

## **Legal Certificity in The Transformation of Conventional Land Certificates to Electronic Land Certificates**

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### **Abstract**

The implementation of electronic land certificates based on Regulation of the Minister of ATR/BPN Number 3 of 2023 aims to improve the efficiency of land governance through digitalization. This research uses an empirical legal approach with descriptive analytical specifications at the Karanganyar Regency Land Office. Since July 2024, 36,039 electronic certificates have been issued through physical and legal data validation in the Computerized Land Activities (KKP) system. Legal protection for owners is guaranteed through electronic signatures (BSrE) and cryptographic features that have valid evidentiary power according to the ITE Law. Although this system minimizes the risk of duplicate certificates and data manipulation, technical network constraints and low digital literacy remain major obstacles during the transition period. Electronic certificates strengthen legal certainty and land data security. Their success depends heavily on consistent data validation, reliable cybersecurity systems, and intensive public outreach.

Keywords: *Electronic Certificates, Legal Certainty, Land Registration.*

### **INTRODUCTION**

Earth, water and space, as well as all the natural resources contained therein are gifts from God Almighty to all the people of Indonesia. This is regulated in Article 33 Paragraph (3) of the 1945 Constitution, therefore it is fitting that the earth, water and space along with everything they contain must be used to achieve the greatest possible prosperity for all the people of Indonesia. This provision is the philosophical basis for national agrarian regulations, which was then implemented through Law Number 5 of 1960 concerning Basic Guidelines for Agrarian Principles.

The Republic of Indonesia is an organization of power from all the Indonesian people, which was formed to regulate, manage and resolve all the interests of all the Indonesian people. On this basis, the Indonesian people then again delegate the authority they have regarding the gifts of God Almighty to the State as the governing body to have full authority to control, regulate

and manage and resolve all issues related to the management of the functions of the earth, water and space. (1)

According to the official view of the bureaucracy (BPN), a land title certificate is evidence and a valuable document that guarantees legal certainty regarding the status of land ownership and control. On the other hand, the public views a land title certificate as more than a passport, a travel document that will lead to entry into a very formal world and will receive many conveniences. The official website of the Republic of Indonesia Land Agency ([www.bpn.go.id](http://www.bpn.go.id)) explains that there are at least seven goals of agrarian reform, namely reducing inequality in land control and ownership, creating sources of prosperity and public welfare, improving and maintaining environmental quality, increasing food security, resolving agrarian conflicts, improving public access to economic resources, and reducing poverty and creating jobs. (2)

The ratification of Law Number 5 of 1960 concerning Basic Agrarian Regulations (UUPA) is a revolutionary manifestation in the history of national law that absolutely ended the dualism of discriminatory colonial law. UUPA is present not merely as a regulatory instrument, but as a legal foundation that integrates all concepts of land ownership rights into the banner of national legal unification based on the sublimation of customary law. As a formal legal basis in the implementation of land registration, UUPA provides an imperative mandate for the state to regulate legal relations between legal subjects and land objects throughout the sovereign territory of the Unitary State of the Republic of Indonesia, in order to create a just agrarian order and provide guaranteed protection for the constitutional rights of every citizen without exception. (3)

Functionally and structurally, the land registration mandate has a dual purpose (*dual purpose*) to realize the principle of legal certainty (*legal certainty*) while providing preventive and repressive legal protection for every rights holder through an administrative-informative system that collects physical and legal data comprehensively. The constitutional basis for the obligation to organize land registration is stipulated in Article 19 paragraph (1) of the UUPA, where the availability of a valid and up-to-date database is a determining variable in the formulation of strategic land policies, spatial planning, and the acceleration of sustainable national infrastructure development. In order to respond to the dynamics of technological disruption in the industrial era 4.0, the government has carried out regulatory innovation through the Regulation of the Minister of ATR/BPN Number 1 of 2021 which was refined by the Regulation of the Minister of ATR/BPN Number 3 of 2023, providing strong legal legitimacy to

electronic documents as a legal instrument in modern land registration governance that is able to guarantee the security of people's rights more effectively and transparently. (4)

These technocratic steps are implemented through an electronic certificate policy which is introduced gradually as a strategic transition phase or pilot project to test the effectiveness of the system before its massive implementation. The location of this trial is selectively prioritized in areas with high economic activity intensity, with the primary target including state-owned assets (*State Property*) as well as large-scale corporate portfolios that have massive data administration complexity. The migration of physical documents that are vulnerable to the risk of natural damage and human manipulation into digital format also serves as a means of evaluating the resilience of the national land database infrastructure in dealing with fluctuating data transaction volumes.(5)

The fundamental transformation from a conventional analog-based certification system to an electronic system is a real manifestation of the doctrine of e-government which aims to reform the bureaucracy and achieve efficiency in public services through integrated digitalization. However, this paradigm shift should not be viewed in a reductionist manner as merely a technical change, but rather as a systemic change that carries very complex legal implications for individual privacy and property rights. A central issue that arises is the extent to which digital systems, which are intangible to maintain the essence of legal certainty which was previously symbolically attached to physical documents, consider that land is a vital asset which has fundamental philosophical, sociological and economic value in the structure of community life.

