African Journal of Law, Political Research and Administration
ISSN: 2689-5102
Volume 8, Issue 1, 2025 (pp. 136-157)
www.abjournals.org

A REVIEW OF THE LEGAL AND REGULATORY FRAMEWORKS AS PATHWAYS TO FOSTERING SMART CITIES IN NIGERIA

Grace Ayodele Arowolo[1] and Sabitiyu Abosede Lawal[2]

[1]Associate Professor and Ag. Head, Department of Public and Private Law, Lagos State University (LASU), Ojo, Lagos State, Lagos, Nigeria.
Email: ayodelearowolo2006@yahoo.com

[2]Senior Lecturer and Sub-Dean, Faculty of Law, Lagos State University (LASU), Ojo, Lagos, Nigeria.
Email: sabit.lawal@lasu.edu.ng

Cite this article:

Grace Ayodele Arowolo, Sabit Abosede Lawal (2025), A Review of the Legal and Regulatory Frameworks as Pathways to Fostering Smart Cities in Nigeria. African Journal of Law, Political Research and Administration 8(1), 136-157. DOI: 10.52589/AJLPRA-GTNCVJKA

Manuscript History

Received: 29 Jan 2025

Accepted: 26 Mar 2025

Published: 27 Mar 2025

ABSTRACT: *The creation of smart cities aligns with the United Nations Sustainable Development Goal (SDG) 11, which focuses on making cities inclusive, safe, resilient, and sustainable. This paper explores the role of laws and policies in promoting the development of smart cities within Nigeria. It assesses existing frameworks, identifies gaps, and highlights potential areas for reform, drawing insights from South Korea, which is known for being the first country to introduce a Smart City Act. Preliminary findings indicate that while Nigeria has made progress in implementing urban development policies and other sector-specific laws, there is no comprehensive national law dedicated to smart city governance like South Korea's. Additionally, current Nigerian laws have not been updated to address the opportunities and challenges associated with smart cities. The study underscores that creating smart cities in Nigeria requires more than just technological progress; it necessitates a comprehensive legal framework that integrates innovation, governance, and active community involvement. The article argues that by overcoming legal and regulatory obstacles and aligning urban policies with smart city principles, Nigeria can build more inclusive, efficient, and sustainable urban areas. It recommends, among other things, the adoption of a national law for smart city governance and the reform of existing laws.*

KEYWORDS: Smart cities, Urbanization, Legal and regulatory framework, Law reform, Nigeria.

Article DOI: 10.52589/AJLPRA-GTNCVJKA
DOI URL: https://doi.org/10.52589/AJLPRA-GTNCVJKA

African Journal of Law, Political Research and Administration
ISSN: 2689-5102
Volume 8, Issue 1, 2025 (pp. 136-157)
www.abjournals.org

INTRODUCTION

Urbanization has become a key trend in the 21st century, with cities driving economic development, technological progress, and societal changes. However, these cities are also grappling with significant challenges, such as poor infrastructure, overcrowding, environmental harm, and ineffective governance.[1] Due to the challenges, globally, the concept of smart cities has gained prominence as a potential solution for addressing these issues and ensuring sustainable urban growth.[2]

In Nigeria, urbanization is advancing rapidly, with a growing percentage of the population residing in cities and towns.[3] Since gaining independence in 1960, Nigeria's urban population has grown by around 62.5 million people, and the United Nations predicts an additional 226 million by 2050.[4] Over half of Nigeria's population now resides in urban areas, with cities like Lagos, Abuja, Kano, and Port Harcourt serving as key centers for commerce, governance, and innovation.[5] Housing shortages are a major concern, with an estimated 20 million housing units needed. Environmental challenges like flooding, waste management issues, and air pollution are worsened by unplanned urban growth and weak regulation enforcement.[6]Additionally, urban poverty is widespread, and many residents live in informal settlements without access to essential services such as healthcare, education, and sanitation.[7]

A smart city is seen as one of the fastest-growing socio-economic and technological initiatives globally, utilizing digital technologies, the Internet of Things (IoT), data analytics, and advanced communication networks to improve urban systems and services.[8] The principles of smart cities are crucial to Nigeria's development objectives, particularly as the country seeks to tackle urbanization issues while promoting economic growth and sustainability. A key factor in the success of smart city projects is the creation and implementation of strong laws and policies. These frameworks offer the legal and institutional foundation needed for planning, resource allocation, and governance, ensuring that urban areas grow in an orderly and equitable manner. Laws support the deployment of innovative technologies, public-private partnerships, fair access

[1] United Nations, (2018). 68% of the world population is projected to live in urban areas by 2050, says the UN,' United Nations Department of Economic and Social Affairs, https://www.un.org/development/desa/en/news/,accessed 18 September 2024.
[2] Ezeudu, T. S. and Ismail, I. (2024). Assessing the Effectiveness of Smart City Initiatives in Promoting Sustainable Urban Development in Nigeria. *FUGUS Journal of Public Administration and Management*, 2 (1), 24-40.
[3] *Ibid.*
[4] United Nations Population Division. (2015). World Urbanization Prospects: The 2014 Revision, United Nations, New York, ST/ESA/SER.A/366.
[5] United Nations Department of Economic and Social Affairs, (2019). World Urbanization Prospects: The 2018 Revision, Statistical Papers - United Nations (Ser. A), Population and Vital Statistics Report.
[6] Ibimilua, F.O. and Ayiti, OM. (2024). Environmental Problems and Sustainable Development in Nigeria, *Research and Reviews: Journal of Environmental Sciences*, 6 (2), 41-50.
[7] World Bank Group (2020). Poverty and Shared Prosperity in Nigeria, https://www.worldbank.org/en/publication/poverty-and-shared-prosperity-2020, accessed 10 November 2024.
[8] Caragliu, A., Del Bo, C., and Nijkamp, P. (2011). Smart cities in Europe. *Journal of Urban Technology*, 18(2), 65-82.

Article DOI: 10.52589/AJLPRA-GTNCVJKA
DOI URL: https://doi.org/10.52589/AJLPRA-GTNCVJKA

to resources, and protection of citizens from potential risks associated with smart city technologies.[9] Laws help cities become more efficient, sustainable, and enhance residents' quality of life.

While Nigeria has developed several urban development policies, the country does not have specific laws for smart cities to develop. To achieve this, the reform of the country's urban and regional planning laws, data protection, cybercrime, intellectual property alongside the establishment of Artificial intelligence regulations is critical.[10] Therefore, this paper analyses Nigeria's current legal framework concerning smart city development while also evaluating their alignment with best practices such as exists in South Korea It identifies gaps in existing frameworks and makes recommendations for law reforms.

