



## ELECTRONIC CERTIFICATES OF LAND RIGHTS AND THE CONCEPT OF IMMUTABILITY IN INDONESIAN NATIONAL LAND LAW

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### Abstract

*Digital transformation in the land sector has led to the implementation of electronic certificates as an effort to modernize national land administration. In this system, the principle of immutability, or the unchangeability of data after it has been recorded, is an important basis for ensuring the integrity and validity of land rights data. This paper analyses the relevance of the concept of immutability in information technology to the electronic certificate system from the perspective of national land law. Through a normative juridical approach and a study of legislation, it is found that while the principle of immutability enhances legal protection, data validity, and service efficiency, it remains subject to basic principles of land law that allow for the annulment of rights on the basis of legal decisions. The study recommends strengthening technical and legal regulations and developing blockchain-based systems to support the immutability principle in land administration. The concept of immutability in law is closely related to the principle of legal certainty. In the context of Indonesian national land law, this concept is reflected in the land registration system that gives legal force to registered land rights. This article discusses the relationship between legal theories and the concept of immutability, as well as its application in national land law, particularly through the Basic Agrarian Law (UUPA) and Government Regulation No. 24 of 1997 on Land Registration. The study shows that the principle of immutability is the foundation for ensuring stability, legal security and protection of land rights.*

**Keywords:** *Blockchange, Digitalisation, Electronic Certificate, Immutability, Land Law, Legal Certainty.*

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### 1. INTRODUCTION

Land has a strategic role in national development, whether socially, economically or politically. In the context of Indonesia as an agricultural and developing country, legal certainty in land ownership is a fundamental aspect to ensure a sense of justice, order and legal stability in society. However, until now the problems of overlapping certificates, manipulation of land data and the rise of agrarian conflicts have shown the weakness of legal certainty in the national land system.

Currently there is a change in the pattern of the structural ownership, control and use of land physically, but there is also a development of changing patterns in digital information technology for land and spatial data management. The Indonesian government, through the Ministry of Agrarian Affairs and Spatial Planning/National Land Agency, has made innovations through electronic certificates based on Ministerial Regulation ATR/BPN No. 1 of 2021. Globalization makes us have to be able to manage information through digital transformation in various aspects of community life and development activities so that it is necessary to manage information technology and digital and



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electronic transactions now and in the future. However, this digitalization has not fully addressed the challenges of land data integrity and reliability. In practice, land data remains prone to manipulation by internal elements and third parties because the centralized digital system does not yet have a solid technological safety layer.

Blockchain technology offers a new opportunity to address this problem. With its decentralized ledger, immutability, and smart contract characteristics, blockchain can be the foundation for a more transparent, accountable, and manipulation-resistant land registration system. However, the use of blockchain in Indonesian land law does not yet have a strong normative basis and has not been comprehensively discussed in agrarian law doctrine.

The development of information technology and land data management has encouraged the Indonesian government to carry out digital transformation in various sectors, including in the land sector. One concrete form of this transformation is the implementation of electronic certificates as a substitute for physical documents of land rights. This step is intended to speed up services, improve efficiency, and reduce the potential for disputes and certificate forgery.

Electronic certificates for transparency and accountability of government services as stated by the Deputy Minister of Agrarian and Spatial Planning/National Land Agency (ATR/BPN), ***"Priority electronic services tend to increase every year, in 2024 Non-Tax State Revenue (PNBP) achieved of Rp 3.061 trillion. As of February 2024, 10 land offices have implemented the issuance of electronic certificates. As of October 2024, all land offices have implemented the issuance of electronic certificates. From the data submitted by Ossy, currently 3,437,073 electronic certificates have been issued by all land offices."*** (<https://www.hukumonline.com/berita/a/atr-bpn-gencarkan-sertifikat-elektronik-demi-layanan-cepat-dan-bebas-mafia-tanah-lt67a1930701860/>, 4 Feb 2025)

In the implementation of electronic systems, an important concept in the field of information technology emerges, namely immutability, which is the unchangeability of data once recorded in the system. This concept, which is widely used in blockchain technology, has great potential to support legal certainty in electronic land registration systems. However, this concept also raises questions from the perspective of national land law: to what extent can land data be considered immutable? Is immutability in line with the principles of Indonesian agrarian law? This paper aims to analyse the legal implications of applying the principle of immutability in an electronic certificate system, particularly in the context of national land law.