From the perspective of state administrative law, legal certainty requires transparent and accountable procedures, as well as protection of citizens' rights from potential arbitrary actions by civil servants. The digitization of land certificates presents new legal challenges related to the integrity of digital documents and the validity of electronic signatures as valid evidence under the umbrella of Law Number 11 of 2008 concerning Electronic Information and Transactions (ITE Law). Although normatively the status of electronic documents has been equalized with physical documents, at the empirical level there is still resistance from various stakeholders regarding their evidentiary power when faced with legal disputes in the judicial forum.(6)

These concerns are further strengthened by the risks associated with cyber security aspects, where the threat of hacking (cyber attack) to database manipulation can have direct

implications for the degradation of individual property rights. Given the high economic value of land data, failure to establish a robust data protection system will not only materially harm rights holders but also potentially undermine the government's institutional legitimacy in the public eye. Furthermore, the digital divide or the inequality of access to technology between urban and rural areas is a significant structural barrier, where the lack of equitable infrastructure can result in social exclusion in access to fair land services. (7)

Viewed from the sociological dimension of law, this challenge is increasingly difficult considering the obstacles to public acceptance (*social acceptance*) regarding the transformation of certificates into digital forms, which are often considered abstract. Indonesian legal culture, which is still dominated by traditional mindsets, tends to place more trust in physical evidence that can be stored independently as a symbol of property security. Concerns about data loss due to system disruptions or the lack of direct control over digital documents fuel resistance in the conversion process, with many landowners preferring to retain analog certificates because they are perceived as having more tangible psychological certainty.

This transition to a digital system has in turn triggered a new dialectic in the context of civil procedural law, particularly regarding the standardization of evidentiary mechanisms in land ownership disputes involving electronic evidence. The absence of established jurisprudence that comprehensively regulates the validation and verification procedures for electronic certificates in court requires judges to have adequate technical-digital capacity to assess the integrity of digital evidence. This situation creates an urgency for the Supreme Court to immediately synchronize procedural law regulations to effectively accommodate electronic evidence, in order to avoid disparities in decisions that could exacerbate legal uncertainty amidst the current of agrarian modernization.

Successfully addressing these challenges in court also depends heavily on the preparedness of human resources within the Ministry of ATR/BPN, which serves as the vanguard of digital land ecosystem management. The technical competency gap among land officials in managing information security and electronic data validation can increase the risk of data input errors (human error) which results in overlapping certificates. Without a strict internal monitoring system and ongoing training, there is concern that this digitalization will actually become a new loophole for bureaucratic maladministration practices that could hinder the realization of clean, transparent, and efficient land services in a comprehensive manner. (8)

The discrepancy between progressive national regulations and the realities of local infrastructure often creates legal loopholes that endanger agrarian stability. The main problem frequently encountered is the mismatch between textual and spatial data in digital systems, which has the potential to trigger new land disputes rather than resolve them completely. This is exacerbated by the vital nature of land as a source of life, which triggers intense competition for control. Any weakness in the digital administration system can be exploited by certain individuals to carry out land grabbing or unilateral claims that harm legitimate rights holders.

The transformation towards electronic land certificates must be seen as a comprehensive effort to reposition national land governance in a more modern direction while still prioritizing the principle of prudence. The government must ensure that this digitalization does not in the slightest erode the substance of legal protection guaranteed by the UUPA, but rather strengthens it through sophisticated encryption systems and inclusive outreach. Synergy between a strengthened regulatory framework, reliable technology, and prepared human resources is an absolute requirement for this digital transformation to achieve substantive legal certainty and minimize land mafia practices, thereby achieving social justice for all Indonesians.

## **METHOD**

This research uses an empirical legal approach that examines the application of legal norms in social reality, with analytical descriptive research specifications to provide a systematic overview of the transition from conventional land certificates to electronic certificates. The research location was determined at the Karanganyar Regency Land Office to obtain primary data through in-depth interviews with authorized sources and field observations related to policy implementation. The data is supported by primary legal materials in the form of land laws and regulations and secondary legal materials obtained through library research of relevant literature. The data collection technique was carried out through triangulation by combining the results of interviews and document reviews to ensure the validity of the information. Data analysis was carried out qualitatively with the stages of data reduction, data presentation, and drawing conclusions to identify the effectiveness and legal obstacles in the process of land digitalization transformation. (9)

## **RESULTS AND DISCUSSION**

### **A. Implementation of Electronic Land Certificate Transformation at the Karanganyar Regency Land Office**

The enactment of Regulation No. 1 of 2021 of the Minister of Agrarian Affairs and Spatial Planning/Head of the National Land Agency (ATR/BPN) on January 12, 2021, marked a fundamental turning point in the history of public administration in Indonesia, particularly in the land sector. This regulation is not merely a normative legal instrument, but rather a manifestation of the state's political will to comprehensively modernize the land system to meet the challenges of the digital disruption era.

Through an approach based on the use of Information and Communication Technology (ICT), this regulation is designed to eliminate various bureaucratic obstacles that have hindered the creation of efficient, transparent, and accountable land services. By integrating all elements of land data into a digital ecosystem, the government seeks to build a single, inclusive system, thereby significantly increasing public accessibility to public services while strengthening integrity standards within the National Land Agency.

