlands International Law Review 121, pp 121 - 155.

[8] See Marco Longobardo, ***"The Relevance of the Concept of Due Diligence for International Humanitarian Law"***, (2019) 37 Wisconsin International Law Journal 44, pp 44 - 87.

[9] See Antonio Coco and Talita de Souza Dias, ***"'Cyber Due Diligence': A Patchwork of Protective Obligations in International Law"***, (2021) 32 European Journal of International Law 771, pp 771 - 806.

[10] See Tony Cabus (ed.), ***"Due Diligence and the High Seas"***, (Routledge, 2021).

[11] See Olivier Corten, ***"'La complicité' dans le droit de la responsabilité internationale: un concept inutile?"***, (2011) 57 Annuaire Français de Droit International 57, p 67.

Similarly, around international investment, the duty of prudence was initially reflected in the requirements of States regarding the treatment of aliens. In early State practice, there was a consensus that once a State allowed aliens to enter its territory, it had made a commitment to provide them with no less protection than its own nationals[12]. This idea has gradually developed into customary international law obligations for States to protect aliens and their property from acts of damage committed within their territorial jurisdiction, including obligations of prevention as well as obligations to punish.[13] The former implies that States need to provide appropriate legislative, administrative and judicial mechanisms to protect the legitimate rights and interests of aliens. The latter requires States to impose appropriate penalties on the wrongdoers for the loss of the legitimate rights and interests of aliens and to take timely measures to prevent the further expansion of the loss.

In the early days of the creation of the concept of prudential obligations, the State was considered the only eligible subject to be subject to its regulations, its institutional framework and basic elements are based on the interests and capacity of States to act as fundamental references. For a long time, most international judicial practice framed the functional extensions of prudential obligations as limitations on the application of State sovereignty. With the development of economic globalization, the situation has gradually improved, therefor, an increasing number of non-State actors began to participate actively in the formulation of international rules and became an indispensable catalyst for the development of international law. As the international economic situation continues to expand the economy and the economic relations become more and more complex, countries begin to realize that the inflow of foreign capital is not entirely positive. In addition to economic growth, the social impact of foreign investors on host countries, including negative effects such as environmental pollution, labor treatment and conflict management, cannot be ignored.[14]

However, foreign investors often engaged in outward investment activities in the form of transnational corporations, which were not eligible subjects under traditional international law, thus presenting an obstacle to the application of existing norms of international law to directly regulate the misconduct of foreign investments. If the conduct of investors is entirely regulated by the domestic law of the host country, the influence of political factors on judicial proceedings cannot be ruled out.

To address these legal gaps, the view has been called for the creation of the concept of "investor prudence" to frame minimum standards for the conduct of foreign investors at the level of international law.[15] Investor prudence obligations are now clearly enshrined in several international soft law documents relating to the social responsibility of TNCs.[16]

2.2 Specific Application of Investor Prudential Obligations in International Investment Arbitration

2.2.1 Regulatory Development of Investor Prudential Obligations

In early international investment arbitration decisions, the arbitral tribunals showed a more restrained attitude towards the application of investor prudence obligations. On the one hand, the original Bilateral Investment Treaty (BIT) lacked explicit provisions on investor liability, and arbitral tribunals lacked a clear legal basis to regulate investor wrongdoing.[17] On the other hand, most arbitral tribunals interpreted in their early decisions the purpose and purpose of BIT as unilateral investment promotion and protection,[18] and therefore the treatment afforded to investors under the BIT entity clause is often directly linked to the host country's obligations. This leads to the obligation of prudence in most cases as a legal justification for unilateral arbitration by investors and as an objective criterion used by arbitral tribunals to measure the legality of the host State's conduct, so, the application of the precautionary obligation rule is markedly one-way and asymmetric.

As international investment relations have grown and international investment legal norms have improved, the tribunals have become aware of the negative effects of such asymmetrical application on the legitimacy of the international investment arbitration system. As a result, some arbitration tribunals began to change their approach to adjudication. In *Plama v. Bulgaria*, the arbitral tribunal for the first time explicitly stated that the duty of care applied not only to the host State but also to the investor.[19]

Since then, the "investor prudential obligation" has been formally established as a referee's rule. Since then, practice has continued this view, resulting in a certain number of rulings where investor prudence obligations are the focus of the controversy. According to existing arbitration practice, the specific elements of investor prudence obligations can be

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[12] See E. de Vattel (ed.), ***"The Law of Nations, Or, Principles of the Law of Nature, Applied to the Conduct and Affairs of Nations and Sovereigns"***, (T. & J. W. Johnson & Co., 1844), p 313.

[13] See C. Eagleton (ed.), ***"The Responsibility of States in International Law"***, (New York University Press, 1928), p 80.

[14] See Camille Martini, ***"Balancing Investors' Rights with Environmental Protection in International Investment Arbitration: An Assessment of Recent Trends in Investment Treaty Drafting"***, (2017) 50 International Lawyer, pp 529 - 531.

[15] See M. Paparinskis (ed.), ***"The International Minimum Standard and Fair and Equitable Treatment"***, (Oxford University Press,2013), p 256.

[16] See UNCHR, Report of the Special Representative of the Secretary-General on the Issue of Human Rights and Transnational Corporations and Other Business Enterprises, UN Doc. A/ HRC/ 8 / 5, 7 April 2008, p 17.

[17] See Martin Jarrett (ed.), ***"Contributory Fault and Investor Misconduct in Investment Arbitration"***, (Cambridge University Press, 2019), pp 1 - 2.

[18] See Thomas Schultz and Cédric Dupont, ***"Investment Arbitration: Promoting the Rule of Law or Over-empowering Investors? A Quantitative Empirical Study"***, (2015) 25 European Journal of International Law 1147, p 1152.

[19] See Plama Consortium Limited v. Republic of Bulgaria, ICSID Case No. ARB/ 03 / 24, Award, 27 August 2008, para. 222.

summarized as compliance with the legal norms of the host country and reasonable prediction of commercial risks and local policy changes in the host country.[20]
For the former, it requires foreign investors to ensure that investments comply with the relevant laws and regulations of the host country before making investments, and to guarantee the legitimacy of the investment during investment activities. In *Anderson v Costa Rica*, for example, the Tribunal held that prudent investment practice required any investor to conduct adequate investigations before committing funds to any project.[21]
An important element of this duty of care is for investors to ensure that their investments comply with the laws of the host country. In this case, the arbitral tribunal expanded the investor's prudential obligation to the extent that foreign investors are equally obliged to pay due attention to the legality of the conduct of local investment partners in the host country;[22] In addition to the requirement of legality of the investment conduct, the duty of care of the investor has also been defined by the Tribunal as an important factor in determining whether the investor can successfully invoke the entity treatment clause in the BIT. This includes an assessment of the commercial risks associated with the investment and a prediction of changes in the regulatory framework and investment policy of the host State, as the Arbitral Tribunal in *Emilio Agustin Maffezini v. Kingdom of Spain* As stated in the case, "international investment treaties should not be considered insurance against bad business judgment" and investors who fail to fulfil their duty of prudence, which manifests itself as a failure to investigate and assess possible business risks prior to investing, should not be afforded the corresponding protection under an investment treaty.[23]
Similarly, in *Waste Management v Mexico* In this case, the arbitral tribunal rejected an investor's claim for compensation against the expropriation by the host country because it failed to assess the feasibility of the investment in the context of the host country's economic environment;[24] The latter mainly concerns the protection of investor's legitimate expectations, i.e. the obligation of the host country to provide investors with a relatively stable investment environment and to protect the legitimate expected expectations of investors based on the host country's policy commitments. This does not mean, however, that all investors' expected benefits should be protected by investment treaties; investors also need to exercise a duty of prudence. *Parkerings v. Lithuania* ruled that the right of investors to derive the expected benefits from the stability and predictability of the host country's investment environment depends on their ability to meet their obligations of prudence, and that investors should anticipate changes in host country policies and adjust their investment strategies accordingly.[25]