Smart City Master Plan Initiatives

In Nigeria, state-level initiatives like the Abuja Smart City Master Plan and the Lagos Smart City Project have been launched to integrate smart city principles into urban planning, focusing on technology for transportation, digital infrastructure development, e-governance platforms, data-driven urban planning, energy, and governance.[11] However, the success of these initiatives relies on alignment with national policies and regulatory frameworks. This reflects the importance of coordinating smart city projects with national strategies, as highlighted at the "Smart Cities Summit Nigeria." The summit emphasized the need to establish a solid legal and regulatory framework to drive smart city initiatives. It aimed to assess Nigeria's readiness, identify challenges, and recommend the best approach for developing a Nigerian smart city. Additionally, the summit advised the government on adopting international best practices to create policy roadmaps for integrating smart city initiatives into the country's urban development framework.[12]

The "World Smart Cities Outlook 2024" by UN-Habitat also highlights the need to align environmental regulations to integrate environmental goals into people-centered smart cities.[13] It suggests that national governments, in collaboration with local authorities and international organizations, should develop and enforce comprehensive policies for designing inclusive smart city solutions. Furthermore, Nigeria's "National Policy on Fifth Generation (5G) Networks for Digital Economy" includes a plan to ensure 5G technology is deployed in major cities, aiming to position 5G as a key driver of the digital economy. Together, these initiatives emphasize the

[9] Ismagilova, E, Hughes, L. Rana, N. and others (2020). Security, privacy and risks within smart cities: Literature review and development of a smart city interaction framework. *Information Systems Frontier*, 24, 393 – 414.

[10] Chiziterem, U. (2023). Towards a Legal Framework for the Introduction of Smart Cities as a Solution to Energy Poverty and Carbon Emissions in Nigeria, https://ssrn.com/ abstract=4542405, accessed 18 October 2024.

[11] Egunjobi, L., Babatunde, S. O., and Odulate, D. O. (2020). Smart cities in Nigeria: An analysis of the prospects and -challenges. In Smart Cities in the Gulf and the Global South (Palgrave Macmillan, 85-101).

[12] Federal Ministry of Communications in collaboration with AFRITEX Initiative, Communique Issued at the end of the smart cities summit Nigeria, 2017, held at TRANSCORP Hilton Hotel, from 8th-99th August, 2017, https://fmcide.gov. ng/wp-content/uploads/2023/11/Smart_Cities_Communique.pdf, accessed 12 March 2025.

[13] Paolo Gerli, Luca Mora, Fabio Neves Da Rocha, and others. (2024). World Smart Cities Outlook 2024. United Nations Human Settlements Programme (UN-Habitat), Kenya, Nairobi, 2024, 1-96.

Article DOI: 10.52589/AJLPRA-GTNCVJKA
DOI URL: https://doi.org/10.52589/AJLPRA-GTNCVJKA

importance of aligning smart city projects with national policies and regulatory frameworks to ensure sustainable urban development in Nigeria. The National Broadband Plan (NBP) is a cornerstone for Nigeria's digital infrastructure, aiming to enhance broadband penetration to 70% by 2025.[1] This framework directly supports smart city initiatives by enabling connectivity for IoT devices, data platforms, and digital governance. However, gaps in implementation, especially in rural and underserved urban areas, limit its reach and effectiveness. Addressing these gaps is crucial for equitable smart city development.

Laws and Policies Impacting Smart Cities in Nigeria

There are several extant laws, policies and regulatory initiatives that are capable of influencing smart city development in the Nigerian context and will be reviewed in this part of the paper. The key areas of focus are national urban planning law, data protection and privacy regulations, cyber security and Intellectual property laws.

a. Urban and Regional Planning

In Nigeria, urban planning is governed by the Urban and Regional Planning Law,[1] which outlines regulations for land use, development control, and the execution of physical development plans. The main goals of this Act are to promote sustainable development, ensure orderly growth, improve the quality of life, protect the environment, and support economic development by creating an environment conducive to economic activities and providing essential infrastructure and services.

The effective implementation of the Urban and Regional Planning Act in Nigeria is hindered by several challenges. These include insufficient funding, bureaucratic delays due to complex administrative procedures, weak enforcement, and corruption, which lead to non-compliance with planning regulations.[1] Additionally, the penalties for violations, stated in section 71 of the Urban Planning Law, such as a maximum fine of N1,000 or three months imprisonment (or both), and N5,000 for a corporate body, are considered too lenient. To improve enforcement, strengthening regulatory frameworks and increasing transparency are essential.

b. Data Protection

Nigeria's dedication to protecting individual privacy and security is reflected in Section 37 of the 1999 Constitution of the Federal Republic of Nigeria (as amended), which clearly safeguards citizens' right to privacy. This forms the basis of Nigeria's legal framework for data privacy and

[1] Federal Ministry of Communications and Digital Economy, (2020). National Broadband Plan 2020–2025. Federal Ministry of Communications and Digital Economy, https:// ngfrepository. org.ng:8443/ handle/ 123456789/3349, accessed 19 January 2025.

[1] Cap 13, Laws of the Federation of Nigeria (LFN) 2004.

[1] Nigeria Housing Market (NHM), The Urban and Regional Planning Act: A Comprehensive Overview, https://www.nigeriahousingmarket. com/real-estate-guide-nigeria/the-urban-and-regional-planning-act-…, accessed 25 September 2024.

Article DOI: 10.52589/AJLPRA-GTNCVJKA
DOI URL: https://doi.org/10.52589/AJLPRA-GTNCVJKA

African Journal of Law, Political Research and Administration
ISSN: 2689-5102
Volume 8, Issue 1, 2025 (pp. 136-157)

www.abjournals.org

protection. Many other laws and regulations impact data protection in Nigeria.[1] However, currently, the most comprehensive statutory instrument for this purpose is the Nigerian Data Protection Act 2023 (NDPA).

The NDPA provides a legal framework for protecting personal information and creates the Nigeria Data Protection Commission to regulate personal data processing and related matters. Section 1 NDPA outlines key objectives of the NDPA which include: safeguarding the rights and freedoms of data subjects (individuals to whom personal data pertains) as guaranteed under the 1999 Constitution, regulating data processing, promoting best practices for data security and privacy, protecting data subjects' rights, and offering recourse in case of breaches. It also aims to ensure that data controllers and processors fulfill their obligations, establishes an independent regulatory body for data protection, so as to strengthen Nigeria's digital economy while ensuring the country's participation in global and regional economies through the responsible use of personal data.

Section 2 of the NDPA applies to the processing of personal data, whether by automated means or not, where the data controller or data processor among others is domiciled in, resident in, or operating in Nigeria; processing of personal data occurs within Nigeria; or the data controller or the data processor is not domiciled in, resident in, or operating in Nigeria, but is processing personal data of a data subject in Nigeria. This provision implies jurisdictional issues, as there is no extraterritorial processing of the personal data of Nigerians outside the country. Section 26(1)-(3) requires that the consent of the data subject must be freely given, specific, informed, and clear, affirmative and not based on pre-selected confirmations. It can be provided in writing or orally or where appropriate in electronic means. Section 41 of the NDPA provides guidelines for the transfer of data to third countries.

