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Legal Protection for Land Rights Holders Against Mapping (Plotting) Errors in Electronic Land Certificates

Retno Damayanti[1*], Nia Kurniati[2], Betty Rubiati[3]
[1]*E-mail: retnodamayanti23007@gmail.com*
[2]*E-mail: nia.kurniati@unpad.ac.id*
[3]*E-mail : betty.rubiati@unpad.ac.id*
[1,2,3]*Universitas Padjadjaran, Indonesia*
*corresponding author

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Abstract
The digital transformation of Indonesia's land administration through electronic land certificates aims to improve transparency and legal certainty. However, spatial plotting errors remain a critical obstacle that undermines the certificates' validity and public trust. This study examines the legal validity of electronic certificates containing plotting errors and the forms of legal protection available to rights holders within the framework of digital land governance. Using a normative juridical method with statutory, conceptual, and case approaches, the research reveals that such errors weaken the material legal force of certificates, as they no longer reflect actual land boundaries. The study's novelty lies in its integration of digital accountability and administrative law principles, highlighting the state's responsibility to ensure data accuracy and equitable protection in electronic land registration.

INTRODUCTION

Land constitutes a fundamental asset with a strategic role in the social, economic, and political spheres of Indonesia. Its pivotal position is explicitly reinforced in Article 33, Paragraph (3) of the 1945 Constitution, which stipulates that the land, water, and natural resources therein are under the authority of the state and must be administered for the maximum benefit of the people[1]. The implementation of state authority in the land sector is carried out by the *Badan Pertanahan Nasional* (BPN), among others, through the issuance of land certificates as valid proof of ownership rights. Since the enactment of Law Number 5 of 1960 concerning the Basic Agrarian Principles (UUPA), land ownership rights have been positioned as the strongest, most comprehensive, and hereditary rights, which may also be transferred through sale and purchase, grants, wills, or other legally recognized mechanisms[2]. The land certificate functions as an authentic legal instrument of both physical and juridical data of a land parcel, as mandated by Article 19 of the UUPA and Article 32 of Government Regulation Number 24 of 1997 concerning Land Registration.[3].

The transformation of the land registration system into an electronic form constitutes part of the modernization efforts in land administration in Indonesia. The *Kementerian Agraria dan Tata Ruang/Badan Pertanahan Nasional* (ATR/BPN) is committed to providing services that are more transparent, efficient, and legally certain. This initiative aligns with the government's strategy of implementing E-Government as a response to the development of digital technology in public services. As the institution responsible for administering governmental affairs in the land sector, the ATR/BPN has taken proactive measures by adapting to contemporary advancements through the concept of "digital service delivery." This concept reflects the government's vision and strategy in utilizing E-Government[4]. E-Government–based information services can enhance and broaden public participation in the processes of decision-making and policy formulation, thereby improving the productivity and efficiency of the bureaucracy. They ensure adequate transparency of governmental information to the public, enabling citizens to follow, monitor, and oversee the development of governmental operations. Furthermore, the

[1] Republik Indonesia, "Undang-Undang Dasar Negara Republik Indonesia Tahun 1945" (1945).
[2] Pemerintah Republik Indonesia, "Undang-Undang Nomor 5 Tahun 1960 tentang Peraturan Dasar Pokok Agraria" (1960).
[3] Pemerintah Republik Indonesia, "Peraturan Pemerintah Republik Indonesia Nomor 24 Tahun 1997 tentang Pendaftaran Tanah" (1997).
[4] Syarifaatul Hidayah et al., "Tantangan dan Peluang Sertifikat Elektronik dalam Reformasi Pendaftaran Tanah di Era Digital," *Jurnal Ilmiah Nusantara (JINU)* 1, no. 6 (2024): 186–99.

implementation of E-Government also embodies the principle of accountability, as all policy formulation and execution can be made subject to responsibility and justification.[5].