## 2. Literature Review and Conceptual Framework

### A. Concept of Immutability

Technically, immutability means that data that has been stored in the system cannot be changed, deleted, or manipulated without valid authorization and recording. In the context of modern information systems, this principle is used to ensure data integrity and transparency, as well as to prevent misuse.

According to Eugenia Politou (2019) in her article “Blockchain Mutability: Challenges and Proposed Solutions”, Nevertheless, blockchain's immutability is being called into question lately in the light of the new erasing requirements imposed by the GDPR's {Right to be Forgotten (RtbF)} provision. As the RtbF obliges blockchain data to be editable in order restricted content redactions, modifications or deletions to be applied when requested, blockchains compliance with the regulation is indeed challenging, if not impracticable. Towards resolving this contradiction, various methods and techniques for mutable blockchains have been proposed in an effort to satisfy regulatory erasing requirements while preserving blockchains' security. To this end, this work aims to provide a comprehensive review on the state-of-the-art research approaches, technical workarounds and advanced cryptographic techniques that have been put forward to resolve this conflict and to discuss their potentials, constraints and limitations when applied in the wild to either permissioned or permissionless blockchains.

The principle of immutability, which has been regarded as an indisputable property of electronic systems, is that data on the blockchain cannot be edited, deleted or altered, which is the main basis for the security of the blockchain that is the foundation for the use of electronic certificates of land rights in Indonesia. The emergence of data deletion demands are governed by the Right to be Forgotten (RtbF) provisions in the GDPR. The RtbF provisions require that data in the blockchain be editable so that the deletion, modification or editing of certain requested content can take place. This makes blockchain compliance with the regulation very challenging, if not impossible.

The Right to be Forgotten (RtBF) in GDPR (General Data Protection Regulation) is the right of individuals to request the deletion of their personal data from data controllers, such as companies or organizations that process such data. This means, if an individual's personal data is no longer relevant, inaccurate, or unlawfully processed, they have the right to request that it be deleted. The GDPR, or General Data Protection Regulation, is a European Union regulation that aims to protect the personal data of EU citizens. It governs how organizations, whether located inside or outside of the EU, must handle the personal data of individuals located in the European Union.

To resolve this contradiction, methods and techniques allow digital data to be altered in an effort to fulfil regulatory data deletion requirements while maintaining digital



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data security. Deletion or change of data that has standards and authorization that are verified in a valid and integrated manner. So, changes and maintenance of digital data stored in the blockchain system must have validated integrity according to the authority stipulated in the existing regulations. So that the immutability that has been regarded as indisputable in the management and use of digital data in the application of electronic certificates in Indonesia, which cannot be edited or deleted remains the main basis for the security of digital land data.

The principles of immutability that should receive attention in this context implemented through centralized database systems are access by authorized parties, digital logs of all changes made (audit trail), and electronic signatures that are valid and have legal force. However, the concept of immutability is still relative and depends on the control of the administrative authority.

The juridical and practical implications of the current use and application of electronic certificates can increase legal certainty and protection, which will lead to immutable electronic certificates that strengthen public confidence in land data. Other outputs also reduce the practice of forgery, duplication and other illegal activities in the management and maintenance of land data, as well as efficiency and transparency in the process of buying and selling, inheriting or transferring rights.

## **B. Principles of National Land Law**

The Basic Agrarian Law (UUPA), Law Number 5 of 1960, is the first law in the National Land Law that contains the basic principles of national agrarian law and lays the basic concept of national land development in Indonesia at that time until now. UUPA brings the concept of prosperity to the greatest extent for the prosperity of the Indonesian people and justice for all people in the utilization, ownership and control of land rights. Article 33 paragraph 3 of the UUPA states “The land, water and natural resources contained therein are controlled by the state and used for the greatest prosperity of the people”. This means that the state as the holder of power must be able to regulate the legal relationship between citizens in utilizing, owning and controlling a land right, which is the basic capital in national development both by the government, legal entities and individuals.