The structural transformation from conventional analog-based land certificates to electronic document formats is a strategic policy emphasized through the Regulation of the Minister of ATR/BPN Number 3 of 2023. This latest regulation serves as a refinement of the previous legal basis, by providing legal certainty that electronic documents have legal standing that is fully equal to physical certificates in the legal evidence system in Indonesia.

This digitalization aims to create maximum operational effectiveness in land registration, where every land right is now managed through a digital mechanism that minimizes manual intervention that is prone to error. From an agrarian law perspective, this step is a preventive effort by the state to strengthen the protection of community land rights, guarantee transparency of ownership history, and ensure that every change in legal data occurs authentically and can be accounted for before the law. (10)

For the public, as legal subjects holding rights, the transition to an electronic system offers a new paradigm in terms of practicality and document security. Years of reliance on physical certificates often pose a risk of loss for landowners, both due to natural factors such as document damage due to age and disasters, and criminal factors such as theft or forgery by land mafia. With an electronic format, all information regarding land rights is securely stored in databaseA

centralized state, so the risk of physical loss can be completely eliminated. Furthermore, the speed of access to information through digital platforms allows people to monitor the status of their land online *real-time*, which in turn will speed up the process of economic transactions, bank credit applications, and other administrative processes that require fast and accurate validation of land data.

Karanganyar Regency, as a strategic region in Central Java Province, has geographic and demographic characteristics that are highly relevant to the implementation of this policy. Covering an area of approximately 74,785 hectares divided into various land types, Karanganyar manages more than 577,000 plots of land, serving as vital economic assets for its 952,132 residents as of the first semester of 2024.

Its administrative uniqueness, including the presence of the Colomadu exclave district bordering economic growth centers such as Surakarta and Boyolali, makes land management in this region complex. However, this high population density and economic activity have actually motivated the local Land Office to quickly switch to a more efficient system to provide services commensurate with the dynamics of regional development. The successful implementation of electronic certificates in Karanganyar Regency is supported by a very solid data modality, where the registered land plot rate has reached almost 90% and the mapped land plots have exceeded 84%. These statistics indicate that Karanganyar has passed the phase of massive systematic land registration, so that the availability of spatial and textual data is very ready to be integrated into the electronic system. (11)

A high number of mapped land parcels is a prerequisite for digitalization, as electronic certificates rely heavily on valid geographic coordinates and accurate land boundaries. With this strong initial capital, Karanganyar Regency not only meets the administrative requirements for implementing policies but also serves as a model for other regions in terms of the readiness of an integrated national land database.

Concrete steps for implementing this policy began simultaneously in Central Java Province on July 12, 2024, involving 29 Regency/City Land Offices simultaneously. According to Ms. Nunik Harsini, an authorized official at the Karanganyar Regency Land Office, this simultaneous implementation strategy is part of a massive and structured national policy, no longer just a limited pilot project. Synchronizing implementation at the provincial level is crucial to prevent disparities in service between regions and to ensure that all new land registration

applications and maintenance of existing land rights data are fully directed into the electronic system. This demonstrates that the land bureaucracy in Central Java, particularly Karanganyar, has achieved the infrastructure and human resource maturity to fully implement the digital transformation mandate.

Statistical data shows impressive achievements in Karanganyar Regency, where as of February 23, 2026, a total of 36,039 electronic certificates had been successfully issued. According to Mr. Yovi, an employee of the Karanganyar Land Office, this figure is not merely a work volume statistic, but a reflection of consistent productivity in carrying out document media transfers over a period of approximately one year and seven months. Each certificate issued has gone through a very strict validation process through the Computerized Land Activities (KKP) system, including synchronization between land books, measurement letters, and other supporting data. This figure of tens of thousands of certificates proves that the people of Karanganyar have a high level of adaptability to system changes, while also demonstrating that the Land Office is able to manage technological transitions without disrupting the stability of public services.

From a legal certainty perspective, the integration of 36,039 land plots into the electronic system has a significant impact on reducing the potential for agrarian conflict. With the digital system, every inch of land has a unique identity in the form of a Plot Identification Number (NIB) that is directly connected to the national mapping system, thereby closing the gaps for duplicate certificates or overlapping ownership claims. This system also records every transaction history and changes in rights chronologically and permanently in blockchain data, which provides full transparency for stakeholders. This not only strengthens landowners' bargaining power in civil disputes but also provides stronger legal protection for the state in managing public assets and monitoring land use more accountably.

The ongoing implementation in Karanganyar also demonstrates success in overcoming sociological adaptive barriers within the community. Although there was initial psychological skepticism regarding the lack of physical documents, the increasing number of electronic certificate issuances demonstrates that public trust began to build organically. This trust is the result of ongoing outreach through various channels, both digital media and direct meetings with village officials and community leaders. The public is beginning to realize that legal force no longer lies in physical pieces of paper, but rather in the validity of data recognized by the state in

an encrypted electronic system. This transformation is slowly transforming the legal culture of society to become more modern and technologically literate, which is an absolute requirement for the creation of effective e-government.