Badan Pertanahan Nasional (BPN) is currently implementing the digitalization of the land administration system as part of the government's broader digitalization program. One manifestation of this initiative is the adoption of an electronic land registration system, which facilitates the transition from conventional land certificates to electronic certificates. This policy is in line with Article 147 of Law Number 6 of 2023 concerning the enactment of Government Regulation in Lieu of Law Number 2 of 2022 on Job Creation (UU Cipta Kerja), which stipulates that proof of rights, including deeds issued by the *Pejabat Pembuat Akta Tanah* (PPAT) and other land-related documents, may take electronic form. Its implementation is further regulated under Article 84 of Government Regulation Number 18 of 2021 concerning Land Management Rights, Land Rights, Condominium Units, and Land Registration, which affirms that land registration may be conducted electronically. The outcomes of such implementation may consist of data, information, or electronic documents, and both electronic documents and their printed versions are legally recognized as valid evidence. Accordingly, electronic data and information, together with their printed copies, constitute an extension of valid legal evidence under the applicable procedural law in Indonesia.

Ministerial Regulation of ATR/BPN Number 3 of 2023 provides the legal foundation for the issuance of electronic land certificates through a digital-based registration system. Although issued in electronic form, rights holders may still obtain a printed copy of the certificate as a facilitative measure for parties who have not yet mastered information technology or face access limitations. An electronic certificate is a digital document containing the physical and juridical data of land, stored within the electronic land register, resulting from the conversion or digitalization of conventional land registers, which simultaneously serves as the legal basis for its issuance. The electronic certificate records both juridical and physical data preserved in the electronic land register, including parcel maps generated from digital plotting[6]. This policy aims to enhance the efficiency, transparency, accuracy, and security of land administration while simultaneously reducing the risks of forgery and document loss. The transition from

[5] Annisa Noor El Izzah dan Wasis Sugandha, "Penggunaan Tanda Tangan Elektronik Dalam Penyelenggaraan E-Government Guna Mewujudkan Pelayanan Publik Yang Efisien," *Journal of Law, Society, and Islamic Civilization* 9, no. 1 (2021): 1, https://doi.org/10.20961/jolsic.v9i1.52836.

[6] Muhammad Faniawan Asriansyah, "Pemetaan (Plotting) Sertipikat Tanah BMN Secara Digital Memberikan Kepastian Hukum Tanah BMN," Kementerian Keuangan Republik Indonesia, 2022, https://www.djkn.kemenkeu.go.id/kanwil-sumut/baca-artikel/15659/Pemetaan-Plotting-Sertipikat-Tanah-BMN-Secara-Digital-Memberikan-Kepastian-Hukum-Tanah-BMN.html.

conventional certificates to electronic certificates is expected to strengthen legal certainty, broaden public access, and promote transparency in public services[7].

Nevertheless, the implementation of electronic certificates is not without various technical challenges, particularly concerning the accuracy of spatial data. One critical issue lies in errors of land parcel plotting, namely discrepancies between the actual physical location of land in the field and the geometric data recorded in the electronic system. Such conditions may potentially lead to overlapping land parcels, ownership disputes, and legal uncertainty developments that stand in direct contrast to the original objectives of land digitalization. The accuracy of both physical and juridical data in certificates constitutes a fundamental requirement for ensuring legal certainty, as emphasized in Article 20 paragraph (1) of the UUPA, which establishes that land ownership rights represent the strongest and most complete form of land rights. The issue of plotting errors in electronic certificates has generated tangible implications in practice. One illustrative case occurred in the City of Bandung, where a *Pejabat Pembuat Akta Tanah* (PPAT) encountered a discrepancy between the deed of sale and purchase and the physical land data contained in the electronic certificate issued following the transfer of title[8]. This situation creates a dilemma for the new rights holder, as the electronic certificate which is supposed to serve as valid proof of ownership contains errors that threaten legal certainty. [9] This condition is even suspected to potentially undermine the authenticity of sale and purchase deeds that have been prepared in accordance with legal procedures, as the recorded land positions become ambiguous and may give rise to legal disputes.