The development and history of the implementation of land registration in the land registration system in Indonesia has a long journey that is influenced by social, political and economic changes in Indonesia. The history of land tenure in Indonesia is inherited from Dutch law and customary law because the development of national land law is inseparable from the influence of the Netherlands both before and after Indonesian independence, which of course always provides the interests of the Netherlands as a colonizing country. According to Prof. Boedi Harsono, “Judging from its purpose, the



Administrative Land Law of the Dutch East Indies Government cannot be maintained and must be replaced by the National Administrative Land Law, which provides legal support to the National Government in implementing the National Land Policy outlined in the 1945 Constitution.” The Basic Agrarian Law became a milestone in the history of national land law because there was a renewal of national land law marked by the birth of UUPA, namely Law Number 5 of 1960 concerning Basic Agrarian Principles. According to Prof. Boedi Hasono, the changes are fundamental because regarding the structure of the legal device, regarding the underlying conception, and regarding its content, which is stated in the “opinion” section, UUPA must be in accordance with the interests of the Indonesian people and also meet their needs according to the demands of the times.

Various agrarian law instruments before the enactment of the UUPA were sourced from customary law with a regius communalistic conception and Western civil law with a liberal individualistic conception and some came from various Swapraja governments which generally had a feudal conception, while the Dutch government implemented and implemented its agrarian politics as outlined in the Agrarische Wet 1870. The development of National Land Law from time to time above is very dynamic, starting from the era before independence, which was coloured by the law of the conceptions of Customary Land Law and Western Law, especially the Netherlands as the ruler and colonizer nation at that time to the current development of Digital Technology in the Era of the Industrial Revolution 4.0 characterized by the use of digital technology which is believed to be able to improve the quality of life of the community in the era of Information Technology which is extraordinarily rapid.

Digital transformation is something that we cannot avoid at this time because it makes major changes in the system, including in the field of land and spatial planning in Indonesia, both in the field of land services and in the order of the national land law system. The rapid development of information technology has made major changes in the development of national land law, including the land registration system in Indonesia. Land registration used to be so difficult and long for the acceleration of land registration but now in the era of President Joko Widodo's administration it is very massive and fast.

Land Registration Systematically Complete (PTSL) is a national strategic program implemented by President Joko Widodo's administration to target 126 million parcels of land throughout Indonesia. With the implementation of PTSL, land certificates owned by the people will increase and reduce land and space problems and disputes, because land certificates are proof of legal rights to one plot of land owned quasi by a legal entity or individual. Based on Government Regulation No. 24 of 1997, Article 32 states that a certificate is proof of right that applies as a strong evidentiary tool regarding the physical and juridical data contained therein, as long as the physical and juridical data is in accordance with the data in the measurement certificate and land book concerned.

Land rights certificates, which are proof of ownership of a land right, are also transformed along with the development of information technology and the era of the





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industrial revolution 4.0, in which all countries must pursue progress in mastering digital technology. Land rights certificates are strong evidence for landholders, both land rights certificates that have been issued in the past and nowadays with the issuance of electronic and digital systems by the government.

According to Prof. Boedi Harsono, "Providing legal certainty in the land sector requires: (1) The availability of written legal instruments, which are complete and clear and implemented with consistency, (2), the implementation of effective land registration. With the availability of written legal instruments, anyone with an interest will easily know what possibilities are available to him to control and use the land he needs, how to obtain it, what rights, obligations and prohibitions exist in controlling his land with certain rights, what sanctions he faces if the provisions are ignored by those concerned and other matters related to the control and use of the land he owns. The principles and legal provisions provide legal protection for anyone who legally controls land against interference from any party, including from the controlling party. The authority of the state as the holder of the right to control from the state is not unlimited; our country is a state of law based on Pancasila.

This legal protection is very important in ensuring legal protection and legal certainty of land rights and, of course, certainty in the control of land and space use for the people as citizens in facing the development of information technology in the era of the industrial revolution 4.0. An era where everyone must adapt to digital transformation marked by the widespread adoption of digital technology, artificial intelligence, connectivity and system integration in various production processes and human life. The Industrial Revolution 4.0 opens the door to various innovations and skill upgrades, allowing humans to work smarter and more efficiently and creating a future of effective and efficient work. These are the characteristics of the industrial revolution that create system integration in various aspects of human life. Greater connectivity, especially through the Internet of Things (IoT), that can monitor all activities directly and in real time. This is the internet of things, where we can send data and use networks to carry out various work activities without human assistance or interacting with humans but simply by using the computer technology devices and information technology that we have.

