

# Synergy of Investment Law Transformation in the Implementation of PPP for Solar Power Plant Financing in Ibu Kota Nusantara

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**Abstract :** *The development of Ibu Kota Nusantara (IKN) embraces a sustainable city concept, targeting 100% renewable energy utilization and achieving Net Zero Emission by 2045. Based on Presidential Regulation No. 63 of 2022, IKN's primary energy source comes from Solar Power Plants (PLTS). However, financing this project faces major challenges due to limited capital access and high loan interest rates. The government has established the Public-Private Partnership (PPP) scheme as the main financing mechanism, covering 54% of IKN's total budget. Nevertheless, the PPP scheme remains highly dependent on high-risk bank loans. Therefore, this study analyzes the optimization of PPP in the PLTS project at IKN by exploring the blended finance scheme, particularly integrating PPP with green bonds. Additionally, it examines the legal aspects of investment in PLTS infrastructure development at IKN and the role of regulations in supporting sustainable financing implementation. This study is expected to provide academic and practical contributions by formulating regulatory recommendations to optimally support energy infrastructure development at IKN. The research employs a normative legal method with a legislative approach, a conceptual approach, and a comparative approach. The findings indicate that issuing green bonds by the IKN Authority can serve as a strategic legal foundation for sustainable PLTS infrastructure financing and attract investors.*

**Keywords :** *Nusantara Capital City, Solar Power Plant, Public-Private Partnership, Blended Finance, Green Bonds*

**Abstrak :** Pembangunan Ibu Kota Nusantara (IKN) mengusung konsep kota berkelanjutan dengan target pemanfaatan 100% energi terbarukan dan pencapaian *Net Zero Emission* pada tahun 2045. Berdasarkan Peraturan Presiden Nomor 63 Tahun 2022, sumber energi utama IKN berasal dari Pembangkit Listrik Tenaga Surya. Namun, pembiayaan proyek ini menghadapi tantangan besar karena keterbatasan akses modal dan tingginya suku bunga pinjaman. Pemerintah menetapkan skema Kerja Sama Pemerintah dengan Badan Usaha (KPBU) sebagai mekanisme utama pembiayaan, mencakup 54% dari total anggaran IKN. Meski demikian, skema KPBU masih sangat bergantung pada pinjaman perbankan yang berisiko tinggi. Oleh karena itu, penelitian ini menganalisis optimalisasi KPBU dalam proyek PLTS di IKN dengan mengeksplorasi skema *blended finance*, khususnya integrasi KPBU dengan obligasi hijau. Selain itu, penelitian ini mengkaji aspek hukum investasi dalam pembangunan infrastruktur PLTS di IKN serta peran regulasi dalam mendukung implementasi pembiayaan berkelanjutan. Dengan demikian, penelitian ini diharapkan memberikan kontribusi akademik dan praktis dalam merumuskan



rekomendasi regulasi guna mendukung pengembangan infrastruktur energi di IKN secara optimal. Penelitian ini menggunakan metode penelitian hukum normatif dengan pendekatan perundang-undangan; pendekatan konseptual; serta pendekatan perbandingan. Hasil penelitian menunjukkan bahwa penerbitan obligasi hijau oleh Otorita IKN dapat menjadi landasan hukum strategis dalam pembiayaan infrastruktur PLTS yang berkelanjutan dan menarik bagi investor.

**Kata kunci :** Ibu Kota Nusantara, Pembangkit Listrik Tenaga Surya, Kerja Sama Pemerintah dengan Badan Usaha, Pembiayaan Campuran, Obligasi Hijau.

## I. INTRODUCTION

Law Number 3 of 2022 on the National Capital (UU 3/2022) marks the beginning of the development of Ibu Kota Nusantara (IKN) as the new capital of the Republic of Indonesia. IKN covers a land area of 252,660 hectares and a water area of 69,769 hectares, located in East Kalimantan Province. The development of this megaproject is estimated to require a budget of approximately IDR 466.98 trillion.<sup>1</sup> The government has emphasized that the State Budget (APBN) will contribute only 19% of the total funding, while businesses will provide 24%. The majority of the funding, amounting to 54%, will be obtained through the Public-Private Partnership (PPP) scheme.<sup>2</sup> Referring to Article 1 point 44 of Government Regulation Number 17 of 2022 on Funding and Budget Management for the Preparation, Development, and Relocation of the National Capital, as well as the Administration of the Special Regional Government of IKN (PP 17/2022), the PPP scheme in IKN represents a collaboration between the government and private sector to develop infrastructure for public benefit. This partnership encompasses financing for the preparation, development, and relocation phases of the National Capital, as well as the administration of IKN's Special Regional Government. The cooperation process follows service standards set by the minister, agency leaders, state-owned enterprise directors, and/or the Head of the IKN Authority. Additionally, this scheme utilizes the resources of business entities, either partially or entirely, while ensuring a fair distribution of risks among the parties involved.

Infrastructure development in IKN will adopt an energy-efficient city concept by utilizing 100% of its electricity production from Renewable Energy (EBT) and achieving Net Zero Emission (NZE) by 2045.<sup>3</sup> This aligns with Indonesia's commitment under Law Number 16 of 2016 on the Ratification of the Paris Agreement to the United Nations Framework Convention on Climate Change and the Sustainable Development Goals (SDGs) target to reduce greenhouse gas emissions. Therefore, energy infrastructure becomes the most crucial aspect in meeting demands and supporting energy sustainability in IKN. This view is also affirmed by the Director General of Electricity at the Ministry

<sup>1</sup> Siswanto Siswanto, "Analisis Tingkat Kesiapan Anggaran dan Pembiayaan Indonesia dalam Memindahkan Ibu Kota Negara: Studi Kepustakaan," *Jurnal Studi Kebijakan Publik* 1, no. 1 (November 30, 2022): 27–41.