2.2.2 Status of Application of Investor Prudential Obligations: Mechanism Differences and Ambiguity of Standards

It is not difficult to see from the presentation of the above-mentioned arbitration practice that the arbitral tribunal's understanding of the investor's prudential obligation has moved away from the previous evasion and restraint, instead linking the prudential duty to the treatment of the investor, and examining investor wrongdoing in a more positive manner. This appears to have solved the problem of imbalance and imbalance arising from the duty of prudence in refereeing. In fact, however, the application of investor prudential obligations in arbitration practice still contains several misjudgments that cannot be ignored, including ambiguities in the understanding of the mechanisms underlying prudential duty and a lack of analysis of relevant models of conduct evaluation.
First, there is an inappropriateness of the regulatory operating mechanism in the application of investor prudence obligations. The duty of prudence is essentially an obligation of conduct, not an obligation for results.[26] In other words, it only requires investors to effectively meet the corresponding requirements based on the prudential obligation, and the ability to achieve the desired outcome should not be a factor in evaluating whether the prudential requirement has been met.
However, the interpretation of the duty of care in some rulings has broken through the above distinction between the objects of regulation. For example, in the case of *Urbaser v. Argentina*, the arbitral tribunal considered whether the investor fulfilled the duty of care. The judgment based on this is not whether investors have investigated and consulted ahead of time about changes in Argentina's investment policies, but rather that investors must be aware that social

[20] See Markus Burgstaller and Giorgio Risso, ***"Due Diligence in International Investment Law"***, (2021) 38 Journal of International Arbitration 697, p 699.
[21] See Alasdair Ross Anderson and others v. Republic of Costa Rica, ICSID Case No. ARB (AF) / 07 / 3, Award, 19 May 2010, para. 55.
[22] See Churchill Mining PLC and Planet Mining Pty Ltd v. Republic of Indonesia, ICSID Case No. ARB/ 12 / 14 and 12 / 40, Award,6 December 2016, paras. 501 - 509.
[23] See Emilio Agustín Maffezini v. Kingdom of Spain, ICSID Case No. ARB/ 97 / 7, Award, 13 November 2000, para. 64.
[24] See Waste Management, Inc. v. United Mexican States (No. 2), ICSID Case No. ARB (AF) / 00 / 3, Award, 30 April 2004, paras. 57, 113.
[25] See Parkerings-Compagniet A. S. v. Republic of Lithuania, ICSID Case No. ARB/ 05 / 8, Award, 11 September 2007, para. 333.
[26] See Timo Koivurova and Krittika Singh, ***"Due Diligence"***, in Rüdiger Wolfrum (ed.), The Max Planck Encyclopedia of Public International Law (Oxford University Press, 2012), para. 1.

conditions in the host country are likely to change at any time.[27] Similarly, in *Stadtwerke Munchen and others v. Spain*,[28] *LSG Building Solutions and others v. Romania*,[29] the arbitral tribunal adopted a similar model of argument.

Second, the arbitral tribunal's review of investor compliance models has shown a tendency towards uniformity and formatting, with a more fixed set of analytical models and judgment criteria to measure compliance with prudent obligations in various scenarios. In other words, whether with respect to commercial risks, political risks or policy changes in the host country, the arbitral tribunal interpreted the element of the prudential obligation as requiring specific measures by the investor, regardless of the investor's specific circumstances. For example, investors' due diligence obligations have been identified by numerous arbitral tribunals as key factors in measuring whether host countries violate investors' reasonable expectations and thus fair and equitable treatment. The extent to which investors' prudential obligations are met, particularly in the context of regulatory changes in the host country, is directly related to the reasonableness of investor expectations.

However, in measuring the above elements, arbitral tribunals often choose to examine whether the investor has taken specific measures. In *Mamidoil v. Albania*, for example, the arbitral tribunal held that the investor had failed to exercise his duty of prudence by not hiring a professional lawyer who understood the laws of the host country, even though the investor had consulted the relevant authorities of the host countries.[30] Subsequent cases such as *Foresight v. Spain*[31] and *Opera Fund EcoInvest v. Spain*[32] further confirmed that the standard of the duty of care can only be met by seeking legal advice from a professional body.

In addition, arbitral tribunals have also shown a tendency to be overly idealistic in assessing the prudential obligations of investors' conduct, in other words that investors must use all "due" means to avoid business risks and the impact of changes in the regulatory framework of the host country. In *Blusun v. Italian Republic*, the Tribunal held that the duty of care required an investor to be aware of all investment-related laws and regulations and policy documents of the host State.[33]

However, from a practical point of view, it is difficult for foreign investors to obtain detailed first-hand information on domestic policy changes in the host country. It is therefore clearly inappropriate that the arbitral tribunal does not differentiate between the actual circumstances of the investor and that the applicable paradigm for evaluating his conduct based on a uniform rational investor standard.

Finally, the interpretation of the criteria for investor prudence obligations varies from arbitral tribunal to tribunal. Some arbitral tribunals defined the criteria for the implementation of the prudential obligation as measures that would be taken by a wise investor.[34] Some arbitral tribunals also use the term "reasonable" as the basic threshold for judging whether an investor has fulfilled its duty of care.[35] Other arbitral tribunals use expressions such as "diligent,"[36] "prudent"[37] and "meaningful".[38] It is thus evident that there is a great deal of inconsistency in arbitration practice in the criteria for the application of investor prudence obligations.

Moreover, even regarding the above-mentioned different standards, the arbitral tribunal did not specify a specific interpretation in its award, leaving the application of the investor prudential obligation primarily dependent on the arbitral court's discretion. While the arbitral tribunal expected to regulate the conduct of foreign investors through the application of prudential obligations, the uncertainty of the content and the ambiguity of the standards would greatly impede their effective application and would interfere with the normal investment behavior of investors.

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[27] See Urbaser S. A. & Consorcio de Aguas Bilbao Bizkaia, Bilbao Biskaia Ur Partzuergoa v. Argentine Republic, ICSID Case No. ARB/ 07 / 26, Award, 8 December 2016, paras. 622, 628.

[28] See Stadtwerke München GmbH and others v. Kingdom of Spain, ICSID Case No. ARB/ 15 / 1, Award, 2 December 2019, para. 308.

[29] See LSG Building Solutions GmbH and others v. Romania, ICSID Case No. ARB/ 18 / 19, Decision on Jurisdiction, Liability and Principles of Reparation, 11 July 2022, para. 1094.

[30] See Mamidoil Jetoil Greek Petroleum Products Societe S. A. v. Republic of Albania, ICSID Case No. ARB/ 11 / 24, Award, 30 March 2015, para. 671.

[31] See Foresight Luxembourg Solar 1 S. á. R1., et al. v. Kingdom of Spain, SCC Case No. 2015 / 150, Final Award and Partial Dissenting Opinion of Arbitrator Raül Vinuesa, 14 November 2018, para. 380.