Section 39-40 of the Act emphasizes appropriate technical and organizational measures for data security considering the amount and sensitivity of data, potential harm to data subjects, processing extent, retention period, and available technologies. Sections 54-59 of the NDPA provides clearer guidelines for legal proceedings, enforcement actions, investigation powers, and representation in civil proceedings. The NDPA makes provision for a limitation period of 3 months, from the date of any act, neglect or default, to institute an action against the Commission, a member of Council or its Staff. However, the Jurisdiction for adjudicating disputes in data protection cases is not clear in the NDPA. Thus, the court conferred jurisdiction to handle disputes arising from the Act is contentious. The word “court” in the Act is defined vaguely in section 65 as "any court of competent jurisdiction" without stating the courts.

Other criticisms of the Act include the Independence of Data Protection Officers (DPOs) under section 32 (1) of the Act, which requires data controllers domiciled in Nigeria, to have a Data

[1] The laws include the Constitution of the Federal Republic of Nigeria 1999 (as amended), the Nigeria Data Protection Regulation 2019 (“NDPR”), the NDPR Implementation Framework 2020, issued by the National Information Technology Development Agency (“NDPR Implementation Framework”), the Child Rights Act 2003 and the National Information Technology Development Agency Act 2007.

Article DOI: 10.52589/AJLPRA-GTNCVJKA
DOI URL: https://doi.org/10.52589/AJLPRA-GTNCVJKA

Protection Officer (DPO). The DPO can be an employee or engaged through a service contract.[1] Questions may arise as to the independence of the DPO, as they are expected to report to the data controller while also being a contact point for the Commission under section 32 (2) (3). It is suggested that the Act should safeguard the status of the DPO by requiring Commission's approval/notice for DPO appointments/removal, thus safeguarding the role of the DPO, and avoiding unfair play from a data controller/processor.

The Act fails to address certain pertinent concerns that are necessary for effective data protection. Section 65 of NDPA defines "consent" as any freely given, specific, informed, and unambiguous indication, whether by a written or oral statement or an affirmative action, of an individual's agreement to the processing of personal data relating to him or to another individual on whose behalf he has the permission to provide such consent. This definition of consent by the Act is not sufficient to protect an individual from the use of sensitive data by advanced technology or artificial intelligence systems which are characteristics of smart cities which Nigeria aspires to attain. The problem is further aggravated in section 27(5) which provides that the withdrawal of consent under subsection (4) shall not affect the lawfulness of data processing that occurred before the withdrawal of the consent.[1] Where an individual goes ahead to withdraw such mistaken consent, it is improper for actions done before the withdrawal to be held as lawful by the Act.[2]

The Act does not provide definitions for many terms, such as anonymisation, cross-border transfer, data portability, recipient, legitimate interest, genetic data, profiling, and third party. These omissions leave stakeholders to adopt various suitable definitions, thus affecting unanimity in certain interpretations of part of the law.[2]

c. Cyber Security

Cybercrimes are criminal activities that either target or use a computer, a computer network or a networked device.[2] As Nigeria embarks on the journey towards creating smart cities, the need for a robust legal framework for cyber security becomes increasingly critical.[2] This is due to the fact that, integration of advanced technologies for establishing smart cities are capable of causing significant cyber security challenges that would have to be tackled through the development and implementation of comprehensive legal measures, for the protection of the infrastructure and data that underpin these smart cities.

[1] Aniukwu, C. Chizitereihe Oti,C. Akanbi I and others. A Review of the Nigerian Data Protection Act 2023: Highlights and Limitations, https://strenandblan.com/wp-content/uploads/ 2023/07/… accessed 2 October 2024.

[1] Section 25(4) NDPA.

[2] Chiziterem (note 10 above).

[2] Aniukwu, Oti, Akanbi (note 18 above).

[2] Amah E.I and Mbah K. M (2023). Domestic Regulation of The Cyberspace: An Appraisal of The Impact of The Nigerian Cybercrime Act on The Rights to Freedom of Expression And Privacy Guaranteed Under The Nigerian Law. *African Journal of Law and Human Rights* (AJLHR) 7 (1), 18-24.

[2] Chaman Law Firm, Legal Framework for Cyber security in Nigerian Smart Cities, https://chamanlawfirm.com/ cyber security-in-smart-cities/, accessed 10 November 2024.

Article DOI: 10.52589/AJLPRA-GTNCVJKA
DOI URL: https://doi.org/10.52589/AJLPRA-GTNCVJKA

African Journal of Law, Political Research and Administration
ISSN: 2689-5102
Volume 8, Issue 1, 2025 (pp. 136-157)

www.abjournals.org

The Nigerian Cybercrimes (Prohibition, Prevention, ETC) Act 2015, revised in 2024, serves as the main legal framework for addressing cybercrime in Nigeria. Section 1 outlines the goals of the Act which include establishing a robust, coordinated legal, regulatory, and institutional system to prevent, detect, prosecute, and penalize cybercrimes; safeguarding critical national information infrastructure; and advancing cyber security by protecting computer systems, networks, electronic communications, data, software, intellectual property, and privacy rights.

Sections 5 and 6 of the Act make various cybercrimes, such as hacking, identity theft, cyber stalking, and data breaches, punishable offenses. For crimes targeting critical national information infrastructure, offenders can face up to 10 years in prison without the possibility of a fine. Section 6 also penalizes unauthorized access to computer systems or networks for fraudulent purposes, with a maximum sentence of 5 years in prison or a fine of N5,000,000, or both. Additionally, Section 12(1) criminalizes the unlawful interception of non-public computer data or signals, with penalties including up to 2 years in prison or a fine of up to N5,000,000, or both. The section further makes it an offense for anyone to unlawfully intercept non-public computer data, content, or traffic, including electromagnetic signals from a computer or network. Offenses are punishable by 2 years imprisonment or a fine of up to N5,000,000, or both.

The Act is not without its shortcomings. For example it failed to state the specific agency that has jurisdiction to investigate and prosecute cybercrime. Furthermore, the Act is believed to have a lenient sentencing model including low penalties (as considered under section 6 above) which does little in crime deterrence.[2] This is unlike the American case of *United States v Seleznev*[2] where Seleznev was charged with wire fraud, intentional damage to a protected computer and was sentenced to 27 years in prison upon conviction.

The Act also primarily focuses on criminal activities rather than the broader aspects of securing interconnected systems, critical infrastructure, and large-scale data management that are integral to smart cities.[2] The current legal framework does not specifically address the unique cyber security challenges associated with smart cities. Therefore, continuous updates and revisions to the legal framework are necessary to keep pace with technological advancements.[2]

d. Artificial Intelligence (AI)

Smart city initiatives in major countries are now focusing on AI- based smart applications.[2] AI enabling smart urban solutions brings multiple benefits, including more efficient energy, water

[2] Adibe E and Osuagwu A. (2023). Nigeria's Cybercrime (Prohibition, Prevention, Etc) Act 2015 At Eight: Class Act or The New Normal?' *International Review of Law and Jurisprudence*, 5 (1),

[2] Unreported, Russian cybercriminal sentenced to 27 years in prison for hacking and credit card fraud scheme, United States Department For Justice April 27 2019 < https://www.justice.gov/opa/pr/russian-cyber-criminal sentenced-27-years… accesed10 March 2025.