The government, in this case the Ministry of Agrarian Affairs and Spatial Planning/National Land Agency (ATR/BPN), has issued electronic land rights certificates as a replacement for analog or manual certificates that have been applied in proving land rights in the national land law system in Indonesia. This electronic certificate is based on digital data in the form of physical land data and juridical data on the subject and object of the land plot. With the support of blockchain-based digital technology, it is considered to have advantages with a level of efficiency, security and transparency that should be in line with its legal objectives, namely, creating legal certainty and legal protection of ownership,



control and use of land by persons or legal entities through electronic certificates of land rights as evidence that cannot be contested by other parties.

Suyus Windayana explained that the current condition of land registration nationally from the total land parcels throughout Indonesia of 126 million parcels of national land registration achievements until November 28, 2024 is a total of 120.4 million registered parcels of land (95.59), a total of 94.9 million certificated parcels of land (75.39). The management and implementation of so many land registrations needs to anticipate how the management of land, especially those with certificates, which are proof of ownership and control, will be done, one of which is by modernizing electronic services and issuing electronic certificates as proof of ownership of land in Indonesia.

Secretary General of the Ministry of Agrarian and Spatial Planning/National Land Agency (BPN), Suyus Windayana, as the keynote speaker at the National Seminar organized by the Indonesian Society of Cadastral Surveyors (MASKI), at the Horison Hotel Bandung on Saturday (14/09/2024) in Bandung, said that the Ministry of Agrarian and Spatial Planning/National Land Agency (BPN) conveyed the progress of the implementation of electronic certificate services. To date, 891,939 electronic certificates have been issued. "Currently, 455 Land Offices are running electronic land services. And the electronic certificates that we have produced to date are 891,939 fields. An e-certificate is a certificate issued through an electronic system whose physical and juridical data has been stored in the Electronic Land Book or BT-El. In this case, the public also continues to receive electronic land certificates in physical form, namely 1 sheet of paper that has special specifications in the form of security paper and certified electronic signatures.

The use of electronic certificates in land practices with existing regulations in order to ensure better legal protection for land rights holders and create a more transparent and secure land system. The condition of conflicts, disputes and land cases that are still high in Indonesia as a result of the lack of legal tools in managing and organizing in the land sector is also due to the interest in the use, ownership and control of rights over land being so high because land is a source of life and the main asset in various development sectors and the business world. Various criminal acts of fraud, forgery and misuse of land data are. Crimes that can occur in proving electronic certificates include forgery, fraud, misuse of access, embezzlement, and data manipulation, all of which can harm land rights owners and disrupt legal certainty in land transactions.

Therefore, it is very important to strengthen how to design the land registration system in Indonesia, including regulations, security systems and law enforcement, in the context of the use of electronic certificates as legal evidence to maintain the integrity of the Indonesian land system. The main principles upheld in land law are legal certainty of land rights, legal protection of legal owners and ease of proving rights through the land registration system.



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**Conclusion**

The implementation of the principle of immutability in Indonesia's electronic certificate system is a step forward in bureaucratic reform and improving the quality of public services in the land sector. This concept strengthens the integrity of land data, increases legal certainty and minimizes the risk of misuse of land rights.

However, immutability does not eliminate the principle of legal flexibility in Indonesian land law, which continues to allow for the change or cancellation of land rights through a legitimate legal process. Therefore, an electronic certificate system needs to be designed to accommodate the principles of agrarian law that prevail in society.

The development of Distributed Systems (Blockchain) by the government can consider the use of blockchain technology to record all land transactions in a decentralized and immutable manner. Legal Protection and Cybersecurity in order to strengthen aspects of cybersecurity and regulations regarding the protection of personal data, it should be a priority in the digital land system.

Synchronization and validation of old data need to accelerate the digitization of analog data with thorough validation to avoid disputes on old data. In addition to public socialization and education, the public must gain a thorough understanding of the use, validity and legal processes related to electronic certificates.

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