In conclusion and as an evaluation for the future, the transformation of land certificates in Karanganyar Regency has provided empirical evidence that digitalization is the right path to achieving legal certainty and service efficiency. The public's hope for the future is that the reliability of this system will continue to be improved, particularly in terms of cybersecurity and central server stability, to anticipate all forms of data manipulation threats. Closer synergy is needed between ministries, regional land offices, and village governments to ensure that digital literacy reaches all levels of society, even in remote areas. With the concrete achievement of 36,039 fields that have been accommodated in the electronic system, Karanganyar Regency has laid a solid foundation for the future of transparent, professional land administration, and provides complete legal protection for all citizens. (12)

### **1. Readiness for the Implementation of Digital Transformation of Land Certificates**

The transformation of conventional land certificates to electronic formats is a fundamental pillar of the public service digitalization policy initiated by the Ministry of Agrarian Affairs and Spatial Planning/National Land Agency (ATR/BPN) as an adaptive response to the industrial revolution 4.0. This policy, reinforced through Technical Instruction Number 3 of 2024, is oriented towards creating a more transparent, accountable, and sustainable land registration ecosystem by reducing reliance on physical documents that are vulnerable to external risks. In Karanganyar Regency, this implementation is driven by the relatively mature readiness of physical and legal data, where local authorities have utilized technology *drone* for aerial photography to ensure precise synchronization between spatial data in the field and textual data recorded in the Land Book. This acceleration is in line with the strategic direction of the Minister of ATR/BPN to increase the use of electronic documents, especially in the settlement of Land Use Rights (HGU) for legal entities and the achievement of the national target of Complete Systematic Land Registration (PTSL). (13)

Technical implementation at the Karanganyar District Land Office shows that this transition requires a rigid "electronic pre-certification" process, where the validity of the Land Book and Measurement Letter must reach an absolute threshold of 100% before they can be converted. Through integration with the Computerized Land Activities (KKP) system, each plot

of land undergoes a series of data structure verifications and document corrections to eliminate past information discrepancies that often hinder legal certainty. Once declared valid, the data is transformed into an Electronic Land Book stored in an encrypted digital data block, which functionally replaces conventional physical archives. This digital storage system allows for systematic tracking of the history of certificate editions, so that every change in land rights is recorded chronologically and minimizes opportunities for data manipulation or claims of dual ownership in the future. (14)

Structurally, electronic land certificates introduce fundamental changes to the identity of land plots by using the Plot Identification Number (NIB) as a single identity which is permanent, replacing the manual numbering used in the analog era. This new format includes comprehensive information ranging from publication edition, location description, plot area, to integrated registration records. In order to guarantee authenticity, electronic certificates feature a QR Code that connects directly to the Sentuh Tanahku app, thereby facilitating rights holders in conducting self-verification in real-time. This format change, although it sparked public debate, is a standardization measure aimed at creating a more modern, orderly land administration that aligns with international operational standards.

Document security in the transformation to electronic land certificates is a top priority, achieved through the use of certified electronic signatures from BSRé, electronic vaulting mechanisms, and multi-layered security to prevent cyber forgery. For citizens requiring physical proof, the state provides prints on secure paper featuring invisible ink, effectively reducing public anxiety over cyberattack risks while ensuring robust juridical protection. Since its simultaneous implementation in 29 Central Java Provincial Land Offices on July 12, 2024, this system has become the official service standard that encourages administrative efficiency and proactive adaptation from various parties, including professional support from PPAT. Going forward, the success of this transformation depends heavily on strengthening transparency, simplifying regulations, and inclusive education to achieve optimal legal certainty and protect citizens' economic rights in the digital era. (15)

## **2. Obstacles that arise in the implementation of electronic land certificates**

Field research conducted through in-depth interviews at the Karanganyar Regency Land Office revealed that the implementation of electronic certificates still faces complex administrative, technical, social, and legal barriers that arise at each stage of the digital

transformation. Although this policy has a definitive regulatory basis through Technical Instruction Number 3 of 2024, in practice, there is still a discrepancy between the readiness of the technological infrastructure and the demands for efficiency in the field. The success of this transition depends heavily on the stability of the centralized system of the Ministry of ATR/BPN, considering that the system adaptation process cannot be instantaneous and requires strong synchronization between technological reliability and operational readiness at the regional level.

Conceptually, an electronic certificate is a modern legal document with a certified electronic signature that has the same legal force as other authentic documents. However, the existence of this regulation has not been able to completely eliminate residual obstacles, such as low digital literacy in society and legal concerns regarding the mechanism of evidence in court and the protection of personal data. Therefore, this study emphasizes that complete legal certainty can only be achieved through harmony between strengthening legal substance, reliable information technology, and massive socialization to build public trust in the modern land administration ecosystem. (16)

The following are several obstacles in implementing the transformation of conventional land certificates to electronic land certificates:

a. Land data validation and quality constraints

The transformation of land certificates from conventional to electronic formats, as stipulated in ATR/BPN Ministerial Regulation No. 1 of 2021 and Technical Guidelines No. 3 of 2024, represents a fundamental restructuring that demands comprehensive land data integrity. In Karanganyar Regency, the main obstacle arises from the residue of past administration, where there are discrepancies between physical and legal data—such as land parcels that have not been digitally mapped and area anomalies due to differences in measurement methods. This necessitates a highly rigorous Pre-SU-el and Pre-BT-el validation process to ensure data accuracy, completeness, and consistency as an absolute prerequisite for ensuring legal certainty in the future.