[2] Chaman (note 23 above).

[2] *Ibid*.

[2] Herath, H.M.K.K.M.B and Mamta Mittal, M. (2022). Adoption of artificial intelligence in smart cities: A comprehensive review, *International Journal of Information Management Data Insights*, 2 (1), 100076.

Article DOI: 10.52589/AJLPRA-GTNCVJKA
DOI URL: https://doi.org/10.52589/AJLPRA-GTNCVJKA

and waste management, reduced pollution, noise and traffic congestions.[2] AI governance has been defined as the idea that there should be a legal framework for ensuring that machine learning (ML) technologies are well researched and developed to help humanity navigate the adoption of AI systems fairly.[3]

Presently, Nigeria lacks a national legal framework for AI policy. However, efforts are being made to have a policy in place through the various initiatives championed by the Ministry of Communication, Innovation and Digital Economy (FMICDE) in the last few years. The ministry has a dedicated National Centre for Artificial Intelligence and Robotics (NCAIR), set up as a digital innovation and research facility focused on Artificial Intelligence (AI), Robotics and Drones, Internet of Things (IoT), and other emerging technologies, aimed at transforming the Nigerian digital economy, in line with the National Digital Economy Policy and Strategy (NDEPS). NCAIR also focuses on creating a thriving ecosystem for innovation-driven entrepreneurship (IDE), job creation and national development.[3]

The National Center for Artificial Intelligence and Robotics (NCAIR) published the draft National Artificial Intelligence Strategy in 2024 which provides an overview of Nigeria's Artificial Intelligence (AI) landscape. The strategy emphasises ten guiding principles that will inform legislative reforms. The principles include ethical conduct, inclusivity, innovation, sustainability, collaboration, global leadership, transparency, human-centric focus, risk management, and data ethics. The strategy aims to establish Nigeria as a global AI leader through five key pillars; developing foundational AI infrastructure with scalability and accelerating AI adoption by enhancing data availability, skills, and regulatory frameworks.[3] The Strategy also noted that applying Nigeria's intellectual property laws: the Copyright Act, the Trademarks Act, the Patents and Designs Act, to inventions and creative works like algorithms and AI models are critical to promoting innovation and protecting the intellectual property rights of developers.[3]

Creating a robust regulatory framework for AI is imperative to guide its ethical and responsible use. Nigeria needs to establish clear guidelines and standards for the development, deployment, and use of AI technologies across different industries..[3]

[2] Diran , D., Van Veensetra, A.F., Timan, T and others. (2021). Artificial Intelligence in smart cities and urban mobility. IPOL | Policy Department for Economic, Scientific and Quality of Life Policies.

[3] Mills, S., Baltassis, E., Santinelli, M., and others (2020). Six steps to bridge the responsible AI gap. https:// www.bcg.com/publications/2020/six-steps-for-socially-responsible-artificial-intelligence, accessed 18 October 2024.

[3] National Centre for Artificial Intelligence and Robotics (NCAIR), & National Information Technology Development Agency (NITDA). National Artificial Intelligence Strategy 2024, https://ncair.nitda.gov.ng/ wp-content/ uploads/ 2024/08/National-AI-Strategy_01082024-copy.pdf, accessed 20 December 2024.

[3] Digital Policy Alert, Nigeria: Published NCAIR National Artificial Intelligence Strategy, https://digitalpolicyalert. org/event/21970-published-ncair-national-artificial-intelligence-strategy, accessed 12 December 2024.

[3] National Centre for Artificial Intelligence and Robotics (NCAIR) (note 31 above).

[3] Edoigiawerie, O, Smart laws for smart machines: Legal perspectives on artificial intelligence in Nigeria, https:// thisnigeria.com/smart-laws-for-smart-machines-legal-…accessed 12 November 2024.

Article DOI: 10.52589/AJLPRA-GTNCVJKA
DOI URL: https://doi.org/10.52589/AJLPRA-GTNCVJKA

African Journal of Law, Political Research and Administration
ISSN: 2689-5102
Volume 8, Issue 1, 2025 (pp. 136-157)

www.abjournals.org

e. Intellectual Property (IP)

The World Intellectual Property Organization (2019) (WIPO) defined IP as "creations of the mind: inventions, literary and artistic works, and symbols, names, images and designs used in commerce."[3] Intellectual property is a relevant issue in the context of smart cities. For the legal protection of the smart city elements, intellectual property law is important for the protection of ideas, solutions, works and inventions. IP is protected in law by, for example, patents, copyright and trademarks, which enable people to earn recognition or financial benefit from what they invent or create.[3]

Intellectual property rights in Nigeria are governed by 3 main laws: the Copyright Act 2022, the Trademarks Act 1967, and the Patents and Designs Act 1971. The law governs the protection and administration of the predominant intellectual property rights in Nigeria.[3]

i. Copyrights

Copyright is a type of intellectual property that protects original works of authorship as soon as an author fixes the work in a tangible form of expression. In copyright law, there are a lot of different types of works, including paintings, photographs, illustrations, musical compositions, sound recordings, computer programs, books, poems, blog posts, movies, architectural works, plays, and so much more.[3]

The Copyright Act of 2022 is the principal law that governs and protects copyrights in Nigeria, while the regulatory agency that supervises copyright registration is the Nigerian Copyright Commission (NCC). The Copyright Act in Nigeria outlines regulations for protecting copyrights, handling transfers, addressing infringements, and providing remedies. Section 1 of the Act highlights its key objectives: safeguarding authors' rights, ensuring access to creative works through proper limitations and exceptions, ensuring compliance with international copyright treaties, and strengthening the NCC's ability to regulate, manage, and enforce the Act. Section 2 outlines the types of works that qualify for copyright protection, including literary, musical, artistic, audiovisual works, sound recordings, and broadcasts. However, for literary, musical, or artistic works to be eligible, they must demonstrate originality and be fixed in a tangible medium of expression.

Section 44 imposes criminal liability on individuals who: (a) create or facilitate the creation of infringing copies of copyrighted works for sale, hire, or business purposes; (b) import infringing copies of works into Nigeria, unless for personal use; or (c) possess equipment intended for

[3] The World Intellectual Property Organization (WIPO), What is Intellectual Property? https://www. wipo.int/ portal/en, accessed 12 December 2024.

[3] *Ibid*.

[3] DLA Piper, Global Expansion Guidebook, (2024), https//www.dlapiperintelligence.com/goingglobal/ accessed 12 December 2024.

[3] U.S. Copyright Office, What is Copyright?, https://www.copyright.gov/what-is-copyright/..., accessed12 December 2024.

Article DOI: 10.52589/AJLPRA-GTNCVJKA
DOI URL: https://doi.org/10.52589/AJLPRA-GTNCVJKA

making infringing copies. Offences attract a fine of at least N10,000 per infringing copy or imprisonment for a minimum of 5 years, or both, upon conviction.