[32] See OperaFund v. Spain, ICSID Case No. ARB/ 15 / 36, Award, 6 September 2019, para. 487.

[33] See Blusun S. A., Jean-Pierre Lecorcier and Michael Stein v. Italian Republic, ICSID Case No. ARB/ 14 / 3, Final Award, 27 December 2016, para. 392.

[34] See MTD Equity Sdn. Bhd. & MTD Chile S. A. v. Republic of Chile, ICSID Case No. ARB/ 01 / 7, Award, 25 May 2004, paras. 242 - 243.

[35] See Churchill Mining PLC & Planet Mining Pty. Ltd. v. Republic of Indonesia, ICSID Case No. ARB/ 12 / 14, Award, 6 December 2016, para. 501.

[36] See RREEF Infrastructure (G. P.) Limited and RREEF Pan-European Infrastructure Two Lux S. à r. l. v. Kingdom of Spain, ICSID Case No. ARB/ 13 / 30, Decision on Annulment, 10 June 2022, para. 122.

[37] See Stadtwerke München GmbH and others v. Kingdom of Spain, ICSID Case No. ARB/ 15 / 1, Award, 2 December 2019, para. 308.

[38] See BSG Resources Limited (in administration), BSG Resources (Guinea) Limited and BSG Resources (Guinea) SàRL v. Republic of Guinea (I), ICSID Case No. ARB/ 14 / 22, Award, 18 May 2022, para. 904.

3. Functional Differentiation of Investor Prudential Obligations in International Investment Arbitration Practice

Some scholars have attributed the difficulty in the application of the above-mentioned investor prudential obligations in international investment arbitration practice to the ambiguity and subjectivity of the scope and scope of the investor prudential right itself.[39] It is true that the arbitral tribunal should interpret the specific norm from a conceptual point of departure.

However, this understanding does not fundamentally reveal the flaws in the institutional application of investor prudential obligations in the unique arena of international investment arbitration. It is affirmed that the basic meaning of the duty of prudence itself will change accordingly as the applicable areas shift. Similarly, when prudential obligations are introduced by arbitral tribunals in international investment arbitration, their normative orientation and functional positioning will inevitably be affected by the structure of external venues.

This is the deeper cause of the problem of real-level application, the branch system of international law, which is widely used in international investment arbitration and other prudential obligations, has a fundamental difference between the value base and the rule framework. The decentralization of its unique litigation model and the coupling of legal domains place new demands on the functional positioning and operational paradigm of prudential obligations.[40]

Specifically, the duty of prudence creates functional differentiation in the process of interacting with the complex framework of international investment arbitration, the investor prudential obligation, as a differentiated normative product, has also been given a normative identity and functional positioning in the special area of international investment arbitration that is different from other areas, to which the existing interpretative tools and analytical frameworks of arbitral tribunals have failed to respond effectively. It is therefore necessary to re-examine the process of functional differentiation of prudential obligations in international investment arbitration and the value-oriented and legal drivers behind it.

3.1 A Tangible Manifestation of Functional Differentiation

<u>3.1.1 Vertical Differentiation: The Functional Orientation of Prudential Obligations from "Limit" to "Balance"</u>

As noted above, the duty of prudence was originally designed as a norm to limit the exercise of State sovereignty. To prevent the abuse of sovereignty, the State needs a certain degree of self-restraint and external restrictions in the exercise of sovereign power. As a result of the interpretation and development of international judicial practice, the duty of prudence not only requires sovereign States to fulfil negative obligations to ensure that the exercise of sovereignty does not have a negative impact on the international community, but also to take proactive measures to prevent damage that has not yet been caused.[41]

This control function was evident in the early decisions of international investment arbitration. Conventional wisdom holds that, while international investment arbitration gives investors the right to sue the host country directly, in fact, investors remain at a disadvantage in their legal relations with the host country.[42]

Because, after receiving investment, the host country could easily use its regulatory power to deprive the investor of the investment proceeds on the grounds of public interest. Accordingly, in the original investment arbitration practice, the function of the prudential obligation was to limit undue interference by the sovereign acts of the host country in foreign investment, while also requiring the host country to assume a positive obligation to protect the investment property.[43]

However, this understanding exaggerates the role of sovereignty in investment relations in a one-way direction from a static perspective. Indeed, with the diversification of international investment approaches and the growth of investment sizes, the risk of investment losses can arise not only from the improper exercise of the sovereignty of the host country but also from the impropriety of foreign investors.[44]

In addition, from the perspective of sustainable development, the goal of BIT should not be unilateral investment protection, but to achieve mutual improvement of the well-being of both sides through economic exchanges.[45]

In response to the new changes in international investment legal relations and the international community's new demands for investment arbitration, the accumulation of State practice has led to vertical functional differentiation of

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[39] See Yulia Levashova, ***"Fair and Equitable Treatment and Investor's Due Diligence Under International Investment Law"***, (2020) 67 Netherlands International Law Review 233, p. 244.

[40] See He Yan and Gu Fang, ***"Research on the Application of Investor Reasonable Expectation Rules: System Coupling and Normative Division"***, Southeast Academic Journal, No. 4, 2023, pp. 231-232.

[41] See Samantha Besson, ***"La Due Diligence En Droit International"***, (2020) 409 Recueil des Cours 1, p. 274.

[42] See Ivar Alvik (ed.), ***"Contracting with Sovereignty: State Contracts and International Arbitration"***, (Hart Publishing, 2011), p. 2.

[43] See Eric De Brabandere, ***"Host States! Due Diligence Obligations in International Investment Law",*** (2015) 42 Syracuse Journal of International Law and Commerce 320, pp. 333 - 337.

[44] See Anna Kozyakova, ***"Foreign Investor Misconduct in International Investment Law"***, (Springer, 2020), pp. 45 - 60.

[45] See Liu Sun, ***"The Humanization Trend of International Law and the Innovation of International Investment Law"***, Journal of Legal Studies, No. 4, 2011, pp. 196-197; Huang Shixi, ***"Conflicts and Challenges in the Application of Investment Rules and Human Rights Rules in International Investment Disputes"***, Contemporary Law, No. 4, 2018, pp. 119-120.

prudential obligations[46]. Its functional audience is no longer limited to the host country, but needs to be evaluated separately for the behavior of investors and the host country; Functional orientation is no longer limited to limiting the sovereignty of the host country, but rather accomplishes the reallocation of investment risk from a micro-point perspective by regulating the investment behavior of investors, thereby achieving a macro-point balance of the rights and obligations of the host nation and investors.[47]

Specifically, in the vertical regulatory legal relationship between host countries and investors, the increased public power of the host country has created additional risk-control responsibilities in international investment arbitration.[48] The introduction of investor prudential obligations has transformed previous risk allocation models that combine investment losses exclusively with the fulfilment of the host country's treaty obligations. Instead, part of the risk obligation was shifted down to the investor's side. The functional positioning of prudential obligations also shifted accordingly from oversight of the sovereign exercise of the host country to compliance requirements for investors.[49]

On the one hand, investors need to ensure that their investments comply fully with the legal requirements of the host country; On the other hand, investors also need to make advance identification and analysis of the laws and policies of the host country related to investment. If the investor fails to meet the above prudential obligations, he or she will be liable for the loss of his or her investment.