<sup>2</sup> Mada Devi Kartikasari and Sonyendah Retnaningsih, "Kajian Mengenai Skema KPBU Melalui Perjanjian KPBU IKN | Ranah Research : Journal of Multidisciplinary Research and Development" (June 14, 2024), accessed July 24, 2024, <https://jurnal.ranahresearch.com/index.php/R2J/article/view/899>.

<sup>3</sup> Halomoan Hutajulu et al., *Sustainable Economic Development: Teori Dan Landasan Pembangunan Ekonomi Berkelanjutan Multi Sektor Di Indonesia* (PT. Sonpedia Publishing Indonesia, 2024).

of Energy and Mineral Resources, Jisman P. Hutajulu, who emphasizes the importance of electricity infrastructure in IKN, stating that without electrical energy, no activities can take place in the region.<sup>4</sup> Moreover, the projected electricity demand in IKN is expected to reach 1,000 MW by 2045, highlighting the urgency of early planning and strengthening of electricity capacity.<sup>5</sup>

According to Appendix Chapter III of Presidential Regulation Number 63 of 2022 on the Details of the IKN Master Plan (Perpres 63/2022), the primary renewable energy source that will supply 100% of IKN's electricity needs comes from Solar Power Plants (PLTS), including solar panel farms and rooftop solar panels. Therefore, PLN Nusantara Power, a sub-holding of PT Perusahaan Listrik Negara (Persero) (PLN), has partnered with Sembcorp Utilities Pte. Ltd., a Singapore-based company, to develop the first phase of the IKN solar power project with a capacity of 50 MW.<sup>6</sup> This principle is fundamentally aligned with Article 33, paragraph (4) of the 1945 Constitution of the Republic of Indonesia (UUD NRI 1945), which states that the national economy is carried out based on economic democracy, with one of its key principles being sustainability and environmental awareness.<sup>7</sup>

The PLTS infrastructure project plays a vital role in achieving the renewable energy (EBT) utilization targets in IKN. However, securing financing for such a project poses substantial challenges, particularly in a developing country like Indonesia, where access to capital is limited and infrastructure needs are extensive. To address this gap, strong regulatory support and innovative financing mechanisms are essential to ensure sustainable funding solutions.<sup>8</sup> In this context, the high cost of developing solar power plants (PLTS) in Indonesia highlights the potential for optimizing the PPP scheme as a solution for PLTS development in IKN.<sup>9</sup> This potential is fundamentally aligned with the significant budget allocation planned to come from the PPP scheme, amounting to approximately Rp252.46 trillion or 54% of IKN's total budget. However, the PPP scheme still heavily relies on bank loans, while the development of solar power plants (PLTS) in

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<sup>4</sup> “Dirjen Ketenagalistrikan Pastikan Progres Penyediaan Listrik IKN Lancar,” *ESDM*, accessed July 19, 2024, <https://www.esdm.go.id/id/media-center/arsip-berita/dirjen-ketenagalistrikan-pastikan-progres-penyediaan-listrik-ikn-lancar>.

<sup>5</sup> “Sekjen ESDM Tegaskan Listrik IKN Harus Efisien Dan Bersih,” *ESDM*, accessed July 29, 2024, <https://www.esdm.go.id/id/media-center/arsip-berita/sekjen-esdm-tegaskan-listrik-ikn-harus-efisien-dan-bersih->.

<sup>6</sup> Kompas Cyber Media, “PLTS Tahap I di IKN Siap Menyala Akhir Februari 2024,” *KOMPAS.com*, last modified February 15, 2024, accessed July 17, 2024, <https://ikn.kompas.com/read/2024/02/16/064238587/plts-tahap-i-di-ikn-siap-menyala-akhir-februari-2024>.

<sup>7</sup> Tukimun Tukimun, Viva Soeri, and Suharto Suharto, “Konsep Perencanaan Infrastruktur Transportasi Smart, Integrated Sustainable & Environment Friendly di Kawasan Ibu Kota Negara (IKN) Nusantara,” *Kurva S : Jurnal Keilmuan dan Aplikasi Teknik Sipil* 10, no. 2 (August 31, 2022): 59–75.

<sup>8</sup> Alfath Satria Negara Syaban and Seth Appiah-Opoku, “Building Indonesia's New Capital City: An in-Depth Analysis of Prospects and Challenges from Current Capital City of Jakarta to Kalimantan,” *Urban, Planning and Transport Research* 11, no. 1 (December 31, 2023): 2276415.

<sup>9</sup> Savira Ayu Arsita, Guntur Eko Saputro, and Susanto Susanto, “Perkembangan Kebijakan Energi Nasional dan Energi Baru Terbarukan Indonesia,” *Jurnal Syntax Transformation* 2, no. 12 (December 24, 2021): 1779–1788.

Indonesia is constrained by high interest rates, which range from 10% to 12%.<sup>10</sup> Therefore, a blended finance scheme combining PPP and green bonds is considered a potential solution. Referring to Article 24B paragraph (1) letter b of Law Number 21 of 2023 on the Amendment to Law Number 3 of 2022 concerning the Capital City of the Nation (Law 21/2023), IKN's debt financing can be sourced from bonds issued by the IKN Authority. Under Law Number 24 of 2002 on Government Securities, bonds issued by the IKN Authority are classified as Government Securities, which are financial instruments in the form of securities acknowledging debt in either rupiah or foreign currency, guaranteed by the Republic of Indonesia for both interest and principal payments within a predetermined period. Bonds are one of the most attractive investment instruments for investors as they offer periodic interest payments and principal protection.<sup>11</sup> Namun, terdapat kekosongan hukum dalam penerbitan obligasi sebagaimana diamanatkan oleh Pasal 24B UU 21/2023, mengingat hingga saat ini Peraturan Kepala Otorita IKN yang seharusnya menjadi landasan hukum pelaksanaannya belum kunjung dibentuk.<sup>12</sup>