Section 26 allows individuals who are blind, visually impaired, or print-disabled (referred to as beneficiaries) to use copyrighted works without needing permission from the copyright owner.

A key issue with the Act is the insufficient enforcement of copyright laws over time. It is recommended that a dedicated department be created within the NCC to focus on enforcing copyright regulations related to digital works.[3]

ii. Patents and Designs

A patent is an exclusive right granted for a product or process which amounts to an invention that generally provides a new way of doing something or proffers a new technical solution to a problem.[4] The Patent and Design Act (PDA) is the primary legislation governing patents and industrial designs in Nigeria.[4] Section 1 of the Act provides that an invention is patentable if it is new, results from inventive activity and is capable of industrial application; or if it constitutes an improvement upon a patented invention and also is new, results from inventive activity and is capable of industrial application.

Section 1(4) outlines areas where patents cannot be granted, including: (a) plant or animal varieties, or biological processes for producing plants or animals (except microbiological processes and their products); and (b) inventions whose publication or use would violate public order or morality. However, an invention is not considered contrary to public order or morality simply because its exploitation is prohibited by law.

Section 3 of the Act outlines the procedure and requirements for submitting a patent application to the Trademarks, Patents, and Design Registry. The application must include: (a) the applicant's full name and address, with a Nigerian address for service if the applicant is located outside Nigeria; (b) a description of the invention; (c) one or more claims; (d) any other required information; and (e) the prescribed application fees. Section 6(1) grants the patentee exclusive rights to prevent others from: (a) making, importing, selling, using, or stocking a patented product for sale or use; and (b) applying a patented process or performing any of the actions listed in (a) for a product directly obtained through the process.

Section 25(2) states that if a patentee's or designer's rights are infringed, the patentee or designer can take legal action. In such cases, the plaintiff is entitled to seek remedies such as damages, injunctions, accountings, or any other relief available in similar cases involving the infringement of other proprietary rights. Under section 7, a patent is granted for a limited period of 20 years from the date of the filing of the application subject to the payment of annual fees.

[3] Elias, G. A Review of the Nigerian Copyright Act, 2022. https://www.gelias.com/images /Newsletter/ A_Review_ of_the_Nigerian_Copyright_Act_2022.pdf, accessed 19 October 2024.

[4] WIPO, Patents, https://www.wipo.int/patents/en, accessed 12 December 2024.

[4] Cap P2 Laws of Federation of Nigeria 2004.

Article DOI: 10.52589/AJLPRA-GTNCVJKA
DOI URL: https://doi.org/10.52589/AJLPRA-GTNCVJKA

The current state of the Patent Act in Nigeria offers inadequate protection. According to Section 4(2)(b) of the PDA, Nigeria follows a depository or non-substantive examination system for patent applications. This means that patents are granted based only on meeting documentary requirements, without a thorough technical examination of the invention to assess its industrial application or novelty compared to existing inventions. Section 4(4) implies that patents are granted at the patentee's risk, with no guarantee of their validity. This poses a risk to the credibility of Nigerian innovations, as inventions seeking international protection may be invalidated due to the lack of thorough examination during the initial granting process.[4]

iii. Trademarks

WIPO defines trademarks as a sign that can distinguish one enterprise's goods or services from another enterprise.[4] The extant law regulating and protecting trademarks in Nigeria is the Trademarks Act.[4] Section 67 of the Act defines trademarks as marks used, or intended to be used, in connection with goods to signify a link between the goods and a person who has the right to use the mark, either as the proprietor or a registered user. This definition was upheld and expanded in the case of *Ferodo LTD & Anor v Ibeto Industries Ltd*,[4] where the Supreme Court defined a mark to include a device, brand, heading, label, ticket, name, signature, word, letter, numeral, or any combination.

Section 18 of the Trade Marks Act requires anyone wishing to be the proprietor of a trademark to apply in writing to the registrar, following the specified procedure for either Part A or Part B of the register. The registrar has the authority to refuse the application or modify the trademark. In the case of *DykTrade LTD v. Omnia (NIG) LTD*,[4] the Supreme Court ruled that submitting an application alone does not grant trademark rights. However, once a trademark is registered, the proprietor gains the exclusive right to take legal action in the Federal High Court for any infringement.

Section 11 prohibits the registration of trademarks that are deceptive or scandalous. Section 13 further states that trademarks identical to or resembling an existing registered trademark, particularly for the same goods or similar goods, cannot be registered if they are likely to deceive or cause confusion. This requirement was affirmed in *Alban Pharmacy Limited v Sterling Products International Inc.*[4]

Section 23(1) of the Act states that once a trademark is registered, it is valid for 7 years. However, it can be renewed for additional 14-year periods, in accordance with the Act's provisions.

[4] Onah, A. Substantive Search and Examination as an Instrument for Competitive Technology Growth in Nigeria.' https://www.linkedin.com/pulse/substantive-search-..., accessed18 December 2024.
[4] WIPO, Trademarks. https://www.wipo.int/trademarks/en/, accessed 2 June 2024.
[4] Cap T13 Laws of Federation of Nigeria 2004.
[4] (2004) (2004) LPELR-1275 (SC).
[4] (2000) LPELR-977 (SC) [2000] FWLR (Pt 10 - 13) 1785.
[4] (1968) 1 ALL NLR 300).

Article DOI: 10.52589/AJLPRA-GTNCVJKA
DOI URL: https://doi.org/10.52589/AJLPRA-GTNCVJKA

African Journal of Law, Political Research and Administration
ISSN: 2689-5102
Volume 8, Issue 1, 2025 (pp. 136-157)

www.abjournals.org

The Act has been criticized for not being updated since its enactment. Its provisions remain unchanged, having been copied from the 1938 UK Trademark Act, with no significant amendments to align it with current international best practices. Given the impact of globalization and advancements in technology, it is clear that the 1965 Nigerian Trademark Act no longer meets the modern trends in trademark registration.[4] This suggests a thorough review of the law now as Nigeria intends to make Nigeria cities smart.

iv. Trade secrets

Trade secrets are intellectual property (IP) rights on confidential information which may be sold or licensed.[4] For information to qualify as a trade secret, it must have commercial value due to its secrecy, be known only to a restricted group of people, and be protected by reasonable measures taken by the rightful owner to maintain its confidentiality. This includes using confidentiality agreements with business partners and employees.[5]

Trade secrets can include various forms such as designs, formulas, processes, methods, or practices that are unknown to others. These secrets can give a business a competitive advantage and enable it to deliver greater value to customers.[5] The unauthorized obtaining, use, or disclosure of trade secret information in a way that violates honest commercial practices is considered unfair and a breach of trade secret protection. .[5]

In Nigeria there is no legislation regulating Trademarks.[5] In Nigeria, one key method businesses use to protect their trade secrets is by having employees and partners sign non-compete and non-disclosure agreements.[5] While these agreements offer some protection, it is limited compared to the more comprehensive safeguards that could be provided by legislation. In *Koumoulis v. Leventis Motors Ltd*[5] the Appellant, who was aware of the Respondent's trade secret, resigned and joined a competitor, Nigerian Technical Company Limited. After his departure, the Respondent discovered that the Appellant had shared their business plan (a trade secret) with his new employer, resulting in lost business opportunities. The Appellant's agreement included a non-compete clause stating he would not engage in similar business within 50 miles of the Respondent's trading stations for one year. The court upheld this clause, finding the Appellant liable for breaching it and disclosing the trade secret, and imposed damages.