Accordingly, the host country could also defend the investor's obligation to be cautious, alleviating some of the asymmetries of rights and obligations between the parties and the natural imbalances of international investment arbitration. This philosophy can also be reflected in the decisions of some arbitral tribunals. For example, in *Mamidoil v. Albania*, the Tribunal clearly stated that, to provide investors with a stable and transparent investment environment, host countries need to carefully modify investment-related legal provisions and enforce them impartially, while investors must also be aware of the content and legislative background of the host country's laws and administrative regulations. In other words, the duty of prudence is a standard for both the State and the investor, and without an adequate and balanced assessment of the conduct of both parties, fairness and justice cannot be fully achieved.[50]

In conclusion, the practical developments and philosophical shifts in international investment legal relations have reshaped the international community's perception of the function of prudential obligations. To better adapt to these changes, State practice and arbitration interpretation have shifted prudential obligations away from traditional functional orientation, ultimately resulting in vertical functional differentiation, from one-way limitation to two-way balance.

3.1.2 Horizontal Differentiation: The Functional Boundaries of Prudential Obligations have Expanded from Supervisory Responsibilities to General Considerations

In addition to the vertical shift in functional concentration, the prudential obligation has also undergone horizontal differentiation under the influence of the complex field of international investment arbitration, i.e., the expansion of the functional boundaries of the investor prudent obligation. Through the historical development of the duty of care, we can see that the essence of the original duty of care is that legal entities need to anticipate the adverse effects of their behavior and take appropriate measures to prevent them.[51]

The investor prudent duty also inherits this concept to some extent. Investment, as an economic activity aimed at generating profits, is inevitably affected by commercial risks. Therefore, investors must handle their invested assets with greater caution than ordinary people and avoid relying too heavily on external assistance, a standard known as the rational investor.[52]

On the one hand, from the perspective of investment behavior itself, investors, as the primary responsible persons and beneficiaries of external investment activities, should naturally gather and understand investment related information and assess and predict the risks associated with the investment. On the other hand, this standard is also a necessary condition for the continuation of the legal relationship between investors and host states.[53]

In international investment arbitration, in addition to the vertical administrative relationship, there is also a horizontal cooperative relationship between investors and host states. Under an investment contract, investors and host states can

[46] See Daria Davitti, ***"On the Meanings of International Investment Law and International Human Rights Law: The Alternative Narrative of Due Diligence"***, (2012) 12 Human Rights Law Review 421, pp. 423 - 429.

[47] See Marcin Kałduński, ***"The Element of Risk in International Investment Arbitration"***, (2011) 13 International Community Law Review 111, pp. 112 - 113.

[48] See M. Sornarajah, ***"The Settlement of Foreign Investment Disputes"***, (Kluwer Law International, 2000), pp. 29 - 30.

[49] See Jorge E. Viñuales, ***"Foreign Investment and the Environment in International Law"***, (Cambridge University Press, 2012), pp. 189 - 221.

[50] See Mamidoil Jetoil Greek Petroleum Products Société S. A. v. Republic of Albania, ICSID Case No. ARB/ 11 / 24, Award, 30 March 2015, para. 634.

[51] See Gramercy Funds Management LLC and Gramercy Peru Holdings LLC v. Republic of Peru, ICSID Case No. UNCT/ 18 / 2, Award, 6 December 2022, paras. 60 - 61.

[52] See Huang Liping, ***"Investor Liability in International Investment Arbitration: Contributory Fault and Rational Investor Standards"***, Global Legal Review, No. 3, 2022, pp 184-185; Valentina Vadi (ed.), Proportionality, Reasonableness and Standards of Review in International Investment Law and Arbitration (Edward Elgar, 2018), p 145.

[53] See Martina Magnarelli (ed.), ***"Privaty of Contract in International Investment Arbitration"***, Original Sin or Useful Tool (Kluwer, 2020), pp. 18 - 20.

engage in investment activities as equal entities. This means that both parties must actively take appropriate actions and strive to achieve the purpose of the contract. In this type of private law relationship, the rights, and obligations agreement model, based on the autonomy of will and the spirit of the contract, which stipulates the obligation to abide by agreements, will inevitably place both parties under the greatest obligation to fulfill their respective obligations.[54]

For investors, a necessary condition for this obligation is the proper management of investment assets and careful planning of investment strategies. Clearly, when prudent investor commitment provides functional guidance at the level of horizontal cooperation between the host country and foreign investors, it cultivates some of the basic elements of the business world, requiring investors to treat their investment properties with the awareness of rational business entities and to measure their investment behavior against standards higher than commercial rationality.[55]

The above understanding of the functional scope of investor prudential obligations in the horizontal relationship of international investment arbitration is certainly reasonable. However, its explanatory power remains insufficient to cover the full picture of investment activities. Foreign investment brings not only positive economic benefits to host countries but also significant negative externalities.[56]

Foreign investment inevitably brings a series of social problems to the host country, including environmental degradation and the treatment of workers. In practice, investment activities not only involve investors and host countries but also affect the interests of third parties other than the parties, namely the human and social rights of the local population in the host country.[57]

In this case, if the investor's prudential obligation still requires foreign investors to focus solely on the economic benefits of the investment without considering the interests of the host country, this is equivalent to completely transferring the investment risks and negative impacts to the host country through the investment contract.[58]

This clearly contradicts the fundamental principle of fairness. Therefore, given the bilateral nature of the investment impact, investors cannot make similar investment decisions based entirely on commercial rationality. The unilateral pursuit of maximizing private interests will inevitably lead to negative consequences for other entities. Based on the conflict between investment benefits and the host country's social interests in the practices mentioned above, the prudential obligations of investors in the horizontal private legal relationship between investors and host countries are further differentiated, thus breaching the value base and normative framework of commercial codes and expanding the functional boundaries of third parties other than the investment parties.[59]

In other words, in addition to urging investors to formulate prudent investment strategies and assume responsibility for gains and losses in their investment assets, the prudent obligation of investors also plays a role in mitigating the negative externalities of investment behavior on the host society. Investors should not seek investment returns at the expense of excessive harm to the social welfare of the host country's population. Instead, in pursuing economic objectives, they should consider the potential negative impacts that investment activities may have on the host country's society and take the necessary measures to avoid them. Some arbitration tribunals have also recognized this horizontal breach of functional boundaries. For example, in *Perenco v. Ecuador*, the arbitral tribunal ruled that investors establishing factories in the host country must consider the environmental impact on the host country, which is also an important factor in measuring the investor's obligation of prudent investment.[60]

In *Bear Creek v. Peru*, the tribunal ruled that the relevant ILO standards apply not only to countries, but that investors must also ensure the basic treatment of workers in the host country. In short, in addition to the functional differentiation resulting from the obligation of prudent investment in the process of achieving vertical administrative relations, the functional boundaries of the obligation of prudent investment have also been expanded in the process of interaction in horizontal cooperative relations. Under the trend of mutual shaping of investment practices and rules, the value-based expression of investors' prudent investment obligations has breached its established self-regulatory commercial normative features, and its functional boundaries have consequently expanded from a model of self-responsibility dominated by commercial rules to a value-pluralistic model that considers the social interests of the host country.[61]

3.2 Legal Motivations for Functional Differentiation

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[54] See Julian Arato, ***"The Logic of Contract in the World of Investment Treaties"***, (2016) 58 William & Mary Law Review 351, p 357.

[55] See Maria Laura Marceddu and Pietro Ortolani, ***"What Is Wrong with Investment Arbitration? Evidence from a Set of Behavioural Experiments***", (2020) 31 European Journal of International Law 405, p 407.