This study also refers to previous research, such as the study by Alfath Satria Negara Syaban and Seth Appiah-Opoku entitled "Building Indonesia's New Capital City: An In-Depth Analysis of Prospects and Challenges from the Current Capital City of Jakarta to Kalimantan." Through their research, the development of IKN, as outlined in the National Medium-Term Development Plan (RPJMN) 2020–2024, is discussed, highlighting its comprehensive and systematically designed financial structure. Additionally, the IKN financing scheme is designed to accommodate various funding sources, both from the government budget and businesses, to guarantee effective and maximized outcomes in environmentally sustainable growth.<sup>13</sup> Additionally, there is a study by Mada Devi Kartikasari and Sonyendah Retnaningsih titled "*Kajian Mengenai Skema KPBU Melalui Perjanjian KPBU IKN*" Their research explains that the development of IKN infrastructure through the KPBU scheme is regulated in a KPBU agreement between the government and private business entities. This agreement acts as a legal instrument that establishes the rights, obligations, and implementation mechanisms of the partnership, ensuring private sector involvement in infrastructure financing and management in a sustainable manner while complying with applicable laws and regulations.<sup>14</sup>

Distinct from prior studies, this research seeks to offer a more comprehensive analysis of the legal framework governing investment in the IKN PLTS infrastructure

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<sup>10</sup> Imam Haryanto et al., "REKONSTRUKSI HUKUM PEMBANGKIT LISTRIK TENAGA SURYA BERDASARKAN ANALISIS EKONOMI," *Bina Hukum Lingkungan* 6, no. 3 (2022): 317–334.

<sup>11</sup> Diani Sadiawati, Rianda Dirkareshza, and Muhammad Fauzan, "Rekonstruksi Perlindungan Hukum Terhadap Korban Investasi Bodong: Studi Komparasi Indonesia Dan Amerika," *Halu Oleo Law Review* 7, no. 2 (September 20, 2023): 149–166.

<sup>12</sup> Maria Elena, "Otorita IKN Bisa Terbitkan Obligasi hingga Tarik Pinjaman Luar Negeri, Dijamin APBN!," *Bisnis.com*, last modified October 5, 2023, accessed March 12, 2025, <https://ekonomi.bisnis.com/read/20231005/10/1701348/otorita-ikn-bisa-terbitkan-obligasi-hingga-tarik-pinjaman-luar-negeri-dijamin-apbn>.

<sup>13</sup> Syaban and Appiah-Opoku, "Building Indonesia's New Capital City."

<sup>14</sup> Kartikasari and Retnaningsih, "Kajian Mengenai Skema KPBU Melalui Perjanjian KPBU IKN | Ranah Research."

project and its alignment with the 2025–2045 National Medium-Term Development Plan (RPJMN), as stipulated in Law Number 59 of 2024 on the 2025–2045 National Long-Term Development Plan (UU 59/2024). Furthermore, this study will further examine the PPP scheme in the development of PLTS infrastructure in IKN, covering two main mechanisms: PPP initiated by the Cooperation Project Responsible Party (PJPK) and KPBU initiated by the Implementing Business Entity (BUP), as well as its application in PLTS projects in IKN. Moreover, this research will explore the potential implementation of a blended finance scheme that integrates PPP with green bond instruments as a sustainable financing alternative. As both an academic and practical contribution, this study will formulate regulatory recommendations necessary to support the optimal provision of PLTS infrastructure in IKN. Based on the outlined background, two key issues can be formulated: How is the transformation of investment law in financing the provision of solar power plant infrastructure in IKN? And how can the Public-Private Partnership (PPP) scheme be optimized in financing solar power plant infrastructure in IKN?

## II. RESEARCH METHOD

This research employs a normative legal research method, which analyzes law as a normative framework consisting of legal norms, regulations, principles, doctrines, and pertinent legal theories.<sup>15</sup> This normative legal research relies on legal sources, including legislation, court decisions or rulings, contracts or agreements, legal principles and doctrines, legal theories, and expert opinions. To analyze and address the legal issues at the core of this study, three approaches are applied: the statute approach, which aims to examine relevant regulations; the conceptual approach is employed to analyze and interpret the legal concepts and principles that serve as the foundation for the issues under study; and the comparative approach, which involves analyzing the legal systems or regulations of various jurisdictions to gain a broader perspective and develop more comprehensive solutions to the legal issues under review.<sup>16</sup>

The statutory approach is employed through a systematic examination of various pertinent laws and regulations, including those governing the financing of IKN infrastructure. A primary focus of this approach is the analysis of legal gaps, particularly the absence of a regulation issued by the IKN Authority concerning IKN debt financing in the form of bonds, as mandated by Article 24B of Law No. 21/2023. The conceptual approach is utilized to formulate ideas regarding the implementation of a blended finance scheme that integrates Public-Private Partnerships (PPP) and green bonds as a financing mechanism for solar power infrastructure in IKN. Furthermore, this approach seeks to propose a solution in the form of the enactment of an IKN Authority Regulation, which would establish a legal foundation for bond issuance to support sustainable infrastructure development. Meanwhile, the comparative approach is undertaken by analyzing the application of the blended finance concept in other jurisdictions, such as Canada and the

<sup>15</sup> Muhaimin, *Metode Penelitian Hukum* (Mataram: UPT Mataram University Press, n.d.).

<sup>16</sup> S.H.I.M.H. Dr. Jonaedi Efendi and S.H.S.E.M.M.M.H. Prof. Dr. Johnny Ibrahim, *Metode Penelitian Hukum: Normatif Dan Empiris* (Prenada Media, 2018), <https://books.google.co.id/books?id=5OZeDwAAQBAJ>.

United States, which have successfully implemented this scheme in green infrastructure financing.<sup>17</sup> This comparative study aims to identify best practices that may be adapted and incorporated into Indonesia's legal and policy framework, particularly in the financing of solar power infrastructure in IKN.