Beyond the issue of historical data quality, the success of this implementation depends heavily on the reliability of the technological infrastructure and the stability of the network directly connected to the central system of the Ministry of Agrarian Affairs and Spatial Planning/National Land Agency (ATR/BPN). This reliance on a centralized system makes the application processing process vulnerable to stagnation in the event of server disruptions or

sudden system maintenance at the national level. Therefore, uniform infrastructure readiness across regions and intensive preparation are crucial for land offices to fully implement electronic land registration without significant technical obstacles for the public.

In addition to system factors, the readiness of human resources to operate special validation applications and re-examine incomplete documents is a determining factor in service efficiency. This procedural transformation encompasses the entire digital land registration cycle, from electronic validation to the rights issuance mechanism, which collectively aims to increase the capacity for legal protection for land rights holders through an integrated and transparent information system. (17)

The implementation of electronic land certificates in Karanganyar Regency faces sociological challenges in the form of a paradigm shift from the symbolic value of physical documents to digital formats, which often triggers concerns about data security amidst the community's still-limited digital literacy. This challenge is compounded by structural barriers to the capacity of human resources within the civil service, where unequal mastery of information technology has the potential to hinder the acceleration of media transfer and create new inefficiencies in public services. To bridge the trust gap, the government implemented a transition strategy by providing copies on secured paper, provision of self-authentication features through the Sentuh Tanahku application, as well as strengthening the digital legal protection system. In the future, sustaining this transformation's success relies on greater transparency, streamlined regulations, and inclusive education to guarantee optimal legal certainty and protect the public's economic rights in the digital era.

b. Technical constraints of technology systems and infrastructure

The implementation of electronic land certificates at the Karanganyar Regency Land Office faces significant technical challenges, particularly related to its absolute dependence on the stability of the national centralized information technology infrastructure and system. As stipulated in Technical Instruction Number 3 of 2024, the entire land registration cycle, from data validation and issuance of electronic land books to signing and storage in a digital vault, is carried out through an integrated online electronic ecosystem. This situation places internet network stability, central server performance, and the reliability of the Land Office (KKP) computerized application as key determinants of service smoothness. Based on field research, disruptions to connectivity or system maintenance often leads to operational stagnation, where the Pre-SU-el

and Pre-BT-el validation processes and electronic signature validation are delayed even though the applicant's files have been declared administratively complete. This highlights a structural vulnerability in digital bureaucratic models that are highly dependent on hardware efficiency and national bandwidth stability. (18)

Conceptually, the success of this transformation is determined not only by software readiness, but also by infrastructure capacity and human resource competency in handling technical dynamics. Differences in telecommunications infrastructure quality across regions often create disparities in service speed, particularly in areas with low connectivity that struggle to perform real-time data authentication. Furthermore, cybersecurity is a crucial factor, considering that each certificate uses a certified electronic signature, as mandated by the ITE Law. The threat of hacking or data leaks requires a multi-layered encryption mechanism to ensure the integrity of digital documents. Furthermore, limited IT competency at the regional executive level leads to a high dependence on the central team when system anomalies occur. Therefore, human resource capacity building is necessary to independently perform maintenance and troubleshoot issues to minimize waiting times for the public.

The dynamics of public acceptance of these technical constraints demonstrate an interesting correlation between public trust and institutional legality. Despite legitimate concerns about the risk of cyberattacks or data misuse in digital systems, the public tends to maintain trust in the legality of electronic certificates as long as the system is officially managed by a government agency. This perception is driven by the security guarantees provided by verified electronic signatures and self-authentication access through the Sentuh Tanahku application. However, to maintain public trust in the long term, the government needs to continuously strengthen cybersecurity systems and increase transparency regarding data protection mechanisms. Thus, land digitization is expected to not only shift conventional administrative barriers to the technological realm, but also truly create a stable, secure system that provides complete legal certainty for all land rights holders. (4)

c. Human resource constraints as an internal challenge

The implementation of electronic land certificates at the Karanganyar Regency Land Office faces significant challenges related to human resource capacity and capabilities, with disparities in digital literacy and technological proficiency among officials in navigating the complex data validation process. As data guardians responsible for information integrity, this

competency gap creates structural barriers that could potentially hinder the acceleration of media transfer and trigger new inefficiencies due to increased verification workloads. Therefore, the transition to e-government in the agrarian sector, this requires changes in work patterns and strengthening of competencies through intensive training and ongoing internal mentoring, to ensure that all service lines are able to operate the electronic land registration system independently and optimally without excessive dependence on central support. (19)

d. Psychological barriers and level of community acceptance

The implementation of electronic land certificates in Karanganyar Regency faces sociological challenges in the form of a paradigm shift from the symbolic value of physical documents to digital formats, which often triggers anxiety regarding data security and legal validity in the eyes of a community with limited digital literacy. Despite a trust gap due to the lack of formal socialization, where information is more often absorbed sporadically through social media or third parties such as Notaries/PPAT, people who have undergone the media transfer process have begun to show positive changes in perception. This direct experience reveals that service efficiency, cost transparency, and protection against the risk of physical damage to documents are the main driving factors for people to start accepting digital systems, provided they are actively accompanied by land officers to minimize administrative confusion and strengthen understanding of the substance of their legal protection. (6)