According to Elias, the need to protect and regulate Trade Secret in Nigeria is gaining traction daily, most especially with the rising tension in relation to it and the impacts of technological

[4] Nwachukwu, O.C. and Okolie, N.C. (2022). Examination of the Legal Effect of Regulation of Trademarks in Nigeria, *Beijing Law Review*, 13, 555-574.

[4] WIPO, Trade Secrets, https://www.wipo.int/en/web/trade-secrets, accessed 12 December 2024.

[5] *Ibid.*

[5] Jake Frankenfield, J. Tradesecret, https://www.investopedia.com/ terms/t/ tradesecret.asp > accessed 5 June 2024.

[5] WIPO (note 49 above).

[5] Elias, G. Trade Secrets and Consumer Protection in Nigeria, https://www.gelias.com/images/ Newsletter/ Trade_Secret_and_Consumer_Protection_in_Nigeria.pdf, accessed 10 November 2024.

[5] *Ibid*.

[5] 4(1973) LPELR-1710(SC).

Article DOI: 10.52589/AJLPRA-GTNCVJKA
DOI URL: https://doi.org/10.52589/AJLPRA-GTNCVJKA

innovations on trade.[5] This will be better addressed by the enactment of specific IP laws on Trade secrets.[5] This is crucial to the development of smart cities in Nigeria.

From the foregoing review of legislation, Nigeria's approach to smart cities is currently fragmented, with various laws covering urban planning, cyber security, data protection, and intellectual property. The government has not yet established a comprehensive national framework specifically for smart city development. While some states, like Lagos, have launched smart city initiatives, there is no unified national policy. This could lead to inconsistencies in policy implementation and regulation across the country. Additionally, there is no clear definition of what constitutes a "smart city" in Nigeria. The existing laws do not clearly outline the technologies involved, the role of private stakeholders, or the specific goals, such as sustainability, efficiency, or inclusivity.

4. The Legal Framework for Smart Cities in South Korea

South Korea serves as an example of how smart city development has evolved into a comprehensive approach to urban development.[5] South Korea's initial efforts in smart city development began with the "u-City" (Ubiquitous-City) projects in the early 2000s, led by local governments and businesses. The aim was to create ICT-driven cities that would enhance urban service efficiency and improve the quality of life for citizens.[5] The early smart city projects in South Korea encountered significant challenges, primarily due to the absence of an institutional and technical foundation to support the new ICT infrastructures. As a result, these projects led to widespread disappointment by the late 2000s. In response, the government shifted its policy approach, focusing on strengthening the institutional framework for smart city development through legal frameworks, public policies, governance, and support for innovation in city operations and services. This shift laid the groundwork for developing cities as platforms for innovation.[6]

[5] Elias (note 53 above).

[5] *Ibid.*

[5] Hwang, J. S. (2020). 'The evolution of smart cities in South Korea: The smart city winter and the city-as-a-platform.' In Y. M. Joo & T. B. Tan (Eds.), *Smart cities in Asia: Governing development in the Era of hyper-connectivity*. (Cheltenham, UK: Edward Elgar Publishing Limited, 78-92).

[5] World Bank Group, Smart Cities in the Republic of Korea: A Journey Toward Institutionalization and Innovation, https://documents1.worldbank.org/curated/en/..., accessed 19 November 2024.

[6] *Ibid*.

Article DOI: 10.52589/AJLPRA-GTNCVJKA
DOI URL: https://doi.org/10.52589/AJLPRA-GTNCVJKA

African Journal of Law, Political Research and Administration
ISSN: 2689-5102
Volume 8, Issue 1, 2025 (pp. 136-157)

www.abjournals.org

i. The Act on the Promotion of Smart City Development and Industry (Smart City Act) in 2017

Building on lessons from the u-City projects, the Korean government started establishing the foundation for institutionalizing smart cities by creating laws, regulations, and institutions, while identifying key enablers. Over time, it developed a structured institutional framework for smart cities. This included passing new legislation, such as the Smart City Act, and amending existing laws to streamline responsibilities and address the fragmented legal framework for smart cities.[6]

The Korean government is the first in the world to enact a Smart City Act.[6] The Act on the Construction of u-City (a prototype of Korean start cities, initiated from 2003 to 2013)[6] was enacted in 2008 and fully revised and renamed the Act on the Promotion of Smart City Development and Industry (Smart City Act) in 2017 expanding its scope to include directions and policies for fostering the entire smart city industry, not just new city construction.[6] The Smart City Act creates national-level Comprehensive Plans for Smart Cities and outlines the institutional framework, including the National Smart City Committee, a support bureau for pilot cities, a consultative council, and an association for smart cities. It also addresses relevant legal systems, including decrees and regulations for implementation and oversight.[6]

The Smart City Act defines smart cities and outlines the scope of their infrastructure requiring government oversight, the promotion system, and procedures for smart city construction. It also includes provisions for certification. Highlights of the Act's purpose stated in Article 1 are to enhance citizens' quality of life, promote balanced national growth, and boost national competitiveness by efficiently developing, managing, and operating smart cities to ensure their sustainable development.

Article 2 (1) defines a "smart city" as a sustainable urban area where city services are delivered through infrastructure built by integrating construction technologies and information and communication technologies, aimed at improving competitiveness and livability.

Article 3(2) outlines the responsibilities of the State and local governments to create and implement policies for developing smart cities and promoting the smart city industry. Article 4 grants the Minister of Land, Infrastructure, and Transport the authority to create a comprehensive smart city plan every five years for the effective development, management, and operation of smart cities. This plan must analyze domestic and global smart city trends and market conditions, set goals and directions for Korea's smart cities, outline step-by-step implementation strategies, and include funding and operational plans. The Smart City Master Plan must align with other national plans, such as the Comprehensive National Territorial Plan and the Framework Act on National Informatization, ensuring coordination and integration.

---

[6] *Ibid.*

[6] *Ibid*.

[6] Lim, Y., Edelenbos, J., and Alberto Gianoli, A. (2023). Dynamics in the governance of smart cities: insights from South Korean smart cities, *International Journal of Urban Sciences*, 27 (1), 183–205.

[6] World Bank Group (note 59 above).

[6] *Ibid*.

