

**HARMONISATION AND LEGAL CHALLENGES OF AGREEMENTS IN INDONESIA:  
STRENGTHENING ENVIRONMENTAL PROTECTION, GLOBAL RESOURCE  
MANAGEMENT, AND DIGITAL ADAPTATION IN THE CONTEXT OF NATIONAL AND  
INTERNATIONAL LEGAL SYNCHRONISATION – A LITERATURE REVIEW**

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**Abstract**

This study examines the harmonisation and challenges faced by treaty law in Indonesia in two main areas, namely environmental protection and global resource management, as well as the adaptation of treaty law in the digital era. Using a *systematic literature review* method, this study analyses various national and international legal instruments that play a role in synergising Indonesian legal regulations with global standards. The results of the study show that there are gaps in implementation and regulation that have resulted in suboptimal environmental protection and resource management, as well as digital law adaptation still facing regulatory and law enforcement obstacles. The study recommends the need for responsive regulatory revisions, institutional strengthening, and active legal diplomacy to ensure effective synchronisation of national and international laws for the sake of sustainable development and Indonesia's legal competitiveness in the global arena.

**Keywords:** Legal harmonisation, treaty law, environmental protection, global resource management, digital adaptation, synchronisation of national and international laws.

**Introduction**

The development of globalisation in the contemporary era has positioned treaty law as a key instrument for relations between countries, multinational companies, and individuals across national borders. Indonesia, as a country with a strategic position in the Southeast Asian region, cannot avoid its involvement in various international legal regimes that have been created to regulate these global interactions (Mandala, 2017). Treaty law is no longer merely a domestic normative legal instrument, but has transformed into the foundation of economic diplomacy, trade, environmental protection, strategic resource management, and even the digitisation of modern transactions. In this context, the debate on harmonising national law with international treaty law has become increasingly urgent as it concerns legal certainty and Indonesia's credibility in the eyes of the world (D).

The harmonisation of national law with international law reflects the need to integrate universal principles with a local legal framework. In practice, the challenges that arise are often related to political policies, national economic interests, and different understandings of the principle of state sovereignty. On the one hand, failure to harmonise can lead to overlapping laws, creating uncertainty and even opening the door to regulatory abuse (Irsan Rahman et al., 2024b). On the other hand, excessive

harmonisation without considering the national context has the potential to erode domestic legal sovereignty and weaken Indonesia's bargaining power with global actors. This dual dilemma between full harmonisation and the protection of national interests has made the discourse on treaty law increasingly complex (Setiawati, 2023).

Environmental issues have become a key dimension in the discussion of international treaty law today. Multilateral agreements such as the *Paris Agreement* on climate change and the *Convention on Biological Diversity* have required countries, including Indonesia, to align their resource management with global sustainability standards. Indonesia faces a serious dilemma in which economic exploitation interests, such as through mining, oil palm plantations, and infrastructure development, must be balanced with the obligation to preserve the environment in accordance with international agreements. This challenge shows that national law is difficult to implement without consistent synergy with global legal instruments (S).

In addition to environmental aspects, global resource management is also the centre of attention in treaty law discourse. Indonesia, as an archipelagic country with a geostrategic position on world sea lanes, is bound by international conventions such as the *United Nations Convention on the Law of the Sea (UNCLOS)*. The implementation of this convention in Indonesia has not always been smooth, given the overlap between international rules and national regulations, for example, regarding marine zoning, exploration rights, and water jurisdiction. This lack of synchronisation can lead to international disputes and harm national interests if not immediately resolved through effective harmonisation mechanisms (, 2025).

In the era of the 4.0 industrial revolution, digitalisation has become a disruptive factor in contract law. Traditional legal instruments, which are commonly based on physical documents, must now contend with the reality of electronic contracts (*e-contracts*), digital signatures, and even blockchain-based *smart contracts* that transcend jurisdictions (Rosalina, 2024). This has created a new dilemma for the Indonesian legal system: how to guarantee legal certainty and protect the rights of parties in digital contracts based on new technology, while international law has set certain standards such as the *UNCITRAL Model Law on E-Commerce*. Legal adaptation is no longer optional, but a necessity in facing the paradigmatic transformation of contract law in the digital era (Ulil Afwa et al., 2025).