[56] See Julian Arato, ***"The Logic of Contract in the World of Investment Treaties"***, (2016) 58 William & Mary Law Review 351, p 357.

[57] See Maria Laura Marceddu and Pietro Ortolani, ***"What Is Wrong with Investment Arbitration? Evidence from a Set of Behavioural Experiments"***, (2020) 31 European Journal of International Law 405, p 407.

[58] See Katia Fach Gómez (ed.), ***"Private Actors in International Investment Law"***, (Springer, 2021), pp 5 - 25.

[59] See Jonathan Bonnitcha Robert McCorquodale, ***"The Concept of 'Due Diligence' in the UN Guiding Principles on Business and Human Rights"***, (2017) 28 European Journal of International Law 899, pp 901 - 902.

[60] See Perenco Ecuador Ltd. v. The Republic of Ecuador and Empresa Estatal Petróleos del Ecuador (Petroecuador), ICSID CaseNo. ARB/ 08 / 6, Interim Decision on the Environmental Counterclaim, 11 August 2015, paras. 389 - 390.

[61] See Bear Creek Mining Corporation v. Republic of Peru, ICSID Case No. ARB/ 14 / 21, Award, 30 November 2017, para. 644.

From the above analysis, the investor's prudent duty does have a functional differentiation phenomenon at the actual level. However, since there is no strict "follow precedent" system in international investment arbitration, simply combing through previous arbitration practices cannot provide a more effective legal support for the arbitral tribunal to interpret and apply the investor's prudent duty in subsequent rulings, nor can it provide clear normative guidance for foreign investors. Therefore, it is necessary to further explore the legal motivations behind functional differentiation. Based on the vertical and horizontal bidirectional differentiation path of the investor's prudent duty, its legal motivation can be analyzed from both macro and micro perspectives.

3.2.1 Macro Perspective: Interaction and Integration of Sovereign Interests and Investment Interests

The smooth development of investment activities requires the cooperation and complementation of investment treaties and investment contracts. The investment treaty between the host country and the investor's home country, as a basic framework, defines the basic treatment related to investment that investors should enjoy. The specific implementation methods and implementation standards still need to be determined by the investor and the host country through the conclusion of an investment contract.[62] The legal relationship of the investment contract is the best perspective and necessary path for studying the legal motivation for the differentiation of investors' prudent obligations.

To a certain extent, the logical starting point of the legal expression of the investment contract is that the host country exchanges foreign investors with foreign investments by transferring part of its sovereign powers.[63] In this interactive process, investors obtain some basic interests that originally belonged to the scope of the host country's sovereignty, such as operating rights, resource use rights and other investment-related rights. This also requires the host country to provide corresponding policy support and legal protection. However, this does not mean that investors have completely occupied this part of sovereignty through investment contracts. On the contrary, investors have only obtained limited economic powers.

The reason is that sovereignty, as an abstract concept of rights collection, itself has multiple aspects and multi-dimensional attributes.[64] Some people believe that in international investment arbitration, the state has both the identity of a sovereign regulator and a party to investment arbitration.[65] The former means that the host country can attract investment by taking the economic autonomy and ownership of natural resources under sovereignty as conditions.

When this part of the power of sovereignty is embodied as a commodity equivalent to investment for exchange, it is equivalent to stripping the state of control over part of the commercial attributes of sovereignty and handing it over to foreign investors; while the latter emphasizes that the sovereignty of the host country is the legal symbol of the highest power in the country, which itself means the management and final decision-making power of domestic affairs.

Therefore, the partial transfer of sovereignty itself is an external manifestation of the authority of the host country. As the judgment of the Permanent Court of International Justice in the "Lotus Case" widely cited by later generations, "the sovereignty of a state cannot be assumed to be limited",[66] the transfer of state sovereignty must be approved by the state to produce international legal effect.[67]

It can be seen from this that the investment contract concluded between the host country and the foreign investor only treats the commodifiable part of sovereignty as a treatment given to the investor, and the host country still retains the management power corresponding to this part of the economy. It is precisely because of the retention of management power that arbitration practice allows the host country to exercise its regulatory power under certain conditions on the grounds of public interest.[68] Therefore, in fact, under the international investment legal system, investors and host countries are essentially the holders of sovereignty related to investment behavior. As an international law principle intended to limit the abuse of sovereignty, the duty of care should naturally also apply to investors.

In addition, the interaction and integration between sovereignty and investment is also reflected in the symmetry of risk and return. Foreign investors have reached an economic community with the host country in terms of the economic benefits of investment through investment injection. Specifically, in the investment legal relationship, the host country and the investor are on the same interest chain. If the investment strategy adopted by the investor enables the investment property to increase in value, the economic development of the host country will also benefit from it. The improvement of the host country's economic environment can further provide investors with a more ideal investment environment, broaden the profit space of investment, and form a virtuous circle.[69] On the contrary, if the investor's investment suffers

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[62] See SGS Société Générale de Surveillance S. A. v. Republic of the Philippines, ICSID Case No. ARB/ 02 / 6, Decision of the Tribunal on Objections to Jurisdiction, 29 January 2004, para. 141.

[63] See Zachary Douglas et al. (eds.), ***"The Foundations of International Investment Law: Bringing Theory into Practice"***, (Oxford University Press, 2014), p. 331.

[64] See Daniel Lee (ed.), ***"The Right of Sovereignty: Jean Bodin on the Sovereign State and the Law of Nations"***, (Oxford University Press, 2021), pp. 3 - 6

[65] See Ivar Alvik (ed.), ***"Contracting with Sovereignty: State Contracts and International Arbitration"***, (Hart Publishing, 2011), p. 239.

[66] See S. S. Lotus (France v. Turkey), Judgment, P. C. I. J., Ser. A, No. 10, 1927, para. 269.

[67] See S. S. Wimbledon (Britain et al. v. Germany), Judgment, P. C. I. J, Series A, No. 1, 1923, pp. 24 - 25.

[68] See Catharine Titi (ed.), ***"The Right to Regulate in International Investment Law"***, (Bloomsbury Publishing, 2014), pp. 33 - 35.

[69] See Tamar Baiashvili and Luca Gattini, ***"Impact of FDI on Economic Growth: The Role of Country Income Levels and Institutional Strength"***, EIB Working Paper 2020 / 02, 2020, p. 19.

losses, it will inevitably have an adverse impact on the social conditions of the host country. This negative effect will further deteriorate the investment environment.[70]

It can be seen from this that in the dynamic evolution of international investment legal relations, the expectations of the host country and investors for investment are gradually overlapping. The two share investment returns and should naturally share investment risks. Driven by this objective connection, the investor's prudent obligation provides a necessary guidance for this actual demand.

From the above analysis, we can see that one of the original functions of the creation of prudential obligations is to allocate risks. For foreign investors, they accept preferential treatment from the host country, so they need to bear the corresponding obligation to protect the social interests of the host country. Based on this, the investor prudential obligation has completed the functional differentiation of different dimensions in the interactive integration of sovereignty and investment.