To overcome psychological barriers and increase public acceptance, a comprehensive outreach strategy is needed through an educational approach that reaches across all social strata. Providing access to self-verification through the 'Sentuh Tanahku' application is a strategic step to shift the perception of the 'unreality' of digital documents into a more concrete one, allowing the public to monitor their land data online in real-time. In addition, the provision of official copies of electronic certificates printed on specially secured paper serves as an important transitional instrument to bridge the shift in legal culture from analog to digital. Overall, the success of this digital transformation depends heavily on the government's consistency in ensuring cybersecurity, continuously improving public digital literacy, and transparency of legal information. By strengthening this socio-cultural dimension, the modernization of land services is expected to not only achieve administrative efficiency but also realize inclusive legal certainty that is widely accepted by the community.

**B. Forms of legal protection regarding legal certainty that can be provided by electronic land certificate owners**

Based on the results of research conducted at the Karanganyar Regency Land Office, legal protection for legal certainty for electronic land certificate owners is realized through the implementation of an electronic-based land registration system that is integrated, standardized, and based on the provisions of applicable laws and regulations. The transformation from conventional certificates to electronic certificates is part of the national policy of the Ministry of Agrarian Affairs and Spatial Planning/National Land Agency to improve the quality of public services in the land sector and strengthen the guarantee of legal certainty of land rights. In Karanganyar Regency, this policy is implemented in line with the achievement of complete village status and the readiness of physical and legal data that has been fully validated before being transferred to the electronic system.

When compared to conventional certificates, the public believes that electronic certificates are more practical and efficient because they are less likely to be physically damaged or lost. Furthermore, ease of access and the possibility of printing official copies if needed are added benefits. He believes that electronic systems are also more in line with current developments that are increasingly moving towards the digitalization of public services. (20)

The implementation of electronic land certificate transformation in Karanganyar Regency is carried out through a rigid physical and legal data validation mechanism in the Computerized Land Activities (KKP) system, supported by strong data modalities from the PTSL program and complete village status. This media transfer process requires Pre-SU-el and Pre-BT-el validation stages to ensure data accuracy and the validity of community rights before migrating to the national database. Despite facing challenges in technological infrastructure, human resource capacity, and digital literacy, the local Land Office proactively mitigates these challenges through technical training and ongoing outreach. Legal protection in this digital ecosystem is strengthened by the use of the Field Identification Number (NIB) as a single identity and cryptographic features to guarantee data authenticity, thereby strengthening legal certainty, minimizing maladministration, and protecting citizens' economic rights through transparent and accountable governance. (11)

## **1. Forms of Legal Protection for Legal Certainty of Electronic Land Certificate Owners**

Legal protection for electronic land certificate holders at the Karanganyar Regency Land Office is based on a very solid foundation of formal legality, as regulated executively in the Regulation of the Minister of ATR/BPN Number 3 of 2023 and reinforced by Technical Instructions Number 3 of 2024. This regulation not only functions as an administrative guideline, but also serves as a legal instrument that provides confirmation that electronic documents are official state documents that have absolute legal standing and authentic evidentiary force before the law. With this explicit and attributive regulatory basis, every land rights owner in Karanganyar Regency is guaranteed a legal safety net (legal safeguard) which ensures that their civil rights are recognized nationally. This provides assurance that digital transformation does not reduce the level of protection provided by the state in the slightest, but rather strengthens the existence of these rights in a more modern, transparent, and integrated land registration system, which legally has equal value to analog certificates. (10)

The validity and integrity of this electronic certificate is further strengthened through the application of high-level digital security technology, namely the use of electronic signatures and electronic seals certified by the Electronic Certificate Agency (BSrE), in accordance with the mandate of the ITE Law and Government Regulation Number 71 of 2019. Theoretically, true legal certainty can be achieved if the applicable legal regulations fulfill the aspect of legal reality, which represents a real legal situation where every provision is written clearly and does not give rise to ambiguous interpretation. (21) In this context, the legal protection provided includes preventive protection through a multi-layered cyber security system and repressive protection through the power of irrefutable digital evidence (non-repudiation). Through the integration of cryptographic technology, the state not only realizes administrative efficiency, but also actualizes legal benefits and justice by minimizing loopholes for land mafia practices, preventing overlapping certificates, and guaranteeing that land data in the digital ecosystem remains authentic, valid, and permanently protected. (22)

Normatively, the existence of electronic certificates obtains legal legitimacy from:

- a. Law Number 11 of 2008 concerning Electronic Information and Transactions as amended by Law Number 19 of 2016, which confirms that electronic documents and electronic signatures have legal force and valid legal consequences.