The main problem in harmonising international treaty law into Indonesian national law lies in the adoption and implementation mechanisms. Indonesia adheres to a mixed legal system, in which the ratification process for international treaties is regulated by Law No. 24 of 2000 on International Treaties. However, in reality, there are inconsistencies in its application, especially when political and economic interests dominate over legal commitments. As a result, Indonesia often faces obstacles in consistently implementing its international obligations, whether in environmental, resource, or digital issues (D).

In the field of law, there are two major schools of thought regarding this harmonisation. First, the pro-harmonisation camp argues that the integration of international law into national law will strengthen Indonesia's credibility as a member of the global community. Second, the camp that tends to be sceptical and prioritises the protection of sovereignty, arguing that full acceptance of international law has the potential to sacrifice domestic legal stability. The tension between these two schools of thought is one of the main obstacles to reaching a consensus on the renewal of treaty law in Indonesia (Juwana, 2024).

Methodologically, legal research on harmonisation should not be confined to the normative level alone, but should also consider the empirical aspects of the implementation of international agreements in Indonesia. For example, on the issue of climate change, it is important to examine the extent to which national development policies are in line with the commitments of the Paris Agreement. Similarly, in the case of offshore fisheries management, it is relevant to compare national policies with the provisions of UNCLOS. Thus, this study attempts to balance theoretical studies with empirical evidence in order to produce a more comprehensive analysis.

In the realm of digital law, a *comparative law* approach is also important to see how other countries harmonise electronic contract regulations with international standards. Singapore, for example, has integrated e-commerce regulations very well through the *Electronic Transactions Act*. Meanwhile, Indonesia is still in the adaptation stage with the Electronic Information and Transactions Law (EIT Law). This delay in harmonisation could result in Indonesia falling behind in terms of competitiveness in the global digital trade arena. Therefore, the synchronisation of national law with the international legal framework needs to be accelerated with a more progressive approach.

## **Research Method**

The research method used in this study is a *systematic literature review* with a legal-normative and comparative approach. The data studied comes from international and national academic literature in the form of journal articles indexed by Scopus, ProQuest, and HeinOnline, law books, national legislation documents such as Law Number 24 of 2000 concerning International Agreements, the Environmental Protection and Management Law, to regulations related to electronic transactions, as well as international legal instruments such as the 1969 Vienna Convention, UNCLOS, the Paris Agreement, and the UNCITRAL Model Law on the Law of International Commercial Transactions (Moher et al., 2020). The review process was conducted systematically through stages of *literature screening* based on relevance criteria, thematic analysis, and comparative synthesis between national legal regulations and international standards. This approach was chosen to provide a comprehensive overview of the harmonisation of treaty law in Indonesia, challenges in environmental

protection and global resource management, and digital adaptation within the framework of national and international legal synchronisation (Eliyah & Aslan, 2025).

## Results and Discussion

### Harmonisation of Treaty Law in Environmental Protection and Global Resource Management

Environmental protection and global resource management are among the most important issues in the era of legal globalisation. Increased economic activity, exploitation of natural resources, and population growth pressures pose serious threats to environmental sustainability (IG Widodo, 2019b). Amidst this situation, international treaty law has emerged as the primary instrument for regulating global governance through mutual agreements between countries. For Indonesia, as a country with abundant resources and high biodiversity, adherence to international legal instruments is essential to maintain a balance between economic interests and ecological protection (A.

International treaty law in the field of the environment is bound by a number of important conventions, such as the *Paris Agreement on Climate Change*, the *Convention on Biological Diversity (CBD)*, the *Kyoto Protocol*, and the *Basel Convention*. All of these instruments emphasise the responsibility of countries to reduce carbon emissions, prevent environmental damage, conserve biological resources, and control the trade in hazardous waste. Indonesia, which is a party to several of these agreements, is required to harmonise international rules with domestic law so that development policies are in line with the principles of *sustainable development* (Rahmat Setiawan et al., 2024).