As a state governed by law, Indonesia is obliged to guarantee legal certainty and provide protection for every citizen, as stipulated in Article 28D paragraph (1) of the UUD 1945. The *Badan Pertanahan Nasional* (BPN), as the operator of the electronic land administration system, is subject to the provisions of Article 15 of Law Number 1 of 2024 on the Second Amendment to Law Number 11 of 2008 concerning Electronic Information and Transactions (UU ITE), which mandates that electronic systems must be operated reliably, securely, and responsibly. Therefore, any data errors resulting from

[7] Faris Faza Ghaniyyu, Yani Pujiwati, dan Betty Rubiati, "Jaminan Kepastian Hukum Konversi Sertipikat Menjadi Elektronik Serta Perlindungannya Sebagai Alat Pembuktian," *Jurnal Usm Law Review* 5, no. 1 (2022): 172–87, https://doi.org/10.26623/julr.v5i1.4553.
[8] I Kadek Dewi Sasih Adnyani, Ratna Artha Windari, dan Muhamad Jodi Setianto, "Pentingnya Sertifikat Tanah Elektronik Di Era Digital Sebagai Bukti Hak Kepemilikan Tanah," *Jurnal Komunitas Yustisia* 7, no. 2 (2025): 121–29, https://doi.org/10.23887/jatayu.v7i2.94192.
[9] Nia Kurniati, *Hukum Agraria Sengketa Pertanahan Penyelesaiannya Melalui Arbitrase Dalam Teori Dan Praktik* (Bandung: PT. Refika Aditama, 2016).

administrative or system negligence must be accompanied by legal protection mechanisms, either preventively through data correction and remeasurement or repressively through the resolution of land disputes. Based on the foregoing, this study aims to analyze the validity of electronic certificates containing land parcel plotting errors from the perspective of the principle of legal certainty, as well as to examine the forms of legal protection available to rights holders in the event of such errors. The study is expected to provide a comprehensive understanding of the legal position of electronic certificates in cases of spatial errors, while also offering recommendations for appropriate legal protection, whether through administrative mechanisms within the *Kementerian ATR/BPN* or through other legal channels.

The primary issues to be examined in this study encompass two main points. First, how the validity of electronic certificates containing land parcel plotting errors can be evaluated from the perspective of legal certainty, given that certificates serve as valid proof of ownership. Second, what forms of legal protection can be provided to land rights holders when plotting errors occur in electronic certificates in the era of digitalization.

METHOD

This study employs a normative juridical method, with an emphasis on the analysis of positive law, legal principles, and relevant legal doctrines. [10]. The focus of this study is to analyze the validity of electronic certificates containing plotting errors, as well as the legal protection that can be afforded to land rights holders. In its implementation, several approaches are employed: a statute approach, which examines laws and regulations related to land administration and digitalization, including the UUPA, Government Regulation Number 24 of 1997, Government Regulation Number 18 of 2021, Ministerial Regulation of ATR/BPN Number 1 of 2021, Ministerial Regulation of ATR/BPN Number 3 of 2023, and the UU ITE; a conceptual approach, which studies legal theories and principles, particularly the principle of legal certainty and the theory of legal protection; and a case approach, which analyzes concrete practices, such as instances of plotting errors in electronic certificates that give rise to legal issues.

The research is descriptive-analytical in nature, aimed at factually depicting the implementation of the electronic land certificate policy and subsequently relating it to the applicable legal framework [11]. The research stages and data collection were conducted using two main techniques: library research and field research. Library research involves

[10] Soerjono Soekanto dan Sri Mamudji, *Penelitian Hukum Normatif: Suatu Tinjauan Singkat* (Jakarta: Raja Grafindo Persada, 2006).
[11] Amirudin dan Zainal J, *Pengantar Metode Penelitian Hukum* (Jakarta: PT. Raja Grafindo Persada, 2003).