Furthermore, this study is also grounded in theories proposed by relevant scholars. One of these is the People's Economy theory put forward by Prof. Sri-Edi Swasono, which emphasizes that the people must be at the center of every policy and regulation formulated. In the context of this study, this theory is utilized to assess the extent to which infrastructure financing policies—especially those concerning the development of solar power plants (PLTS) in the Nusantara Capital City (IKN)—conform to and embody this principle. Additionally, this study adopts the polycentric governance theory developed by Elinor Ostrom, which highlights the importance of involving multiple stakeholders in resource governance. This theory posits that a polycentric governance system facilitates collaboration among various stakeholders—including the government, private sector, and civil society—in managing resources more efficiently and with greater flexibility. In this study, the theory is used to understand how the blended finance scheme, which integrates green bonds and Public-Private Partnerships (PPP), can be optimally managed through multi-stakeholder engagement in the development of solar power infrastructure in IKN.

### III. RESULT AND DISCUSSION

#### **The Legal Transformation of Investment in Financing the Provision of Solar Power Infrastructure in Ibu Kota Nusantara**

Law No. 59/2024 and Presidential Regulation No. 12 of 2025 on the National Medium-Term Development Plan for 2025–2029 (Perpres 12/2025) regulate the sustainability of IKN development. Under Law No. 59/2024, the development of IKN is classified as one of the 20 super-priority transformative efforts (Game Changers) for Indonesia's transformation. Furthermore, Perpres 12/2025 stipulates that the development of IKN is included in the National Strategic Projects for 2025–2029. To achieve this, one of the targets in the IKN Development Plan, which will be implemented in phases from Phase 1 (2022–2024) to Phase 5 (2040–2042), is the construction of solar power plants (PLTS) as part of IKN's electricity infrastructure network.<sup>18</sup> The energy supply strategy in IKN is categorized into three groups: primary, supplementary, and backup energy. Solar farms and rooftop solar panels will serve as the primary energy source, supplying 100% of IKN's electricity needs. Supplementary energy will be generated through facilities capable of producing energy, such as roadside photovoltaic panels from street lighting installations, floating photovoltaics on reservoirs within IKN, and bioenergy from incinerators and other renewable energy sources. Meanwhile, backup energy is divided into two types:

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<sup>17</sup> Asti Sri Mulyanti and Syavira Azzahra Syavira Azzahra, "Integrasi Konstitusi Hijau Dalam Era Society 5.0 Tantangan Dan Peluang Dalam Pengelolaan Lingkungan," *KRTHA BHAYANGKARA* 18, no. 2 (2024): 486–495.

<sup>18</sup> Lampiran XII Peraturan Presiden Nomor 64 Tahun 2022 tentang Otorita Ibu Kota Nusantara. (2022).

backup energy to address power supply disruptions and secondary backup energy to enhance system resilience.<sup>19</sup>

The renewable energy potential study in IKN indicates a solar energy potential of 1,218 MWh per year or 1,600.2 kWh/m<sup>2</sup>, evenly distributed across North Penajam Paser Regency, the designated location for IKN development.<sup>20</sup> However, the realization of solar energy utilization in Indonesia remains relatively low. The total installed capacity of solar panels across the country is currently estimated at only around 201.1 MWp, which is still less than 4% of the Ministry of Energy and Mineral Resources' target of 5,000 MW for 2025.<sup>21</sup> This condition is driven by the comparatively higher costs associated with developing solar power plants (PLTS) in Indonesia than in other Southeast Asian nations. According to reports from Bloomberg NEF and the International Renewable Energy Agency (IRENA), the cost of PLTS development per watt in Indonesia is higher than in Vietnam or Thailand due to the adoption of more efficient technologies in those countries.<sup>22</sup>

To support the financing of solar power plant (PLTS) development as part of IKN infrastructure and to foster economic democracy, the Deputy for Funding and Investment of the IKN Authority, Agung Wicaksono, stated that the IKN Authority plans to issue bonds as a financing instrument for infrastructure development projects in IKN.<sup>23</sup> Article 24B, paragraph (1) of Law No. 21/2023 stipulates that IKN debt financing consists of loans obtained by the IKN Authority, bonds issued by the IKN Authority, and sukuk issued by the IKN Authority. Furthermore, Article 24B, paragraph (2) of Law No. 21/2023 explains that IKN debt financing aims to support funding for the preparation, development, and relocation phases of IKN, as well as the administration of the IKN Special Regional Government. The bonds issued by the IKN Authority may take the form of green bonds, in accordance with Article 8(a) of Financial Services Authority Regulation No. 18 of 2023 on the Issuance and Requirements of Debt Securities and Sukuk Based on Sustainability (POJK 18/2023), which states that Environmentally Based Business Activities (KUBL) eligible for green bond financing include renewable energy sources such as solar energy.<sup>24</sup>

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<sup>19</sup> Lampiran Bab III Peraturan Presiden Nomor 63 Tahun 2022 tentang Perincian Rencana Induk Ibu Kota Nusantara. (2022).

<sup>20</sup> Faruq Nashrulloh, "Analisis Potensi Dan Kelayakan Pada Perencanaan Sistem Energi Terbarukan Di Kabupaten Penajam Paser Utara Sebagai Ibu Kota Negara Indonesia" (Universitas Gadjah Mada, 2020), accessed March 15, 2025, <https://etd.repository.ugm.ac.id/penelitian/detail/197038>.

<sup>21</sup> Peraturan Presiden Nomor 63 Tahun 2022 tentang Perincian Rencana Induk Ibu Kota Nusantara. (2022).

<sup>22</sup> "Renewable Energy Outlook for ASEAN: Towards a Regional Energy Transition (2nd Edition)," accessed March 15, 2025, <https://www.irena.org/Publications/2022/Sep/Renewable-Energy-Outlook-for-ASEAN-2nd-edition>.