One of the main challenges of legal harmonisation in the environmental field is the gap between general international norms and national regulations, which are often specific and pragmatic. For example, the commitment to reduce emissions in the Paris Agreement often conflicts with national energy policies that still rely on coal. This situation creates regulatory conflicts, where international legal instruments have not been fully internalised into national regulations. As a result, the implementation of global environmental commitments in Indonesia tends to be more formalistic than substantive (( Irsan Rahman et al., 2024a).

Not only on climate issues, global resource management also requires Indonesia to align its national laws with the international legal framework. The international law of the sea convention or *United Nations Convention on the Law of the Sea (UNCLOS)* provides a regulatory basis for Exclusive Economic Zones (EEZs), rights of peaceful passage, and mechanisms for resolving maritime disputes. Harmonisation with national law is crucial because Indonesia's maritime territory is a global trade route prone to conflicts of interest. Without clear synchronisation, jurisdiction and law enforcement can lead to disputes with other countries and transnational actors (Barkatullah, 2023).

One relevant case study is the Natuna maritime management conflict involving the presence of foreign vessels, particularly from China. Under international law, Indonesia has sovereign rights in its EEZ based on UNCLOS, but national regulations are sometimes insufficient to provide full protection and legitimacy. This situation indicates that without comprehensive legal harmonisation, Indonesia will continue to face potential territorial violations and illegal exploitation of its marine resources( Mochtar, 2009).

The harmonisation of environmental agreements is also closely related to the issue of sovereignty, especially regarding natural resources. As a developing country, Indonesia faces a dilemma when it has to adjust its national policies to global instruments that are often designed by developed countries. There are concerns that international obligations could become an economic burden, for example in the form of restrictions on fossil fuel-based industries or reductions in deforestation that could hamper development. However, at the same time, without commitment to international agreements, environmental damage will worsen and harm Indonesia itself( Hutabarat, 2018).

From a legal perspective, harmonisation does not mean applying international rules directly into national law, but rather adapting them to the domestic context without diminishing the essence of global commitments. For example, the ratification of the Paris Agreement in Indonesia was followed by the issuance of Presidential Regulation No. 98 of 2021 concerning Carbon Economic Value. This regulation is a concrete example of legal harmonisation, where international obligations are translated into domestic mechanisms in the form of carbon trading instruments and environment-based financing (B.

In addition to energy regulations, biodiversity aspects have also received attention through the harmonisation of treaty laws. As a *megabiodiversity* country, Indonesia has an obligation to protect its biological wealth under the CBD. The implementation of this treaty is reflected in Law No. 5 of 1990 on the Conservation of Living Natural Resources and Their Ecosystems, as well as various policies on the protection of conservation areas (Eko Riyadi, 2024). However, problems arise because national regulations often lose out to extraction-based economic interests, which actually accelerate biodiversity loss. This shows that legal harmonisation is not only a matter of adopting regulations, but also of consistent law enforcement (IG Widodo, 2019a).

In terms of forest management, the harmonisation of treaty law is also evident in the implementation of *REDD+ (Reducing Emissions from Deforestation and Forest Degradation)*, which is part of the global climate law regime. As the country with the third largest tropical forest in the world, Indonesia receives special attention for its role in climate change mitigation. The REDD+ programme encourages synchronisation between national forestry laws and international commitments to reduce

deforestation. However, its implementation faces complex challenges, such as weak supervision, land ownership conflicts, and corruption in forest resource management.

The harmonisation of treaty law in the field of global resources also concerns energy, particularly the transition to renewable energy. Global governance encourages the use of clean energy as a climate mitigation strategy, but Indonesia still has a high dependence on fossil fuels. This shift requires more adaptive legal harmonisation by incorporating renewable energy aspects into national regulations, while providing incentives for the private sector to support the energy transition (LCotula, 2020) . Without a synchronised legal framework, Indonesia risks being left behind in the global development agenda that focuses on sustainability. One of the factors hindering harmonisation is the overlap of national regulations that are not in line with international agreements. In many cases, national laws are more oriented towards achieving short-term economic targets than fulfilling long-term international obligations (Juwana, 2024) . This inconsistency often leads to Indonesia facing criticism in international forums for being considered inconsistent in its implementation. In fact, successful legal harmonisation would strengthen Indonesia's diplomatic position and bargaining power in global negotiations (Mulya T. Multazam, 2023) .