3.2.2 Micro Perspective: Strengthening Investor Protection of Investment

The theoretical root of the functional differentiation between investment and investor prudent obligation can also be observed from the micro level, that is, taking the relationship between investors and investment as the starting point for legal analysis. Both traditional theoretical views[71] and early arbitration practices[72] tend to regard investors as the weak party, and then over-protect the interests of investors. The reason is that when investors invest their investment property in the host country for related production and operation, they are bound to be subject to the constraints of the host country's domestic legal framework and the control of the host country's local competent authorities.[73]

In this case, the legal status of the investment property is in an uncertain state, and the host country can reduce or deny the investment treatment that should be given by relying on the Public Interest Clause or Non-exclusionary Measures Clause in the investment treaty, or on the grounds of domestic policy changes.[74]

Therefore, even if the investment treaty clearly stipulates the rights enjoyed by investors based on investment, due to the host country's dual role as a beneficiary and manager, the investor's ability to protect investment property is still at a relatively limited level. The above analysis is also the reason why the duty of prudence is only applicable to the host country's behavior in early investment arbitration practice.[75] However, there is no doubt that this understanding is obviously behind the times and one-sided. From the perspective of investment practice, the early foreign investment model was relatively simple and mostly indirect investment by foreign investors through purchasing shares of host country enterprises.[76]

As an intangible property, the value and legal positioning of equity itself are uncertain. In this regard, the host country will inevitably impose more restrictions. Whether investors acquire or transfer equity, they must strictly comply with the relevant laws and regulations of the host country. The current foreign investment model is more about investors combining indirect investment with direct investment, using combination strategies to optimize the form and configuration of investment assets.[77]

Specifically, the direct investment model with the establishment of new enterprises or factories as the main form makes investment assets tangible, and investors therefore have more legal protection and operating space. Investors can not only negotiate with the host government on behalf of their industry to obtain more favorable policy support, but also transfer and reorganize investment assets through multinational companies scattered around the world, further enhancing the liquidity and flexibility of investment.[78] This gives investors the opportunity to "treaty shopping" and prepare the most advantageous investment plan.[79] It can be seen that recent investment practices have broken the traditional perception of investors, and the modernization trend of international investment has enabled investors to increasingly protect their investment assets.

4. Reflection and Reconstruction of the Normative Expression of Investor's Prudent Duty

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[70] Ibid pp 20-21.

[71] See Hanno Wehland, ***"Forum Shopping: Investment Arbitration"***, in Hélène Ruiz Fabri (ed.), The Max Planck Encyclopedia of International Procedural Law (Oxford University Press, 2019), paras. 4 - 6.

[72] See Wang Peng: ***"Analysis of Power Structure in International Investment Agreements"***, Legal Publishing House, 2019, pp. 160-164.

[73] See Peter D. Cameron, ***"Stabilization Clauses: Do They Have a Future"***, (2020) 7 BCDR International Arbitration Review 109, pp. 111 - 115.

[74] See Carolina Moehlecke, ***"The Chilling Effect of International Investment Disputes: Limited Challenges to State Sovereignty"***, (2020) 64 International Studies Quarterly 1, pp. 1 - 12.

[75] See Eric De Brabandere, ***"Host States, Due Diligence Obligations in International Investment Law"***, (2015) 42 Syracuse Journal of International Law and Commerce 320, pp. 333 - 337.

[76] See United Nations Conference on Trade and Development, World Investment Report 1999, July 1999, pp. 1 - 4.

[77] See Andreas Cahn and David C. Donald (eds.), ***"Comparative Company Law: Text and Cases on the Laws Governing Corporations in Germany"***, the UK and the USA (Cambridge University Press, 2018), pp. 306 - 344.

[78] See United Nations Industrial Development Organization, Multinational Enterprises Foreign Direct Investment Location Decisions within The Global Factory, Research and Statistics Branch Working Paper 04 / 2009, 2009, pp. 78 - 85.

[79] See Hanno Wehland, ***"Forum Shopping: Investment Arbitration"***, in Hélène Ruiz Fabri (ed.), The Max Planck Encyclopedia of International Procedural Law (Oxford University Press, 2019), paras. 4 - 6.

After clarifying the functional differentiation of foreign investors' prudent duty and the legal motivation behind it, it is not difficult to find that the current arbitration practice ignores and deviates from the theoretical guidance path and presentation context that promotes its functional differentiation in the normative deconstruction of investor's prudent duty and the normative expression when applying it, but rather mechanically directly cites the conclusions made by other arbitration tribunals when evaluating the state's prudent duty, which is obviously not compatible with the legal relationship of international investment arbitration. To further solve the application problem, it is necessary to re-examine the legal core of investor's prudent duty in the context of international investment arbitration, and thus reshape the practical construction of the applicable standards.

4.1 Reshaping the Legal Core of Investor's Prudent Duty: From "Identity Theory" to "Control-Foreseeability Theory"

The core of jurisprudence is the basis on which norms can achieve their intended functions, and it is also the main principle that can be interpreted and applied in international investment arbitration in a reasonable way. From the above summary of the applicable situation, the theoretical paradigm abstracted from the current arbitration practice can be summarized as the "identity theory", that is, the objective identity of the investor determines the applicable threshold of the investor's prudential obligation.

In short, regardless of the actual situation of the investor, the requirements of a rational investor must be met, and a comprehensive assessment of investment risks should be taken. This kind of normative expression with identity as the core of jurisprudence has corresponding limitations and deficiencies both at the level of theoretical construction and in actual adjudication. First, this paradigm presupposes an unreasonable premise, that is, the assumption that rational investors are an absolute objective criterion that is not constrained by the actions of external fields and other legal subjects. This is evident in Olguín v. Nowhere is this more evident than in the Paraguay case. In assessing whether the investor had fulfilled its duty of care, the tribunal held that Olguín, as a commercially talented and experienced businessman, was still making high-risk investments and therefore did not deserve the protection of the investment treaty.

Even in this case, where part of the risk stemmed from the host country's oversight of the financial institution, the tribunal still relied on the standard of a rational investor under ideal conditions.[80] It is true that the duty of prudence is an obligation of conduct, which should evaluate the appropriateness of a specific act by certain objective criteria. However, this does not mean that the standard should be fixed.[81] On the contrary, any normative interpretation should strive to achieve the goal of its function.[82] The foregoing has proved that the function of the duty of prudence in international investment arbitration is no longer a one-way limit but pursues a balance between the rights and obligations of both parties. The complex nature of the legal relationship of investment determines that the normal operation of investment does not depend solely on the unilateral efforts of investors. The regulatory actions of the host country government, the social situation of the host country, etc., may be a source of risk for investment.

In other words, it is impossible for even the most experienced investor to make a pre-assessment of all the risks associated with an investment. Therefore, if investors are mechanically and dogmatically required to use fixed standards, it is obviously contrary to the normative purpose of investors' prudential obligations. Second, the theoretical shaping of the "identity theory" is essentially an abstract analogy of the application of the duty of care in other areas of public international law. When interpreting the judgment of the International Court of Justice, some scholars directly bind the source of the duty of care to sovereignty in the sense of identity symbols, that is, the duty of care is a by-product of sovereignty.[83]

Along this line, for investors, the standard of judgment for judging their duty of care is the rational requirement brought about by their status. On the one hand, this inappropriate understanding is due to the one-sided interpretation of previous international law precedents, and on the other hand, it also stems from the failure to extract the core basic concept of the duty of care from the specific field in the process of analogy application, and then correctly adapt to the international investment arbitration system.[84] The Corfu Channel case explicitly explored for the first time the relationship between the duty of care and the principle of sovereignty. The International Court of Justice stated in its judgment that "every State is under an obligation not to allow its territory to be used knowingly for acts contrary to the rights of other States".[85] This is also the main basis for the "identity theory". However, a closer examination of the Corfu Channel judgment shows that the Court did not intend to use sovereignty itself as a source of jurisprudence for the duty of care. The

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[80] See Eudoro Armando Olguín v. Republic of Paraguay, ICSID Case No. ARB/ 98 / 5, Award, 26 July 2001, para. 65.