the exploration and analysis of primary, secondary, and tertiary legal materials.[12]. Field research was conducted to obtain primary data through interviews with relevant officials and practitioners, particularly at the Land Office of Bandung City and with *Pejabat Pembuat Akta Tanah* (PPAT). This primary data serves to complement and reinforce the analysis of secondary legal materials. The purpose of the interviews was to gather information regarding the implementation and challenges associated with the recording of data in electronic certificates. The collected data were analyzed using a qualitative juridical method, which involves logically and systematically describing, classifying, and interpreting the data.[13]

RESULTS AND DISCUSSION

1. The Validity of Electronic Certificates Containing Land Parcel Plotting Errors from the Perspective of the Principle of Legal Certainty

Plotting errors in electronic certificates are generally influenced by two main factors: technical factors and administrative factors. From a technical perspective, discrepancies arise between spatial data obtained from field measurements and digital base map data. The quality of the base maps, which do not yet fully meet national geospatial standards, leads to mismatches in geo-referenced coordinates. On the other hand, from an administrative perspective, errors may occur due to weaknesses in the verification and validation processes during the conversion from physical documents to electronic documents. Inaccuracies in data entry by officials, as well as limitations in human resources in the geospatial technology field, further increase the likelihood of plotting errors

Field findings indicate several patterns explaining why plotting may deviate from the physical location of land parcels. First, changes in parcel shape (e.g., due to construction extending beyond parcel boundaries) cause the factual geometry to shift compared to the initial data collection. Second, inaccuracies in inputting locations on Google Maps and geotagged photos submitted by applicants or their representatives, such as deviations in coordinates (shared locations) from mobile devices or environmental changes since the last plotting, contribute to errors. Third, differences in the accuracy and precision of digital maps (e.g., OpenStreetMap versus Google Maps) still result in discrepancies

[12] Zainuddin Ali, *Metode Penelitian Hukum* (Jakarta: Sinar Grafika, 2009).
[13] Johny Ibrahim, *Teori dan Metodologi Penelitian Hukum Normatif*, Cetakan ke (Malang: Bayumedia Publishing, 2008).

between mapped and actual physical positions of parcels in practice[14]. All of these factors are acknowledged by the Land Office and serve as the rationale for requiring every application to include a Google Maps screenshot and geotagged photos, while the BPN continues to refine digital mapping, including the use of drones to achieve higher accuracy.

During interviews with the *Pejabat Pembuat Akta Tanah* (PPAT), it was confirmed that the process of creating a Sale and Purchase Deed (Akta Jual Beli, AJB) is bound by procedures stipulated in the applicable laws and regulations. The deeds are also guided by templates issued under Regulation of the Head of BPN Number 8 of 2012 concerning Land Registration, which serve as a reference for PPAT. This means that the authenticity of a PPAT-issued AJB is guaranteed as long as all procedural requirements for deed preparation are complied with. The purpose of a PPAT's authenticity is to ensure legal certainty in the land registration process at the Land Office. Currently, applications for data maintenance arising from legal acts of sale and purchase can be submitted through the electronic system or the Land Office counter. The PPAT submits the deed along with the required documents for registration purposes. If the review of the submitted deed and accompanying documents is deemed complete and compliant, the PPAT is requested to submit all requirements to the Land Office through the service counter. The Land Office issues a document receipt and a payment order for service fees.

Once the application is fully processed, the maintenance of Land Registration Data is carried out, recording changes in both Physical Data and Juridical Data in the electronic land register to issue a new electronic certificate. For applications where the land register is still in physical form, a media conversion process is conducted to transform it into an Electronic Land Register. This involves verification and validation to obtain accurate data. The first edition of the electronic certificate is issued according to the application, and for subsequent changes, a new edition of the electronic certificate is issued as a continuation of the previous edition. The previous edition then becomes invalid and serves solely as a record of the land registration history. The above process must be undertaken by the PPAT to enable the issuance of the electronic certificate, as the PPAT functions as a partner of BPN, assisting the Land Office in exercising its authority in accordance with Articles 2 and 4 of Ministerial Regulation of ATR/BPN Number 5 of 2025 on the Delegation of Authority for Land Rights Determination. Interviews with PPAT in Bandung City confirmed that all preliminary verification and validation