In terms of benefits, legal harmonisation of agreements provides Indonesia with significant opportunities to gain access to international funding, environmentally friendly technology, and bilateral and multilateral cooperation. This is evident in the *Green Climate Fund* mechanism and renewable energy project funding, which can only be optimised if Indonesia demonstrates consistency in its international treaty obligations. In other words, legal harmonisation not only serves to maintain legal reputation, but also paves the way for sustainable economic development (D .

However, the harmonisation of treaty law cannot be separated from domestic political problems. Many environmental and resource management policies in Indonesia are determined by the tug-of-war between the interests of the central government, regional governments, and large corporations. The implementation of international agreements is often weakened by political resistance or low commitment from decision-making elites. Therefore, legal harmonisation is not sufficient if it is only carried out through legislation, but must also be supported by institutional strengthening, oversight mechanisms, and the role of civil society (Agus Susanto, 2024) .

Thus, the harmonisation of treaty law in environmental protection and global resource management is an urgent need for Indonesia amid an increasingly complex global landscape. Harmonisation will not only strengthen Indonesia's position in the global arena, but also ensure ecological sustainability and domestic economic stability. To achieve this goal, a holistic approach is needed that includes regulatory reform, consistent law enforcement, institutional capacity building, and a progressive legal diplomacy strategy at the international level.

## Adaptation of Treaty Law in the Digital Age

The development of digital technology has had a revolutionary impact on various aspects of life, including the field of contract law. The digital era has given rise to new technology-based contract models such as electronic contracts (*e-contracts*) and *smart contracts* that are executed through blockchain protocols. This phenomenon requires traditional legal systems, including Indonesia's, to adapt the law in order to remain relevant and effective in regulating increasingly complex and cross-border agreements (Mardiyati, 2019).

Legal adaptation of agreements in the digital era is not only about formal recognition of the validity of electronic contracts, but also how the legal system handles issues of authentication, data integrity, and global dispute resolution. Indonesia has taken the first step through the Electronic Information and Transaction Law (EIT Law), which recognises electronic signatures and digital documents as legal evidence. However, there are still a number of technical and substantial challenges that must be addressed in order for this legal adaptation to run smoothly and provide legal certainty for digital economy players (SMardiyati, 2025).

The concept of *e-contracts* stems from the basic needs of business and transactions in the virtual world, which require certainty that agreements made online have the same legal force as conventional contracts. This concerns the recognition of the contract content, acceptance by the parties, and the validity of electronic signatures. Legal adaptation in Indonesia to this issue is largely accommodated in the ITE Law and the Minister of Communication and Information Technology Regulation, but weaknesses in the scope of the definition and application of this mechanism remain an obstacle (Agus Susanto, 2024).

Furthermore, the development of *smart contracts* presents its own challenges because these contracts operate automatically based on code written in the blockchain without direct human involvement in their execution. Smart contracts promise high efficiency and transparency, but on the other hand, they require the legal system to be able to handle cases of code inconsistency, technical errors, and limitations in legal understanding of new technologies. Indonesia, whose contract law is based on classical doctrine and codification, faces great difficulties in interpreting and accommodating these innovations appropriately (D).

Internationally, the legal frameworks that serve as references in the digitisation of agreements include the *UNCITRAL Model Law on Electronic Commerce* and the *UNCITRAL Model Law on Electronic Signatures*. These legal models provide guidelines to ensure the validity, enforceability, and legal force of electronic documents as evidence. Indonesia needs to play an active role in adopting, translating, and adapting these principles so that national contract law can operate seamlessly in the global digital ecosystem (Mulya T. Multazam, 2023). However, legal adaptation in Indonesia is still limited by fragmented and not fully synchronised regulations. For example, the ITE Law

does not yet regulate smart contracts in detail, creating a legal vacuum that could cause uncertainty for parties using this technology. This uncertainty has the potential to create significant legal risks, ranging from contract fulfilment disputes to issues of jurisdiction and law enforcement (Juwana, 2024) .