- b. Regulation of the Minister of ATR/BPN Number 3 of 2023 concerning the issuance of electronic documents in land registration activities
- c. Technical Instruction Number 3 of 2024 concerning the issuance of Electronic Certificates which regulates technical procedures, data validation, and the mechanism for validating electronic land documents.(19)

Preventive legal protection is realized through a rigorous physical and legal data validation process before electronic certificates are issued. The Karanganyar Regency Land Office conducts validation stages through Pre-Electronic Measurement Letters (Pra SU-el) and Pre-Electronic Land Books (Pra BT-el) using the SITATA application to ensure a 100% validity score. This database integration process aims to minimize the risk of administrative errors, overlapping land parcels, and duplicate certificate issuances that often occur in manual systems. Legal certainty is a fundamental pillar in a state based on the rule of law, which demands predictability and clarity of norms. Based on a review of Regulation of the Minister of Agrarian Affairs and Spatial Planning/Head of the National Land Agency (Permen ATR/BPN) Number 1 of 2021 concerning Electronic Certificates, there are four essential dimensions in the meaning of legal certainty:

- a. Codification of Law in Positive Form (*Gesetzliches Recht*) certainty requires that norms be manifested in the form of positive law based on facts, not merely judicial discretion. Regulation of the Minister of Agrarian Affairs and Spatial Planning/National Land Agency (ATR/BPN) No. 1/2021 fulfills this qualification as part of the hierarchy of laws and regulations in Indonesia. Under Law No. 15 of 2019, ministerial regulations established on the basis of attributive or delegative authority have firm binding legal force, thus providing a static basis for legal subjects in carrying out land legal acts.
- b. Ontological Basis for Urgency and Factual Consideration: The formation of legislation must be based on sociological realities and practical needs. Ontologically, the consideration "considering" in Regulation of the Minister of ATR/BPN 1/2021 reflects the urgency of modernizing land services. The fact that advances in information technology are an indicator of a country's modernity drives the need for a transformation from physical documents to electronic ones. This aims to improve the ease of doing business index.(*ease of doing business*)and the effectiveness of public services in the agrarian sector.

- c. Systematic and Theoretical Aspects of Clarity of Formulation, to avoid ambiguity or norm conflicts, a regulation must be formulated logically, structured, and comprehensively. This regulation demonstrates systematic consistency, from the preamble through the body (general provisions, main points, and transitional provisions), to the technical appendices. This clarity is reinforced by the inclusion of detailed electronic document formats (such as measurement drawings and land plot maps) in the appendices, which serve as operational guidelines to minimize multiple interpretations during the implementation phase.
- d. Stability and Continuity of Norms: The principle of legal certainty also encompasses the aspect of stability, where positive law may not be changed frequently without a fundamental reason. As long as a regulation remains effective and relevant to the dynamics of the times, then change has no legal urgency. Considering that Regulation of the Minister of ATR/BPN 1/2021 is currently in a transitional phase and preparation for massive implementation, the stability of this regulation is predicted to be maintained in the long term to ensure legal security for land rights holders. (11)

## **2. Legal Protection of Electronic Land Certificates for Rights Holders as a Means of Evidence**

The discussion regarding the evidentiary power of electronic land certificates in court is based on the principle of legal certainty mandated by Article 19 paragraph (2) letter c of the UUPA, which stipulates that certificates are a strong means of proof. In the Indonesian civil law landscape, certificates are authentic deeds because they are issued by authorized public officials, so they have perfect evidentiary power (*volledig bewijskracht*) as stipulated in Article 1870 of the Civil Code. The transformation to an electronic format does not degrade this legal status, but rather expands its legitimacy through the ITE Law, which recognizes electronic documents and their printouts as valid legal evidence. Thus, electronic certificates still hold the provisions of evidence *prima facie* which binds the judge to accept its contents as formal truth, as long as it cannot be proven otherwise through a lawsuit for cancellation or proof of procedural defects. (23)

Operationally, legal certainty for electronic certificate holders at the Karanganyar Regency Land Office is guaranteed through a multi-layered verification mechanism that includes validation of physical data, legal data, and the integrity of the national land system. The issuance process, which involves a certified electronic signature from the Electronic Certificate Center (BSrE), ensures that data authenticity, integrity, and availability are cryptographically maintained. This addresses public concerns about the security of digital documents, as each

certificate is equipped with an audit trail that can be traced to prevent forgery. In judicial practice, the validity of this document can be verified directly through the official system, thus providing more transparent and non-repudiable legal protection (non-repudiation) compared to physical documents which are vulnerable to manipulation or material damage. (24)

Comprehensively, legal protection for electronic land certificate holders includes normative, administrative, and technical aspects that are mutually integrated in order to realize the modernization of accountable public services. In addition to being relevant in civil cases, electronic certificates also fulfill the elements of valid documentary evidence in criminal law according to Article 187 of the Criminal Procedure Code, due to their status as official documents made by authorized officials. In fact, with a nationally documented digital system, the potential for duplicate certificates and disputes due to data inaccuracy can be significantly reduced. Therefore, from the perspective of legal certainty, electronic land certificates have fulfilled all elements of legality and validity as a perfect means of evidence in court, providing guarantees of protection of land rights that are equal, and even superior in terms of data accuracy compared to conventional certificates. (25)

## **CLOSING**

The transition from analog to electronic land certificates in Karanganyar Regency faces multidimensional obstacles, ranging from legal aspects related to evidentiary mechanisms in court, technical constraints on infrastructure and cybersecurity, to sociological resistance from the public who still strongly cling to physical documents. However, normatively, the legitimacy of electronic certificates has been confirmed through the ITE Law and Regulation of the Minister of Agrarian Affairs and Spatial Planning/National Land Agency Number 3 of 2023, which substantially strengthens legal certainty by mitigating the risk of duplicate certificates and data manipulation through encryption technology and certified electronic signatures. Although the simultaneous implementation since July 2024 demonstrates adequate institutional readiness, the effectiveness of the legal protection provided remains highly dependent on the accuracy of data validation and strengthening public trust in the resilience of the digital ecosystem.