[14] Retno Damayanti, "Perlindungan Hukum Bagi Pemegang Hak Milik Tanah Terhadap Kesalahan Plotting Pada Sertipikat Elektronik Dalam Perspektif Hukum Pertanahan di Era Digitalisasi" (Universitas Padjadjaran, 2025).

procedures—including checking juridical status, validating physical data, establishing/checking the Land Parcel Identification Number (NIB), and attaching map screenshots and geotagged photos—are conducted after the AJB is signed. Nevertheless, plotting errors only emerge after the electronic certificate has been issued.

During the submission and examination of documents, it was observed that no notifications of procedural errors occurred during the preparation of the Sale and Purchase Deed (AJB), and all registration procedures were deemed complete and compliant with requirements. Consequently, the subsequent registration process for the issuance of the electronic certificate becomes the full responsibility of the BPN through its Land Office, and any errors that occur after issuance are likewise the responsibility of the BPN.[15] The issue was then submitted to the Complaints Division and responded to by the Land Office with a solution involving boundary remeasurement, including the participation of neighboring landowners affected by the plotting points. However, due to refusal by some neighbors to participate, the BPN subsequently allowed the remeasurement to proceed without their involvement after conducting internal validation. In practice, the rights holder bears the cost of the boundary remeasurement to correct the physical data in the certificate, while detailed technical explanations regarding the cause of the error are not provided to the applicant.[16].

Legal certainty refers to consistency in the administration of law. Inconsistent law enforcement will not encourage society to rely on the law as a framework regulating communal life. Consistency in law administration is necessary as a reference for daily human behavior in interactions with others [17]. Discrepancies between the Physical Data related to plotting in the electronic certificate and the Physical Data recorded in the Sale and Purchase Deed (AJB) result in inconsistencies in the evidentiary documents available to the rights holder. As is well recognized, the AJB constitutes an authentic deed whose preparation is governed by law, while the electronic certificate is a product of the BPN, the issuance of which is also legally regulated[18]. This ambiguity, resulting from inconsistencies in the application of law, leads to legal uncertainty, even though legal certainty is one of the essential principles in a state governed by law. Legal certainty is almost an absolute requirement for a modern and democratic rule-of-law state.

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[15] Boedi Harsono, *Hukum Agraria Indonesia Sejarah Pembentukan Undang-Undang Pokok Agraria, Isi dan Pelaksanaanya* (Jakarta: Djambatan, 2008).
[16] Damayanti, "Perlindungan Hukum Bagi Pemegang Hak Milik Tanah Terhadap Kesalahan Plotting Pada Sertipikat Elektronik Dalam Perspektif Hukum Pertanahan di Era Digitalisasi."
[17] Budiono Kusumohamidjojo, *Ketertiban yang Adil Problematik Filsafat Hukum* (Jakartra: Grasindo, 1999).
[18] I Gusti Bagus Yogya Prawira, "Tanggung Jawab PPAT Terhadap Akta Jual Beli Tanah," *Jurnal IUS Kajian Hukum dan Keadilan* 4, no. 1 (2016): 65.

Plotting discrepancies give rise to dual implications. On one hand, rights holders face difficulties in using the electronic certificate to assert their rights (e.g., for financing, subsequent transactions, or legal defense), as the parcel map in the certificate indicates a different location. On the other hand, the Sale and Purchase Deed (AJB), as an authentic deed, correctly specifies the object and the legal act, whereas the electronic certificate, as a final–individual legal product, contains erroneous physical data. Consequently, the legal status and evidentiary strength of the certificate are undermined, necessitating correction of the physical data through official mechanisms[19]. Normatively, a land certificate constitutes strong evidence regarding both physical and juridical data, provided it aligns with the survey deed and land register. This provision also applies to the electronic registration scheme and the electronic land register, making the precision of physical data particularly the parcel location an essential requirement for the evidentiary strength of electronic certificates. Within the framework of the Government Regulation on Land Registration and BPN practices, the principle of legal certainty is understood as certainty of the object (the parcel's geo-referenced location on the registration map) and certainty of the subject (the recorded rights holder).