Article DOI: 10.52589/AJLPRA-GTNCVJKA
DOI URL: https://doi.org/10.52589/AJLPRA-GTNCVJKA

Chapter 4 outlines standards for smart city technologies and information protection. Article 20(1) gives the Minister of Land, Infrastructure, and Transport the authority to establish and publicly announce standards for construction and information communication convergence technologies, in consultation with relevant central agencies, including the Minister of the Interior and Safety. If existing Korea Industrial Standards cover any technology used in convergence technologies, those standards must be followed. Information and communication technologies must comply with standards set by the relevant agencies, while transportation-related technologies must adhere to applicable standards established for such technologies under other laws.

Article 21 ensures that personal information collected, used, stored, managed, and disposed of during the management of smart cities and the provision of smart city services is handled legally and securely, in accordance with applicable laws and regulations, and only to the extent necessary.

Article 23 outlines the smart city promotion system in Korea, with the National Smart City Committee serving as the highest decision-making body. The committee, guided by the Smart City Act, reviews and discusses smart city policies, including the Smart City Master Plan, national construction projects, coordination between central and local governments, government support, and integration of information systems to improve smart city services. Additionally, local governments planning smart city projects must establish a Smart City Project Council, consisting of local residents, experts, and government officials.

Article 36 mandates States and local governments to provide necessary support in terms of budgets and others to the national pilot smart cities designated under Article 35 (1).

Article 49(1) states that a business entity wishing to carry out a smart innovation project can apply to the Minister of Land, Infrastructure, and Transport for approval of a plan to implement the project (referred to as the "smart innovation project plan") when laws or regulations governing the permission, approval, certification, verification, authorization, or registration of smart innovation technologies or services do not provide the necessary standards or requirements for promoting the project and when it is not suitable to apply the existing standards or requirements outlined in the laws or regulations for implementing the smart innovation project.

Article 54 provides for penalty for different categories of defaulters and any of the following persons shall be punished by imprisonment with prison labour for up to three years or by a fine of not exceeding 30 million won:

(1). A person who has been approved for a smart innovation project plan by fraud or other improper means and (2), a person who has been approved for a smart demonstration project plan by fraud or other improper means.

Article DOI: 10.52589/AJLPRA-GTNCVJKA
DOI URL: https://doi.org/10.52589/AJLPRA-GTNCVJKA

African Journal of Law, Political Research and Administration
ISSN: 2689-5102
Volume 8, Issue 1, 2025 (pp. 136-157)

www.abjournals.org

ii. Protection of Data Privacy

In South Korea, the main law governing data protection is the Personal Information Protection Act (PIPA), adopted in 2011 and amended in 2023. The Act provides comprehensive regulations for the collection, use, and processing of personal data by individuals and organizations, establishing a strong framework for the responsible and ethical management of personal information.[6] Article 1 states the purpose of the Act as the provision for the processing of the personal information for the purpose of enhancing the right and interest of citizens, and further realizing the dignity and value of the individuals by protecting their privacy from the unauthorized collection, leak, abuse or misuse of personal information.

Article 2(1) defines "personal information" as any data about a living person that can identify them, such as their name, resident registration number, or image, including information that, when combined with other data, can identify an individual. "Processing" refers to actions like collecting, storing, editing, using, disclosing, or destroying personal information. Article 3(1) defines a "data subject" as the individual identifiable by the processed information, while the personal information processor is responsible for safely managing this data, considering the risks of infringing on the data subject's rights based on the type and method of data processing.

.Article 4 outlines the rights of data subjects, which include the right to be informed about the processing of their personal information, the right to consent (and set the scope) to the processing, the right to confirm and access their personal data, and the right to request suspension, correction, deletion, or destruction of the data. Additionally, individuals have the right to seek redress for any harm caused by the processing of their personal information. The 2023 amendment to South Korea's PIPA also introduces the right to data portability, allowing individuals to receive their personal data in a format that is easy to transfer to another entity. Furthermore, individuals have the right to object to automated decision-making processes that significantly impact their rights or obligations, though automated decision-making is allowed if the individual consents.

Article 5 outlines the responsibilities of the state and local governments in relation to data protection; They must create policies to prevent harmful practices such as unauthorized collection, misuse, and abuse of personal information, as well as excessive surveillance, while also promoting human dignity and individual privacy; They are required to develop policy measures, including legislative improvements, to protect the rights of data subjects as specified in Article 4; and The state and local governments should respect, encourage, and support the self-regulation of personal information processors to address and improve harmful societal practices regarding personal data processing.

Article 14 encourages International Cooperation and empowers the government to work out policy measures necessary to enhance the data protection standard in the international environment so that the rights of data subjects may not be infringed upon owing to cross border transfer of personal information. Article 23 limits the processing of personal information

[6] Guide to South Korea's Personal Information Protection Act (PIPA), https://business.privacybee.com/resource-center/guide-t.-south-korea...accessed 15 November 2024.

Article DOI: 10.52589/AJLPRA-GTNCVJKA
DOI URL: https://doi.org/10.52589/AJLPRA-GTNCVJKA

hereinafter referred to as the "sensitive data" including ideology, belief, admission/exit to and from trade unions or political parties, political mindset, health, sexual life, and other personal information which is likely doing harm to privacy of data subjects. Article 33(1) requires a Privacy Impact Assessment by the head of a public institution if there is a potential violation of personal information due to the operation of personal information files. This assessment analyzes and addresses risk factors, with the results submitted to the Minister of Public Administration and Security. Article 39(1) allows data subjects to claim compensation if they suffer harm due to violations of the Act while Article 67(1) mandates that the Commission prepares an annual report on data protection policies and their implementation, which is submitted to the National Assembly.

The Act highlights the need for accurate, complete, and up-to-date data, secure management practices, and consideration of potential risks to protect data subject rights. The PIPA promotes transparency, accountability, and privacy by requiring privacy policy disclosures, ensuring access rights, and encouraging anonymization or pseudonymization when possible.

iii. Cyber security

The Republic of Korea has built one of the most convenient and prosperous cyberspace environments, drawing upon world-class information and communications technology (ICT) and related infrastructure.[6] In South Korea, cyber[7]security is anchored by several significant laws and regulations that collectively aim to protect personal data and enhance the security of information systems. One of the cornerstones of this legal framework is the Personal Information Protection Act (PIPA) considered above. The basic law, however, is the Act on Promotion of Information and Communications Network Utilization and Information Protection, enacted in 2001, and amended in 2015.[6] The system of information[8] security laws covers seven major areas: (1) information security policy establishment, (2) major information and communication-based security, (3) incident response, (4) cyber security measures and action, (5) evaluations, certifications, and inspections, (6) electronic signature, and (7) personal information protection, including policy establishment and intrusion incident response for each security task. The security targets are divided into public and private areas.[6] [9]

The Information and Communications Network Act regulates the information security policy establishment function in the public and the private sectors. The National Cyber Safety Act separates and regulates the public and the private sectors in performing the intrusion incident response function based on the Act on Promotion of Information and Communications Network Utilization and Information Protection, Etc. The Information and Communication Infrastructure Protection Act performs a major information and communication infrastructure protection