<sup>23</sup> "Bukan Karena Kekurangan Dana, Ini Alasan Otoritas IKN Akan Terbitkan Obligasi," accessed July 1, 2024, <https://nasional.kontan.co.id/news/bukan-karena-kekurangan-dana-ini-alasan-otoritas-ikn-akan-terbitkan-obligasi>.

<sup>24</sup> Fikri Hadi, Budi Endarto, and Farina Gandryani, "TINJAUAN YURIDIS GREEN BOND SEBAGAI PEMBIAYAAN ENERGI BARU TERBARUKAN DI INDONESIA," *Jurnal Rechts Vinding: Media Pembinaan Hukum Nasional* 11, no. 3 (December 31, 2022), accessed July 1, 2024, <https://rechtsvinding.bphn.go.id/ejournal/index.php/jrv/article/view/984>.

POJK 18/2023, which regulates green bonds, was established based on three laws: Law No. 8 of 1995 on Capital Markets (UU 8/1995), Law No. 21 of 2011 on the Financial Services Authority (UU 21/2011), and Law No. 4 of 2023 on the Development and Strengthening of the Financial Sector (UU 4/2023).<sup>25</sup> In financing solar power infrastructure in IKN, the capital market serves a vital function as a funding source for investors aiming to achieve financial returns while simultaneously promoting environmental sustainability initiatives.<sup>26</sup> The IKN Authority can commit to developing financial instruments in the form of green bonds aimed at addressing the challenges of financing sources for the provision of solar power infrastructure in IKN.<sup>27</sup> Green bonds offer several advantages over conventional bonds, including lower interest rates—approximately 5% compared to bank loans, which range from 10-12%—a diversified investor base with a focus on environmental concerns, the development of sustainable business platforms, competitive pricing, the promotion of green finance initiatives, and alignment with the political agenda for sustainable growth.<sup>28</sup>

Article 5, Paragraph (1) of POJK 18/2023 stipulates that the issuance of Environmental Debt Securities or green bonds must meet at least four key aspects. First, the use of funds from the issuance must be clearly defined and aligned with predetermined objectives. Second, there must be an evaluation and selection process for the activities to be funded to ensure their compliance with sustainability principles. Third, the funds obtained must be managed transparently and accountably. Lastly, issuers are required to prepare and submit reports on the use of funds and the impact of the financed activities. The utilization of green bonds in Indonesia represents an effort to create a just and prosperous society. In the theory of people’s economy, Prof. Sri-Edi Swasono emphasizes that the people should be the foundation of all policies and regulations. Enhancing productivity by positioning the people as a national asset and effectively utilizing available resources are key strategies in economic development under this theory. Consequently, growth and equitable distribution occur simultaneously.<sup>29</sup> In this context, green bonds serve as a crucial financial instrument in supporting sustainable development.

In Indonesia, financing through green bonds for environmentally conscious projects has been carried out by both banking and non-banking institutions. The following table presents an overview of green bond financing:<sup>30</sup>

Issuer	Industry Sector	Project	Green Bond Value
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<sup>25</sup> “LPPI,” accessed March 15, 2025, <https://sandbox.lppi.or.id/produk/sustainable/tentang-green-bond-1/>.

<sup>26</sup> Abdul Syukur At-Tibasiy, Fadly Mane, and Indah Yuliana, “Mekanisme Green Bond Di Indonesia,” *Al-Ammal : Jurnal Ekonomi dan Perbankan Syariah* 11, no. 2 (October 23, 2019): 259–272.

<sup>27</sup> Muslim Cendekiawan and Amrie Firmansyah, “Pengembangan Green Bonds Di Indonesia: Upaya Pemerintah Untuk Mewujudkan Keuangan Berkelanjutan,” *Journal of Law, Administration, and Social Science* 4, no. 1 (February 24, 2024): 87–100.

<sup>28</sup> Cendekiawan and Firmansyah, “Pengembangan Green Bonds Di Indonesia.”

<sup>29</sup> Sri-Edi Swasono, *Keindonesiaan: demokrasi ekonomi, keberdaulatan, kemandirian* (UST-Press, 2015).

<sup>30</sup> Hadi, Endarto, and Gandryani, “TINJAUAN YURIDIS GREEN BOND SEBAGAI PEMBIAYAAN ENERGI BARU TERBARUKAN DI INDONESIA.”

Bank Mandiri	Banking	Sustainable banking, sustainable operations, and corporate social responsibility (CSR) & financial inclusion.	USD 300 Million
Bank BNI	Banking	The preservation of land and marine biodiversity, eco-friendly transportation, efficient water and waste management, climate resilience strategies, environmentally sustainable architecture, and responsible agricultural practices.	IDR 5 Trillion
PT Sarana Multi Infrastruktur	Non-Banking	Projects related to SDGs.	2018: IDR 2 Trillion 2022: IDR 9.8 Trillion.

This is crucial as investors will evaluate the IKN Authority's capacity to fulfill its bond repayment obligations. These revenue sources may derive from levies, taxes, or other forms of income that can ensure the sustainability of coupon and principal payments.<sup>31</sup> This can be implemented once the IKN Authority attains the status of a

<sup>31</sup> Liputan6.com, "Otorita IKN Bakal Terbitkan Obligasi, Kekurangan Investasi?," *liputan6.com*, last modified December 15, 2023, accessed May 31, 2024,

Special Regional Government following the issuance of a Presidential Decree, as mandated by Article 4(2) of Law No. 3/2022. The amendment to Article 24A(2) of Law No. 21/2023 stipulates that IKN's revenue consists of three main categories. First, IKN's own-source revenue, which includes special regional taxes, special regional levies, and other lawful sources of income in compliance with prevailing laws and regulations. Second, transfer revenues to IKN. Third, other legally acquired revenues.<sup>32</sup> The special regional revenue of IKN also originates from the IKN Authority Business Entity (BUO), a business entity whose shares are partially or wholly owned by the IKN Authority. The BUO serves as the primary developer in the preparation, construction, and relocation of IKN, as well as in the administration and development of IKN and its Partner Regions by establishing subsidiaries as needed for business and service purposes, as mandated by Article 29(3) of Presidential Regulation No. 62/2022. Consequently, the IKN Authority will generate revenue from the BUO.<sup>33</sup>