According to Article 41 of the Ministerial Regulation of ATR/BPN Number 16 of 2021, amending Ministerial Regulation of ATR/BPN Number 7 of 2019 on Land Registration, the maintenance of registration maps, survey drawings, and related measurement data is the responsibility of the Head of the Land Office. In the event of technical errors in measurement data during the preparation of registration maps and survey drawings, the Head of the Land Office is authorized to correct such errors. [20] Based on the foregoing, an electronic certificate can be considered valid if it accurately reflects the correct data. However, when the parcel location in the electronic certificate does not correspond to the physical condition on the ground, the evidentiary quality—and ultimately the validity of the certificate is compromised, as it no longer "reflects" the actual physical data. Plotting errors in the parcel location render the electronic certificate invalid until corrections are made through boundary remeasurement and updating of physical data to realign it with the Sale and Purchase Deed (AJB) and the actual conditions in the field.

[19] Fariz Muhammad Iqbal, "Legal Analysis of the Protection and Legal Certainty of Electronic Land Certificates as an Instrument of Land Reform in Indonesia," *Krtha Bhayangkara* 19, no. 1 (2025): 176–87.
[20] Kementerian ATR Kepala Badan Pertanahan, Pasal 41 Permen ATR/BPN Nomor 16 Tahun 2021 tentang Perubahan Ketiga Atas Permen ATR/BPN Nasional Nomor 3 Tahun 1997 tentang Ketentuan Pelaksanaan Peraturan Pemerintah Nomor 24 Tahun 1997 tentang Pendaftaran Tanah.

2. Legal Protection for Rights Holders Against Plotting Errors in Electronic Certificates

In land registration practice, the BPN has transitioned from physical certificates to electronic certificates by leveraging information technology. All land registration documents are gradually converted into electronic form and stored in the Ministry's database, ensuring that the entire process from data acquisition to certificate issuance—is conducted through a digital system.[21]. This situation requires the BPN to ensure the reliability, security, and accountability of the electronic system used, as regulated under Article 15 of Law Number 1 of 2024 on Information and Electronic Transactions (UU ITE) in conjunction with Article 84 of Government Regulation Number 18 of 2021. This obligation also aims to prevent data errors, provide protection guarantees for land rights holders, and ensure that every electronic document produced has legal force as valid evidence in accordance with Article 5 of the UU ITE. Accordingly, the transition to electronic certificates is not merely an administrative transformation but also carries juridical consequences, positioning the BPN as the operator of the electronic system fully responsible for the validity and authenticity of the documents issued.[22].

Under the electronic registration regime, all stages from the virtual collection and processing of physical data, the authentication of electronic survey deeds, to the recording of rights and issuance of electronic certificates—are conducted within the electronic system, with officials/operators responsible for the accuracy of parcel locations on the registration map. This means that system unreliability or inaccuracies resulting in plotting errors constitute an administrative risk that must be rectified through official mechanisms, in line with the principles of rights holder protection and legal certainty in land registration. Plotting, also referred to as mapping, is a measurement procedure conducted to obtain land survey certificates with a high degree of precision [23]. This process generally utilizes electronic equipment to produce more accurate measurement representations. In the context of developing digital systems, efforts are required to enhance the accuracy of digital maps that serve as the basis for plotting, including the expanded use of drone technology and the implementation of stricter spatial evidence standards, such as the use of screenshots and geotagging in each data maintenance service. From a governance perspective, plotting errors should be classified as serious