## REFERENCE

1. Undang-Undang Dasar Negara Republik IndTahun 1945.
2. Bangsawan, M., Absori SH. Kebijakan sertifikasi tanah dan implikasinya terhadap kesejahteraan masyarakat (Doctoral dissertation, Universitas MuhammadiyahSurakarta). 2019.
3. Undang-Undang Nomor 5 Tahun 1960 tentang Pedoman Dasar Pokok-Pokok Agraria.
4. Yulies MT. entingnya Kepemilikan Sertifikat Tanah Melalui Pendaftaran Tanah Sebagai Bukti Hak. J USM Law Rev. 2022;5.
5. Peraturan Menteri Agraria dan Tata Ruang/Kepala Badan Pertanahan Nasional Nomor 3 Tahun 2023 tentang Perubahan atas Peraturan Menteri Agraria dan Tata Ruang/Kepala Badan Pertanahan Nasional Nomor 1 Tahun 2021 tentang Sertipikat Elektronik.
6. Supartini N. Kekuatan Pembuktian Sertifikat Elektronik dalam Persidangan Perdata di Indonesia. J Litigasi. 2025;
7. Undang-Undang Nomor 11 Tahun 2008 tentang Informasi dan Transaksi Elektronik.
8. Ach Farhan Arif, Hardi Sudarwanto KH. Mitigasi Risiko Keamanan Data dalam Implementasi Sertifikat Tanah Elektronik untuk Mewujudkan Kepastian Hukum. J Huk. 2025;
9. Sugiyono. Sugiyono, Metode Penelitian Kuantitatif, Kualitatif, dan R&D. 2016.
10. Peraturan Menteri Agraria dan Tata Ruang/Kepala Badan Pertanahan Nasional Republik Indonesia Nomor 3 Tahun 2023 tentang Penerbitan Dokumen Elektronik dalam Kegiatan Pendaftaran Tanah.
11. Harsini N. Penata Pertanahan Ahli Muda Kantor Pertanahan Karanganyar. Karanganyar; 2026.
12. Laporan Statistik Capaian Alih Media dan Penerbitan Sertifikat Elektronik: Update Periode Februari 2026. Karanganyar: Sub Bagian Tata Usaha. Dokumen Internal/Laporan Kinerja,. karanganyar; 2026.
13. Diana Setiawati. ‘Digitalisasi Sistem Administrasi Agraria: Penyuluhan Tentang E-Sertifikat Tanah Di Desa Gedangan, Sukoharjo.’ Borobudur J Leg Serv. 2021;(22):51–60.
14. Laporan Strategi Nasional Digitalisasi Layanan Pertanahan Wilayah Provinsi Jawa

Tengah. Karanganyar: Seksi Penetapan Hak dan Pendaftaran. 2024.

15. Pedoman Teknis Penggunaan Tanda Tangan Elektronik dalam Penerbitan Sertifikat Tanah Digital. Jakarta Badan Siber dan Sandi Negara (BSSN). 2025;10:45–50.
16. Yovi. Wawancara Pribadi Dengan Pegawai Kantor Pertanahan. Karanganyar; 2026.
17. Ari N. Wawancara Pribadi Kepada Masyarakat Pemohon Sertifikat. Karanganyar; 2026.
18. Astuti R. Wawancara Pribadi Terhadap Masyarakat Pemohon Sertifikat. 2026.
19. Supartini T, Nugroho MA. Tinjauan Yuridis Kekuatan Hukum Sertifikat Tanah Elektronik. Iblam Law Review. 2025;5(1):56–62.
20. Ghaniyyu FF, dkk. Jaminan Kepastian Hukum Konversi Sertipikat Menjadi Elektronik. Jurnal USM Law Review. 2022;5(1):172–87.
21. Permadi I, Herlindah. Electronic Title Certificate as Legal Evidence. Digital Evidence and Electronic Signature Law Review. 2023;20:47–61.
22. Putra R. Keamanan Data dalam Implementasi Sertifikat Tanah Elektronik. Jurnal Hukum Ius Quia Iustum. 2022;29(1):58.
23. Dewi RARM, Susantio C. Penggunaan Sertifikat Elektronik Untuk Meningkatkan Efisiensi Pendaftaran Tanah. Jurnal Syntax Admiration. 2024;5(9):3382–92.
24. Satria U.T. Sukmana BB. Implementasi Sertifikat Tanah Elektronik dan Dampaknya Terhadap Kepastian Hukum Serta Aspek Sosial di Kabupaten Semarang. Jurnal Hukum Ar-Risalah. J Huk Ar-Risalah. 2025;
25. Juliyanti NKED, dkk. Perlindungan Hukum terhadap Pemegang Sertifikat Tanah Digital. Jurnal Preferensi Hukum. 2022;4(1):91–96.