To formulate regulations on the issuance of green bonds in IKN, the IKN Authority government can refer to the juridical basis established as positive law, such as POJK 18/2023. POJK 18/2023 regulates various key aspects related to the issuance of debt securities and/or sustainability-based Sukuk. First, the issuance of these instruments can only be used to finance or refinance Environmentally Friendly Business Activities (KUBL) and/or Socially Oriented Business Activities (KUBS), asset optimization projects for Waqf assets, and the achievement of Sustainability Performance Indicators (IKU Keberlanjutan). Second, it stipulates the types of business activities or other activities eligible for funding through the issuance of such securities. Third, issuers or offering entities are required to obtain a review from an External Review Provider with expertise in the field to ensure the compliance of financed activities. Fourth, regulations govern the management of funds obtained through public offerings or non-public issuance. Fifth, obligations must be fulfilled by issuers or offering entities if the instrument no longer meets sustainability criteria. Lastly, regulations on Sustainability Performance Indicators and Sustainability Performance Targets that must be achieved are outlined.

Based on the existing regulations on green bonds as previously outlined, the provisions within the Head of the IKN Authority Regulation regarding the issuance of green bonds for financing infrastructure development in IKN will encompass several key aspects. These include project criteria and standards (KUBL), the mechanism for issuing green bonds, financing and utilization of funds, and monitoring and reporting. With the enactment of the Head of the IKN Authority Regulation, the mandate of Article 24B(1)(b) of Law No. 21/2023, which stipulates that IKN debt financing may be sourced from bonds, will be fulfilled. Furthermore, this policy will uphold the principle of economic democracy by ensuring that the issuance process, fund allocation, and project reporting are conducted transparently and accountably. It will also facilitate public participation in sustainable investment, thereby enabling IKN's development to be

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<https://www.liputan6.com/bisnis/read/5482661/otorita-ikn-bakal-terbitkan-obligasi-kekurangan-investasi>.

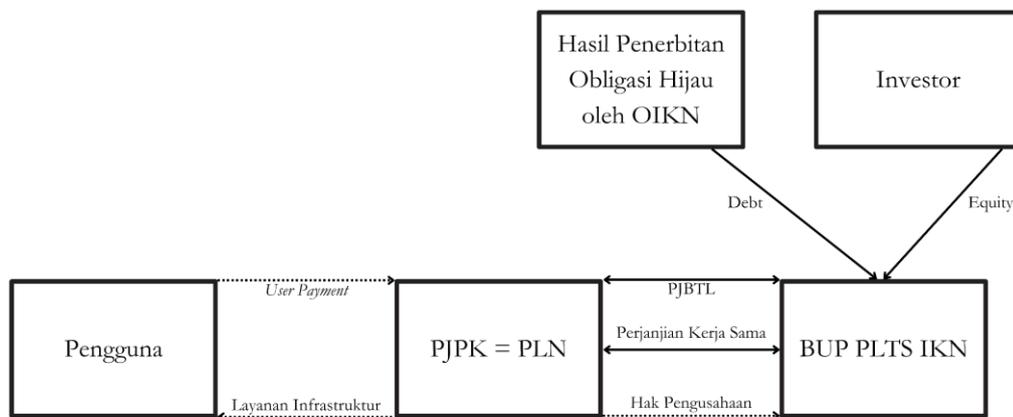
<sup>32</sup> Undang-Undang Nomor 21 Tahun 2023 tentang Perubahan atas Undang-Undang Nomor 3 Tahun 2022 tentang Ibu Kota Negara. (2023).

<sup>33</sup> Peraturan Presiden Nomor 62 Tahun 2022 tentang Otorita Ibu Kota Nusantara. (2022).

financed not only through conventional funding sources but also through investors committed to environmental and social sustainability.

**Optimization of Public-Private Partnership Schemes in Financing Solar Power Plant Infrastructure in Ibu Kota Nusantara**

Article 52, paragraph (7) of Presidential Regulation Number 64 of 2022 concerning the Spatial Planning of the National Strategic Area of Ibu Kota Nusantara for the 2022–2024 period (Perpres 64/2022) stipulates that the development of solar power plants (PLTS) in IKN will be carried out in various locations. Several designated areas for PLTS development include PLTS WP IKN Selatan, PLTS WP IKN Timur 1, PLTS WP IKN Utara, PLTS WP Simpang Samboja, as well as PLTS located in environmental buffer zones and food security areas within KPIKN. To ensure that PLTS infrastructure provision proceeds as planned and meets electricity demand, the IKN Authority may implement a blended finance scheme combining green bonds and Public-Private Partnerships (PPP). This approach aligns with Article 5, paragraph (2), letter (i) of Presidential Regulation Number 38 of 2015 on PPPs in Infrastructure Provision, which stipulates that electricity infrastructure projects may be financed through the PPP scheme.