[21] Ghaniyyu, Pujiwati, dan Rubiati.
[22] Kharisma Setya Wardani dan Septi Indrawati, *Panduan Praktis Konversi Tanah Letter C Menjadi Sertifikat Hak Milik (SHM)* (Agam: Yayasan Tri Edukasi Ilmiah, 2025).
[23] Asriansyah, "Pemetaan (Plotting) Sertipikat Tanah BMN Secara Digital Memberikan Kepastian Hukum Tanah BMN."

cases that must be addressed through transparent standard operating procedures (SOP), encompassing clear correction workflows, defined completion timelines, and standards for re-measurement precision. Moreover, the mechanism for allocating correction costs should be reconsidered to avoid placing the entire burden on rights holders acting in good faith. These measures align with the mandate of land registration, which aims to ensure legal certainty and protection, while also guaranteeing coherence between the sale and purchase deed (AJB) as the basis for rights transfer and the land certificate as a valid proof of ownership

According to Gustav Radbruch, legal certainty must be maintained to ensure the orderliness of a state; therefore, positive law governing human interests in society must always be observed, even if such law is less just or fails to fully achieve the objectives of the law itself.[24]. Administrative land disputes may arise as a result of the issuance of State Administrative Decisions containing errors or mistakes in the determination of land rights and their registration. Such disputes can be caused, among other factors, by errors in identifying the object of rights, as well as mistakes in determining location, area, boundaries, and related aspects[25]. The protection scheme is centered on two pathways: preventive (administrative) and corrective (data restoration). In the context of preventive legal protection, the significance of the right to be heard lies in allowing individuals affected by government actions to present their rights and interests, thereby ensuring justice and supporting the implementation of good governance. One of its applications is found in regulations regarding the general provisions of state administrative procedures. The National Land Agency (BPN) provides a complaint service as an entry point for handling and resolving land-related cases; requests can be submitted orally or in writing and are administratively screened before being forwarded to the technical division (Surveying, Measurement, and Mapping) for problem clarification and solution. This approach aligns with the principle of the right to be heard as a form of preventive legal protection and good administration.[26]

According to Article 3(1)(a) of ATR/BPN Regulation No. 21 of 2020 on the Handling and Resolution of Land Cases, the Complaint Service is established to facilitate the exercise of the right to be heard and to minimize potential disputes between the government and rights holders. In this regard, the Surveying, Measurement, and Mapping division is responsible for clarifying issues and providing solutions, demonstrating that stakeholder concerns are acknowledged. For instance, solutions such

[24] Theo Huijbers, *Filsafat Hukum dalam Lintasan Sejarah* (Yogyakarta: Kanisius, 1982).
[25] Nia Kurniati, *Hukum Agraria Sengketa Pertanahan Penyelesaiannya Melalui Arbitrase Dalam Teori Dan Praktik*.
[26] Philipus M. Hadjon*, Perlindungan Hukum Bagi Rakyat Indonesia,* (Surabaya: Bina Ilmu, 1987).

as Boundary Arrangement Measurements illustrate that the legal protection process can be effectively implemented in line with good administration principles. Moreover, Article 41A(c) of ATR/BPN Regulation No. 16 of 2021, amending Regulation No. 7 of 2019 on Land Registration, allows for improvements to registration maps, survey drawings, and measurement data, including upon requests from rights holders. Regulatory provisions also hold authorized officials accountable for ensuring the accuracy of parcel locations within the electronic registration system [27]. Boundary Arrangement Measurement instruments are submitted based on requests from rights holders. These requests aim to produce new measurement data as the basis for updating electronic land survey certificates, registration maps, and ultimately issuing the latest edition of electronic land certificates. During the implementation of Boundary Arrangement Measurements, rights holders are requested to be present to indicate boundaries, while survey officers utilize GPS and aerial photography (drones) to enhance accuracy. The results subsequently serve as the basis for amending electronic land survey certificates, which are integrated with the electronic land book and electronic certificates, accompanied by the issuance of a new edition reflecting the changes.