[81] See Neil McDonald, ***"The Role of Due Diligence in International Law"***, (2019) 68 International & Comparative Law Quarterly 1041, pp. 1044 - 1049.

[82] See J. Romesh Weeramantry (ed.), ***"Treaty Interpretation in Investment Arbitration"***, (Oxford University Press, 2012), p. 56.

[83] See Joanna Kulesza (ed.), ***"Due Diligence in International Law"***, (Brill, 2016), p. 56.

[84] See Heike Krieger et al. (eds.), ***"Due Diligence in the International Legal Order"***, (Oxford University Press, 2020), pp. 75 - 76.

[85] See Corfu Channel Case (United Kingdom v. Albania), Judgment, I. C. J. Reports 1949, p. 22.

International Court of Justice, in its summary of the gist of the judgment, pointed out that territorial control is the source of obligatory responsibility.[86] This is even clearer in the Congolese armed conflict.[87]

The normative source of the duty of care is not the specific identity and the general expectations it carries, but the control and predictability of the risk sources associated with a specific legal object. For the former, the ability to control the source of risk means that the relevant entity can determine the actual direction of the risk largely in other words, it can use the risk to influence other actors.[88] The right behind this control is the legal object of the limitation of the duty of care, not the source of the duty of care. From the perspective of international investment arbitration, the deeper theoretical basis and variable of concern behind the above-mentioned differentiation of prudential obligations are also investors' ability to control investment risks.

From a macro perspective, the interaction between sovereignty and investment enables investors and host countries to form a synergy of interests and work together in the investment process. With the systematic support of the sovereign's economic power, investors can grasp the investment trend more accurately and respond to risks in a timely manner. At the micro level, while investors' ability to protect investment assets is gradually strengthened, their ability to control risks that may cause investment damage is also naturally improved.

Therefore, taking the ability to control risk sources as the core of legal theory can not only integrate the basic principle of prudential duty in theory, but also effectively respond to the needs of investment practice. However, the control of risk sources is not the only reference factor that frames the theoretical coordinates of investors' prudential obligations. As mentioned in the Corfu Channel judgment, "the mere fact that a state exercises control over its territory and waters does not lead to the conclusion that it must have known or ought to have known of any unlawful act committed there".[89]

The ability to control the source of risk cannot be separated from the objective subject limitations. In the process of outbound investment, the premise for investors to take measures to prevent relevant risks is that investors can foresee that such risks will occur with a high probability under certain circumstances,[90] however, due to the limitations of investors' own capabilities and cognitive levels, as well as the vagaries of investment forms, ordinary investors are still unable to foresee extreme events such as natural disasters, wars, and illegal interference by the host country. Therefore, predictability should also be used as another part of the theoretical basis, and together with the risk control ability, the legal core of the investor's prudential obligation should be constructed. To sum up, the theoretical basis and logical framework of the "identity theory" are both inconsistent and incomplete, and the "control-foresight theory" should be taken as the legal core of the investor's prudential obligation.

4.2 Reconstruction of the Applicable Standard

From the inductive analysis of the above-mentioned arbitration practice, there are many drawbacks in the current applicable standard of the investor's prudential duty. After the reshaping of its jurisprudential core, the applicable standards should also be reconstructed. Since the theoretical structure of the investor's prudential obligation depends on the investor's control over future risks and their predictability, the author believes that the new applicable standard should also take control and foreseeability as the main reference and integrate and evaluate the objective factors related to it. First, the arbitral tribunal should take the ability to control the risk as the primary criterion, and foreseeability as the "exemption condition". The reason is that being able to control the source of risk necessarily requires the legal subject to have a certain degree of understanding of the risks related to the subject matter in advance, so the former itself includes a certain degree of risk prediction ability.[91]

Thus, predictability, which is the core of jurisprudence, is aimed at the relevant parts that go beyond the cognitive capacity of the main system. The factors that determine an investor's ability to control the source of risk include the investor's commercial strength, political authority, social relations, and rights in legal relations.[92] In previous arbitral awards, although the arbitral tribunal did not explicitly state that the above elements are related to risk control, some awards have included the above elements in the definition of measures corresponding to the investor's duty of care. For example, in *Lemire v. Ukraine*, the tribunal first found that the investor should conduct the relevant investigation before investing, but as an individual investor, the host State's failure to publicly assess the issuance of the broadcasting license and the related lack of transparency were clearly beyond the investor's ability to foresee, and the tribunal rejected the host State's defense that the investor had breached the duty of care.[93] In addition, in *MTD v. In the Chile case*, MTD, as a multinational corporation with subsidiaries in Chile, should have had considerable access to the host country's investment-related land planning policies, but chose to follow only the advice of lay consultants. This clearly does not

[86] See Corfu Channel Case (United Kingdom v. Albania), Judgment, I. C. J. Reports 1949, p. 1.

[87] See Case Concerning Armed Activities on the Territory of the Congo (DRC v. Uganda), Judgment, I. C. J. Reports 2005, para. 173.

[88] See Alice Ollino, ***"Due Diligence Obligations in International Law"***, (Cambridge University Press, 2022), pp. 133 - 135.

[89] See Corfu Channel Case (United Kingdom v. Albania), Judgment, I. C. J. Reports 1949, p. 18.

[90] See Alice Ollino, ***"Due Diligence Obligations in International Law",*** (Cambridge University Press, 2022), p. 156.

[91] See Mikayil Mammadov v. Azerbajan, Judgment, App no 4762 / 05, 2009, para. 111.

[92] See Heike Krieger et al. (eds.), ***"Due Diligence in the International Legal Order"***, (Oxford University Press, 2021), pp. 90 - 91.

[93] See Joseph Charles Lemire v. Ukraine, ICSID Case No. ARB/ 06 / 18, Decision on Jurisdiction and Liability of 14 January 2010, paras. 403 - 408, 416 - 422.

meet the standard of compliance with the duty of care;[94] For the analysis of predictability, the arbitral tribunal can make a judgment based on the investor's experience, the investment environment and social background of the host country, and the international economic situation.[95] e.g., in *Mamidoil v. In the Albani* decision, the tribunal held that the host country, Albania, had experienced a severe financial crisis that had brought it to the brink of complete economic collapse and that the duty of care required investors to foresee that investments in such an environment were extremely risky.[96] Second, the arbitral tribunal needs to distinguish between the legal relationship between the investor and the host State at different stages of the investment process. Before making an investment, the investment property is under the full control of the investor, in which case the investor's duty of care should be of a high standard, and the investor needs to have a complete understanding of the social context of the host country as much as possible; After the act of investment has been made, as mentioned above, there is a twofold legal relationship between the host State and the investor. At the horizontal level, the two are equal and cooperative, which involves the performance of investment and the granting of treatment.