The PPP scheme applies a project financing concept through collaboration between the government, business entities, and lenders. The government designs projects for public services and ensures revenue streams for investment returns. Business entities develop and operate the projects, while lenders typically provide more than 70% of the financing. When all three parties effectively fulfill their respective roles, a conducive environment for PPP development is established. However, in developing countries such as Indonesia, the domestic project financing market tends to be shallow, characterized by high lending interest rates, limited loan tenors, and various investment risks such as

sovereign risk, political risk, and demand risk. These factors pose significant challenges to achieving bankability for PPP projects.<sup>34</sup>

To address the challenges of achieving bankability in PPP projects and the high project loan interest rates for solar power plants (PLTS) ranging from 10-12%, the IKN Authority may issue green bonds as a funding source within a blended finance scheme with PPP to finance PLTS projects in IKN.<sup>35</sup> The government has issued regulations to promote increased funding through the PPP scheme, such as Minister of National Development Planning Regulation Number 6 of 2022 on Procedures for Implementing PPP in IKN (PM PPN 6/2022) and the blended finance scheme outlined in Article 2, paragraphs (3) and (4) of the Minister of Finance Regulation of the Republic of Indonesia Number 220/PMK.08/2022 on Government Support for PPP and Creative Financing in Infrastructure Provision in IKN. The implementation of blended finance through the issuance of green bonds within the PPP scheme has been successfully applied in several major projects across various countries, including:

#### 1. North Island Hospitals Project—Tandem Health Partners

This initiative represents the first issuance of green bonds aimed at financing a Public-Private Partnership (PPP) project in North America and supporting infrastructure development in Canada, totaling CAD 231.5 million with a 32-year maturity and a "AAA" credit rating, backed by payment guarantees from the Province of British Columbia. These green bonds attracted strong investor interest, including insurance firms, fund managers, and other PPP bond buyers. The PPP project involves the design, construction, and maintenance of two environmentally friendly hospitals certified with LEED Gold, aimed at improving energy efficiency and lowering greenhouse gas emissions.

#### 2. Eglinton Crosstown Light Rail Transit (LRT)—Ontario

The green bonds issued by Ontario represent a significant initiative in financing environmentally friendly transportation and infrastructure projects. With an issuance value of CAD 500 million, Ontario was the first Canadian government to introduce green bonds featuring a four-year term. These green bonds received an overwhelmingly positive response from global investors, with demand reaching CAD 2.4 billion, indicating substantial interest in green investments. As a result, the Province of Ontario successfully raised funds at a low-interest rate, serving as a strategic tool for the government to meet critical infrastructure needs. Ontario's green bonds are part of the government's broader plan to invest in communities, develop modern infrastructure, and support a dynamic and innovative business climate.<sup>36</sup>

<sup>34</sup> Kementerian Keuangan Usaha KPBU-Kerjasama Pemerintah Dengan Badan, "KPBU – Kerjasama Pemerintah Dengan Badan Usaha," *KPBU*, accessed June 24, 2024, <https://kpbu.kemenkeu.go.id/>.

<sup>35</sup> Haryanto et al., "REKONSTRUKSI HUKUM PEMBANGKIT LISTRIK TENAGA SURYA BERDASARKAN ANALISIS EKONOMI."

<sup>36</sup> "Ontario Launching Green Bonds to Fund Infrastructure Projects," *News.Ontario.Ca*, accessed July 29, 2024, <https://news.ontario.ca/en/release/30427/ontario-launching-green-bonds-to-fund-infrastructure-projects>.

3. Luz del Norte project—OPIC

The Overseas Private Investment Corporation (OPIC) issued green bonds to finance the development of a Photovoltaic Solar Power Plant (PLTF) in Chile. Upon completion, this PLTF will become the largest in Latin America. The issuance amounted to USD 47.3 million, with a 15-year maturity. These bonds fully comply with green bond principles, demonstrating a commitment to international standards in green financing.<sup>37</sup>

The success of green bond issuance in PPP projects across various countries can serve as a model for infrastructure financing in IKN, particularly for the provision of solar power plants (PLTS). The application of blended finance between green bonds and PPP in the provision of PLTS infrastructure in IKN aligns with the theory of Polycentric Governance proposed by Elinor Ostrom, Nobel Prize laureate in Economics in 2009. In her view, the polycentric governance system involves multiple stakeholders collaborating to manage resources effectively. This creates opportunities for innovation in management that involves various stakeholders, such as the government, society, and the private sector. Through the issuance of green bonds, the IKN Authority provides an opportunity for the public to invest in the IKN PLTS project. Furthermore, through PPPs, the private sector also contributes to the development of the project.<sup>38</sup>

To implement the PPP scheme for the solar power plant (PLTS) project in IKN, it can be compared to a similar project, such as the PPP for the Batang Coal-Fired Power Plant (PLTU). In the Batang PLTU PPP, there are three main parties: the government, represented by PLN as the Project Owner (PJPK), the Implementing Business Entity (BUP) PT Bhimasena Power Indonesia, and lenders from the Japan Bank for International Cooperation (JBIC) and international commercial banking syndicates. The blended finance scheme in the IKN PLTS PPP project can involve collaboration from various key parties: the government, represented by PLN as PJPK, the BUP PT Nusantara Sembcorp Solar Energi (PT NSSE), and lenders through financing by the IKN Authority from the proceeds of green bond issuance, with the possibility of other financing institutions being involved. Below is the design and development table for the IKN PLTS PPP project:

<b>Design and Development of the IKN PLTS PPP Project</b>	
Funding Scheme	PPP
Cooperation Project Responsible Party (PJPK)	PLN
Implementing Business Entity (BUP)	PT NSSE

<sup>37</sup> “Green Bonds in Public-Private Partnerships,” *International Institute for Sustainable Development*, accessed March 15, 2025, <https://www.iisd.org/publications/report/green-bonds-public-private-partnerships>.

<sup>38</sup> “Toward Comparative Institutional Analysis of Polycentric Social- ecological Systems Governance - Thiel - 2018 - Environmental Policy and Governance - Wiley Online Library,” accessed March 15, 2025, <https://onlinelibrary.wiley.com/doi/abs/10.1002/eet.1814>.