To ensure legal certainty, the results of Boundary Arrangement Measurements must be adhered to, as they form the basis for the Land Office to amend land survey certificates in the Electronic Land Book and to issue new editions of Electronic Certificates, where the plotting of land parcel locations aligns with the physical boundaries. This obligation is grounded in Article 40(5) of Agrarian Regulation No. 3 of 2023 on the Issuance of Electronic Documents in Land Registration Activities, which stipulates that if data entry errors are identified after the issuance of an electronic certificate, the authorized official is required to correct them and issue a new edition of the electronic certificate [28]. Boundary Arrangement Measurements constitute a form of legal protection provided by the Land Office, which rights holders can request for data recovery (corrective measures) in the form of improvements to registration maps, survey drawings, and measurement data. However, in the implementation of these solutions, rights holders are still required to bear the costs associated with submitting a Boundary Arrangement Request to correct the plotting on electronic certificates.

[27] Ghaniyyu, Pujiwati, dan Rubiati, "Jaminan Kepastian Hukum Konversi Sertipikat Menjadi Elektronik Serta Perlindungannya Sebagai Alat Pembuktian."
[28] Kementerian Agraria dan Tata Ruang/Kepala Badan Pertanahan Nasional, "Peraturan Menteri Agraria dan Tata Ruang/Kepala Badan Pertanahan Nasional Republik Indonesia Nomor 3 Tahun 2023 tentang Penerbitan Dokumen Elektronik dalam Kegiatan Pendaftaran Tanah," Kementerian Agraria dan Tata Ruang/Kepala Badan Pertanahan Nasional § (2023).

From a normative legal perspective, the mechanisms of preventive and corrective protection implemented by the National Land Agency (BPN) should also be evaluated in light of Philipus M. Hadjon's theory of legal protection and the principles of good governance. According to Hadjon, preventive legal protection aims to prevent violations before they occur, while repressive protection provides remedies after a violation or administrative error has arisen. In the context of electronic land certificates, the preventive mechanisms—such as verification, validation, and complaint services—have not yet fully realized their preventive function, as plotting errors continue to occur even after complete administrative compliance. Likewise, the corrective mechanism through Boundary Arrangement Measurement, while providing a legal avenue for rights restoration, still places a disproportionate burden on rights holders, which contradicts the principle of fairness in administrative accountability.

When assessed through the lens of good governance, especially the principles of transparency, accountability, and responsiveness, the existing protection mechanisms require improvement in both procedural clarity and cost allocation. The absence of detailed technical feedback from the BPN to the applicant during corrective processes indicates a lack of transparency and procedural justice. Thus, while the BPN has established formal structures for protection, their practical effectiveness remains limited by administrative rigidity and uneven responsibility-sharing between the agency and the rights holders.

The novelty of this study lies in its integration of administrative and digital aspects in analyzing land law protection. The transformation toward electronic land registration introduces new dimensions to the classical concept of legal protection—extending it from physical procedural safeguards to digital data reliability and system accountability. Therefore, ensuring the alignment of these mechanisms with Hadjon's theory and good governance principles is crucial for achieving substantive justice and genuine legal certainty in the era of land digitalization.

CONCLUSION

First, the validity of electronic certificates containing plotting errors regarding land parcel locations The validity of electronic land certificates containing plotting errors raises crucial concerns regarding legal certainty in Indonesia's digital land administration. This study emphasizes that when discrepancies occur between the physical data verified in a Sale and Purchase Deed (AJB) and the electronic certificate issued by the Land Office, the latter's validity is compromised. Such errors reflect the

limitations of current digital mapping systems and underscore the urgent need for accuracy improvements.

Furthermore, legal protection for land rights holders must not only take the form of administrative correction mechanisms but also embody the state's accountability in managing electronic land data. The requirement for certificate holders to bear correction costs reveals an imbalance that contradicts the principle of equitable legal protection. Therefore, this research contributes to the development of digital land law by recommending that the National Land Agency (BPN) enhance system reliability, standardize technical verification procedures, and establish a cost-free correction policy to ensure fairness and reinforce public trust in electronic land certification.

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