5. Implications for Morocco

As Morocco continues to position itself as a key player in the international investment arena, the implications of investor due diligence and the evolving norms in international investment arbitration are crucial for its economic development. The country has made significant strides in attracting foreign investment, leveraging its strategic geographical location as a gateway to Africa and Europe. However, with the increasing scale of foreign investments, it is imperative for Morocco to navigate the complexities of investor obligations and the regulatory landscape effectively. This comprehensive analysis explores the implications of investor due diligence for Morocco, focusing on regulatory enhancements, balancing investment attraction with domestic development, strengthening due diligence practices, improving dispute resolution mechanisms, and fostering a collaborative investment environment.

5.1 Regulatory Framework Enhancement

Morocco's legal framework for foreign investment is foundational to its attractiveness as an investment destination. However, to align with international best practices, Morocco must enhance its regulatory framework to include clearer obligations for investors. Currently, while Morocco has established several Bilateral Investment Treaties (BITs), many lack explicit provisions detailing investor duties.

To mitigate risks associated with foreign investments, Morocco should consider adopting BITs that explicitly outline investor obligations. For example, the Morocco-Nigeria BIT mandates compliance with environmental assessments, setting a precedent for Morocco to follow. By including such provisions, Morocco can ensure that investors are held accountable for their actions and their impact on local communities and the environment. This clarity will not only protect Moroccan interests but also enhance the country's reputation as a responsible investment destination.

In addition to obligatory clauses, Morocco should incorporate encouragement clauses in its investment treaties. Drawing inspiration from the Canadian Model BIT, these clauses would promote responsible business conduct among investors. By encouraging investors to adopt sustainable practices, such as considering labor rights, environmental protection, and community engagement, Morocco can align foreign investments with its national development goals. This dual approach—combining encouragement with mandatory obligations—will foster a more sustainable investment environment.

5.2 Balancing Investor Attraction and Domestic Development

As Morocco strives to attract foreign investment, it faces the challenge of balancing the need for capital influx with the imperative of ensuring that such investments contribute positively to local development. This balance is critical for maintaining social stability and fostering economic growth.

To achieve this balance, Morocco should adopt a dual approach in its investment agreements. By including both encouragement and obligatory clauses, the country can create a framework that incentivizes foreign investors while ensuring they adhere to local regulations and contribute to sustainable development. For instance, while investors may be encouraged to engage in corporate social responsibility initiatives, they must also comply with specific regulatory requirements related to environmental protection and labor practices. This comprehensive framework will help Morocco attract quality investments that align with its development objectives.

Mandating that investors contribute to sustainable development is vital for Morocco's long-term growth. This can be achieved by requiring foreign investors to demonstrate how their projects will benefit local communities, create jobs, and minimize environmental impacts. By prioritizing investments that align with national priorities, Morocco can ensure that foreign capital contributes to its broader socio-economic goals. This approach not only enhances the quality of investments but also builds trust between investors and local communities.

5.3 Strengthening Due Diligence Practices

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[94] See MTD Equity Sdn. Bhd. & MTD Chile S. A. v. Republic of Chile, ICSID Case No. ARB/ 01 / 7, Award, 25 May 2004, paras. 176 - 177.

[95] See Carolina Moehlecke1 and Rachel L. Wellhausen, ***"Political Risk and International Investment Law"***, (2022) 25 Annual Review of Political Science 485, pp. 489 - 491.

[96] See Mamidoil Jetoil Greek Petroleum Products Societe S. A. v. Republic of Albania, ICSID Case No. ARB/ 11 / 24, 30 March 2015, para. 671.

For Moroccan enterprises and investors, understanding and fulfilling due diligence obligations is essential, especially when investing abroad. A robust due diligence process can mitigate risks and enhance the chances of successful investments.

Moroccan investors venturing into foreign markets must thoroughly research the legal and regulatory landscapes of their target countries. This includes understanding investment laws, tax regulations, labor laws, and environmental standards. By conducting comprehensive due diligence, Moroccan investors can minimize the risk of non-compliance and potential disputes. Additionally, understanding local customs and business practices can enhance the likelihood of successful integration into the host market.

Collaborating with local professionals is another critical aspect of effective due diligence. Moroccan investors should seek partnerships with local firms, legal advisors, and industry experts to gain insights into the business environment and cultural nuances of the host country. This engagement not only facilitates compliance with local regulations but also helps mitigate risks associated with unfamiliar markets. By leveraging local expertise, Moroccan investors can make informed decisions and adapt their strategies to align with local expectations.

5.4 Improving Dispute Resolution Mechanisms

As the scale of foreign investments in Morocco increases, so does the likelihood of disputes arising between investors and the government or local communities. Therefore, enhancing dispute resolution mechanisms is crucial for protecting the rights of investors and ensuring a stable investment climate.

Morocco should focus on strengthening its legal framework surrounding investment arbitration. By providing clear and efficient mechanisms for resolving disputes, the country can instill confidence in foreign investors. This includes establishing specialized arbitration institutions and ensuring that arbitration processes are transparent, fair, and accessible. Additionally, Morocco should consider adopting international arbitration standards to align its practices with global norms.

Educating Moroccan investors about available arbitration options is essential for safeguarding their rights. Investors should be informed about the mechanisms for investment arbitration, including the steps to take in case of disputes. This awareness will empower investors to take proactive measures to protect their interests and seek recourse when necessary. Furthermore, promoting awareness of successful arbitration cases can enhance confidence in the effectiveness of the dispute resolution system.

5.5 Fostering a Collaborative Investment Environment

Creating a collaborative investment environment is vital for ensuring that foreign investments align with national development goals and benefit local communities. This collaborative approach can foster trust and facilitate smoother interactions between investors and stakeholders.

Encouraging dialogue between the government, investors, and local populations is essential for addressing concerns and expectations. Morocco should establish platforms for stakeholder engagement, where investors can communicate their projects and seek input from local communities. This engagement can help identify potential issues early on and foster a sense of ownership among local populations, leading to more successful investment outcomes.

Promoting public-private partnerships (PPPs) can enhance the effectiveness of investment projects in Morocco. By collaborating with the government, private investors can leverage public resources and expertise to implement projects that align with national priorities. PPPs can be particularly beneficial in sectors such as infrastructure, healthcare, and education, where investment can have a significant impact on local communities. By fostering collaboration between the public and private sectors, Morocco can create a more conducive environment for sustainable investments.

6. Conclusion

In conclusion, the evolving landscape of international investment arbitration necessitates a nuanced understanding of investor prudence obligations. As multinational enterprises continue to expand their global footprint, the need for a balanced framework that holds investors accountable while respecting the rights of host countries has become increasingly urgent. This article highlights the critical gaps in the current normative provisions governing investor conduct and underscores the importance of integrating prudential obligations into the legal fabric of international investment law. The examination of the historical development and practical application of investor prudence obligations reveals that while some arbitral tribunals have begun to embrace this concept, significant inconsistencies and ambiguities remain. The traditional public law paradigm, while valuable, is insufficient to address the complexities of contemporary international relations and the diverse array of legal subjects involved in investment arbitration. As such, a shift towards a more functional and differentiated approach is imperative. By revisiting and refining the legal basis for prudential obligations, this article advocates establishing clear, applicable standards that align with the evolving nature of these obligations. Such standards should not only reflect the expectations of host countries but also foster a culture of responsible investment that benefits all stakeholders involved. Ultimately, the successful integration of investor prudence obligations into international investment arbitration will require collaboration among scholars, practitioners, and policymakers. By embracing a comprehensive and adaptive framework, the international community can better navigate the challenges posed by globalization and ensure that both investors and host countries can thrive in a fair and equitable investment environment.

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