	(Joint Venture Company owned by PLN Nusantara Power and SembCorp Utilities Pte. Ltd.)
Sources of Finance	Blended Finance (IKN Authority Green Bonds and Other Sources)
PPP Contract (Estimate)	<i>Build-Operate-Transfer</i> (BOT) or <i>Build-Operate-Own</i> (BOO)
Concession Period (Estimate)	Generally, 25-30 years.
Location	WP IKN Selatan, WP IKN Timur 1, WP IKN Utara, WP IKN Simpang Samboja, kawasan penyangga lingkungan dan ketahanan pangan (KPIKN)
Guarantor	PT Penjaminan Infrastruktur Indonesia (PT PII) and Pemerintah Pusat (Kementerian Keuangan RI)

Referring to Article 17 in conjunction with Article 36 of PM PPN 6/2022, the IKN PPP project can be initiated either by the Contracting Agency (PJPK) and/or by a Business Entity. An IKN PPP initiated by the PJPK follows the stages of planning, preparation, transaction, and agreement implementation. Meanwhile, an IKN PPP initiated by a Business Entity follows the stages of preparation, transaction, and PPP Agreement implementation. To ensure project completion by 2042, the PPP can be initiated by PLN as the PJPK responsible for infrastructure provision. This PPP scheme allows PLN to collaborate with Business Entities (BUP) and financing institutions, accelerating development and ensuring the sustainability of the solar power plant (PLTS) project until its timely completion.

Referring to Minister of Energy and Mineral Resources Regulation No. 4 of 2020 concerning the Second Amendment to Ministerial Regulation No. 50 of 2017 on the Utilization of Renewable Energy Sources for Electricity Supply (Permen ESDM 4/2020), there are two PPP contract options: build-own-operate (BOO) and build-operate-transfer (BOT). The BOO scheme keeps ownership of the IKN solar power plant (PLTS) in the hands of the Business Entity (BUP) as an Independent Power Producer (IPP), with electricity being absorbed by PLN. However, this scheme reduces government control and prevents asset transfer, leading to suboptimal technology transfer while placing all risks—including design, procurement, construction, financing, and operation—on the IPP. On the other hand, the BOT scheme includes a transfer of ownership to the government after the concession period ends.<sup>39</sup>

<sup>39</sup> Faiq Rizqi Aulia Rachim, “The Review of Build-Own-Operate (BOO) for New and Renewable Power Plant under Minister of Energy and Mineral Resources Republic of Indonesia Regulation Number 4 of 2020

Regarding the return on investment for the IKN PPP, Article 14 of PM PPN 6/2022 regulates two schemes: user payment and availability payment. User payment refers to payments made by users for the services they utilize, whereas availability payment is based on the availability of services. Power generation projects generally adopt the user payment scheme, in which electricity consumers pay tariffs to PLN. These tariffs are determined by PLN as the Contracting Agency (PJPK) to ensure investment returns that cover capital costs, operational expenses, and profits, as implemented in the Bintang Bano Minihydro Power Plant project.<sup>40</sup>

The PPP scheme offers various advantages in the implementation of the solar power plant (PLTS) project in IKN, such as leveraging public-private sector collaboration, accessing broader resources and expertise, reducing the government's budget burden, sharing project risks, and promoting efficiency and innovation through the latest technologies introduced by Business Entities (BUP).<sup>41</sup> In the context of IKN's solar power plant (PLTS), these advantages are further strengthened through the implementation of blended finance, incorporating green bonds issued by the IKN Authority. This approach attracts investments focused on environmental sustainability while offering lower interest rates. Therefore, the combination of PPP and green bonds can facilitate the achievement of PLTS infrastructure development targets in IKN, while integrating environmental and social responsibility into infrastructure financing.

#### IV. CONCLUSION

The legal formulation of green bond issuance by the IKN Authority represents a strategic step in supporting the development of solar power infrastructure in IKN. Through the issuance of green bonds, the IKN Authority can address the challenge of high costs in solar power plant development while contributing to a more environmentally friendly renewable energy transition. By harnessing its vast solar energy resources, the establishment of solar power plants in the Nusantara Capital City (IKN) can significantly contribute to building an equitable and sustainable economy, while also reinforcing IKN's dedication to fully transitioning to renewable energy and achieving net zero carbon emissions by 2045. The key aspects of the regulations to be issued by the Head of the IKN Authority include Project Criteria and Standards (KUBL), the Mechanism for Green Bond Issuance, Financing and Fund Utilization, as well as Monitoring and Reporting.

The implementation of blended finance through the issuance of green bonds by the IKN Authority within the PPP scheme for developing solar power infrastructure (PLTS) in IKN holds significant potential in addressing financing challenges and encouraging public sector participation. The PPP scheme enables collaboration between

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Based on the 1945 Indonesian Constitution," *Jurnal Rechts Vinding: Media Pembinaan Hukum Nasional* 11, no. 3 (December 31, 2022), accessed July 28, 2024, <https://rechtsvinding.bphn.go.id/ejournal/index.php/jrv/article/view/990>.

<sup>40</sup> "KPBU - Perkembangan Proyek Pemeliharaan Bendungan Dan Bangun Guna Serah Pembangkit Listrik Tenaga Minihidro Bintang Bano," accessed March 15, 2025, <https://kpbu.kemenkeu.go.id/berita/read/1395/perkembangan-proyek-pemeliharaan-bendungan-dan-bangun-guna-serah-pembangkit-listrik-tenaga-minihidro-bintang-bano>.

<sup>41</sup> Yusid Toyib Nugroho Riant, *Transformasi Public Private Partnership Indonesia* (Elex Media Komputindo, 2018).

the government, business entities, and lenders to ensure the sustainability and efficiency of the project. The government, through PLN as the Contracting Agency (PJKP), can leverage existing regulations and insights from similar projects abroad to integrate blended finance mechanisms, incorporating green bonds into the PPP framework. Consequently, IKN's solar power plants can meet the region's renewable energy (EBT) needs, foster a conducive investment climate, accelerate development, and support more optimal technology transfer. Additionally, issuing a Regulation of the Head of the IKN Authority on Green Bond Issuance would provide legal certainty and clarify the mechanism for issuing sustainable financial instruments as a funding source for infrastructure development. The integration of blended finance and green bonds within the PPP framework can serve as an effective solution to optimize private sector participation, enhance investment attractiveness, and ensure the sustainability of the PLTS project in IKN through an innovative and sustainable financing approach.

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