Another issue is the regulation of personal data protection and cyber security, which are fundamental to digital contracts. Indonesia has passed the Personal Data Protection Law (PDP Law) to strengthen the privacy and security of user data in digital interactions. However, the implementation of the PDP Law in the context of digital contracts still requires more detailed guidelines and strict supervision to maintain the principle of trust in the digital realm. In addition, dispute resolution in the context of digital contracts also requires legal adaptation at both the national and international levels (LCotula, 2020) . Information technology-based arbitration and mediation are becoming popular as alternative methods for resolving disputes quickly and cost-effectively. Indonesia needs to develop regulations and legal institutions that support these digital dispute resolution mechanisms while harmonising them with international rules so that the results are binding and recognised globally (A .

Jurisdiction is also a crucial issue in cross-border digital contracts. Indonesian judges and legal institutions must be able to understand and decide cases involving foreign elements and sophisticated technology so that decisions are made with a full understanding of technical and international law. Without this preparedness, Indonesia risks losing its legal bargaining position and allowing disputes to drag on without effective resolution (Eko Riyadi, 2024) .

Legal adjustments must also consider aspects of electronic commerce transactions, particularly in rapidly growing digital economy sectors such as fintech, e-commerce, and digital platforms. Adaptive contract law policies have been proven to increase investor and business confidence, while also encouraging national digital economic growth. Contract law that is incompatible with digital practices can actually slow down economic transformation and reduce Indonesia's competitiveness on the global stage (B. Milligan, 2019) .

Conceptually, the adaptation of digital contract law requires a paradigm shift from a legal system based on physical and formal documents to a more agile and flexible legal system. This includes understanding automated contracts, interoperability between digital platforms, and recognition of forms of digital evidence. Therefore, developing legal institutional capacity, legal education, and technology-related training are vital parts of this adaptation process( Hutabarat, 2018) .

In the context of Indonesian law, the government and the House of Representatives must accelerate the revision of relevant laws to explicitly and comprehensively include the regulation of digital contracts. For example, the revision of the Electronic Information and Transactions Law and its derivative regulations must clearly accommodate smart contracts and blockchain technology. Openness to legal



innovation will strengthen the position of national law and provide legal certainty for domestic and foreign digital actors( Mochtar, 2009) . International cooperation is also an important synergy in the adaptation of digital era contract law. Indonesia needs to be active in multilateral and regional forums to promote national interests while learning from international best practices. The harmonisation of digital regulations between countries is key to ensuring that digital contracts can be executed effectively without cross-border bureaucratic and technical barriers (Barkatullah, 2023) .

From this entire explanation, it can be concluded that the adaptation of treaty law in the digital era is a complex process that requires a multidimensional approach. Indonesian law must move from mere formal recognition towards a holistic and futuristic legal framework that encompasses technological developments and digital business needs. Only with such an approach can Indonesian contract law address the challenges of the times and strengthen competitiveness and fairness for all stakeholders in the global digital era.

## **Conclusion**

The harmonisation of contract law in Indonesia in the context of environmental protection and global resource management is an essential requirement to ensure compliance with international obligations while maintaining national legal sovereignty. This study shows that although various international instruments such as the Paris Agreement, UNCLOS, and CBD have been ratified, the main challenge lies in implementation, which is not yet fully synchronised with national policy. The gap between global norms and national pragmatism often hinders the effectiveness of environmental protection and sustainable resource management.

Meanwhile, the adaptation of treaty law in the digital age requires a more progressive national legal paradigm to accommodate the development of electronic contracts and smart contracts. Indonesia has begun adaptation steps with regulations such as the ITE Law and the Personal Data Protection Law, but still faces legal gaps, particularly for new technologies and cross-border jurisdiction issues. Synchronisation with international legal frameworks such as the UNCITRAL Model Law is key to ensuring that digital contracts in Indonesia have strong legal certainty and support the development of the national digital economy.

Overall, the harmonisation of contract law in Indonesia between national and international law, both in the environmental and digital spheres, is a complex challenge that requires a multidimensional approach and cross-sector collaboration. Regulatory improvements, strengthened law enforcement, increased institutional capacity, and more active legal diplomacy are absolute requirements for responding to global challenges while capitalising on opportunities for Indonesia. Thus, this harmonisation is not only a matter of fulfilling international obligations, but also a strategic instrument for strengthening Indonesia's legal position and sustainable development as a whole.

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