[6] National Security Office, Changing Environment and New Challenges, https://www.itu.int/en/ITU-D/Cybersecurity/Documents/National_Strategies_Repository/…, accessed15 November 2024.
[6] Santiago Paz, Luis Tejerina, Kang Donghuyun, (2024). National Cybersecurity Law, Governance, and Infrastructure in the Republic of Korea. Inter-American Development Bank ("IDB"), New York, 1-67.
[6] *Ibid.*

Article DOI: 10.52589/AJLPRA-GTNCVJKA
DOI URL: https://doi.org/10.52589/AJLPRA-GTNCVJKA

function in the public and the private sectors, and the E-Government Act performs cybersecurity functions and regulates only the public sector.[70]

Furthermore, the Framework Act on Cyber security, adopted in 2020, aims to create a cohesive approach to cyber security across various sectors. This act outlines the obligations of critical infrastructure organizations, ensuring their systems are fortified against cyber threats. It also emphasizes the importance of collaboration among government agencies, private sectors, and international partners to respond effectively to emerging threats.

iv. Urban Planning

Since 2003, the National Land Planning and Utilization Act has served as the foundation for the current Korean system of planning laws. The Act specifies the ways in which urban plans are established, as well as their subject, kind, and content. It functions as the fundamental legal foundation for the urban plan. Art. 28 of the Act specifies who has planning authority and how plans are established, including the mandatory public and local council hearing process. The act's procedures must be followed by the administrative agency; otherwise, the urban plan is illegal and subject to revocation through administrative lawsuits. Permission for development activities is outlined in the National Land Planning Act and is what establishes whether or not a particular development activity complies with the urban plan. It basically looks at how the development and the plan's contents correspond to each other. In other words, it's a process for implementing the plan and making decisions about how to use the land. The local government has extensive decision-making authority. It is not to be confused with "building permission," which is the process of determining whether the building is hygienic and physically secure. It is ministerial in most cases.[71]

v. Intellectual Property Laws

Intellectual property rights are governed by various Korean intellectual property statutes, including the Patent Act (PA), the Copyright Act (CA), the Utility Model Act, the Trademark Act (TMA), the Design Protection Act, the Unfair Competition Prevention and Trade Secret Protection Act (UCPA) and the Semiconductor Chip Act (SCA).[72]

Information from the Intellectual Property office in Korea indicates as follows:

a. The copyright legislation is based on the Copyright Act of 1957, known as the Korean Copyright Act. Registration for all forms of copyright except computer software is made with the Ministry of Culture, Sports and Tourism. Software should be registered with the Ministry of Information and Communications.[73] Specific concerns over copyright in Korea include online

[70] *Ibid*.

[71] Jeon, J. (2023). Planning Law and Development Process in South Korea (CLS Working Paper Series 2023/08). London, UK: City, University of London.

[72] DLA PIPER, Intellectual property framework, www.dlapiper.com/en-mx/capabilities/practice-area/intellectual-property, accessed 15 October 2024.

[73] Intellectual Property Office, Intellectual Property Rights In the Republic of Korea, https://assets.publishing.service.gov.uk/media/…/IP_rights_in_Korea.pdf, accessed 10 October 2024.

Article DOI: 10.52589/AJLPRA-GTNCVJKA
DOI URL: https://doi.org/10.52589/AJLPRA-GTNCVJKA

piracy. Books are also widely copied, especially textbooks. In hardware, circumvention devices are available for example, modified chips and game copiers that bypass technological protection measures.[7] [4]

b.. Patents, utility models and industrial designs: South Korea's patent regulations are contained in the Patent Act and the Utility Model Act. A utility model can be granted for any device defined as 'the creation of technical ideas using the rules of nature'. An invention patent can be granted for devices and other inventions which are more highly advanced than this. Invention patents give protection for a maximum of 20 years, while utility models are valid for ten. South Korean patent law operates under the 'first to file' principle - that is, if two people apply for a patent on an identical invention, the first one to file the application will be awarded the patent.

c. Industrial designs are covered by the Design Act. The law confers protection for a maximum of 15 years. The Korean Intellectual Property Office is responsible for all aspects of patents, utility models and industrial designs.[7] [5]

d. Trademarks are regulated in the Republic of Korea under the Trademark Act. The system operates in protecting designs, symbols, colours or other devices used to identify a business' products or services. Registration takes around seven to ten months and a trade mark is valid for ten years, after which it can be renewed indefinitely for further ten-year periods.[7] [6]

e. Recordal of marks with the Korean Customs Service. This allows the local Customs offices to check and intercept infringing goods. Applying for a recordal is generally done through a lawyer or local attorney and costs about £250. The Unfair Competition Prevention and Trade Secrets Protection Act provides protection for rights owners in addition to the Acts covering each form of IP. This covers unfair practices including 'cybersquatting' and the infringements involving 'dead copies' of designs.

f. The three levels at which IP rights can be enforced in South Korea: mediation, civil action and criminal prosecution.

g. South Korea's intellectual property (IP) laws are comprehensive, and the authorities and processes are becoming increasingly efficient. The protection offered to foreign and domestic rights owners is of a reasonably high standard. As a member of the World Trade Organisation, the Republic of Korea is committed to certain minimum IP protection standards.[7] [7] However, there are some obvious problems for IP rights owners operating in South Korea, including linguistic challenges and difficulties for people from the UK that are used to common law.[7]

[7] Ibid. [4]
[7] Ibid. [5]
[7] Ibid. [6]
[7] Ibid. [7]
[7] Ibid. [8]

Article DOI: 10.52589/AJLPRA-GTNCVJKA
DOI URL: https://doi.org/10.52589/AJLPRA-GTNCVJKA

vi. Artificial Intelligence

On 26 December 2024, the South Korean National Assembly approved and adopted the AI Basic Act. The AI Basic Law, also known as the South Korean AI Act (SKAIA), will take effect as of January 2026. This law unifies AI regulation in South Korea, consolidating 19 separate AI-related regulatory proposals. The SKAIA aims are to ensure the protection of human rights and dignity and improve quality of life while strengthening South Korea's national competitiveness through establishing rules for the development of sound and trustworthy AI.[7]

The SKAIA focuses on three main developmental areas: Launching of an organisational system, including that of a National AI Committee and an AI Safety Research Institute; Supporting measures for AI development; Establishing mechanisms to ensure safe and reliable bases for high-risk and generative AI.

Prior to this time, starting with the announcement of the National Strategy for Artificial Intelligence in December 2019, followed by the issuance of a Roadmap for Improving AI Law, System and Regulation in December 2020, and then the unveiling of the Digital Bill of Rights in May 2023, the nation has been vigorously engaged in shaping its AI regulatory landscape.[8]

5. Lessons from the South Korean Legal Framework

Analysis above shows that South Korea has established a comprehensive legal and policy framework to promote smart city development. That is, the "Act on the Promotion of Smart City Development and Industry," discussed above. This Act specifically defined what smart city means in South Korea and provides a structured approach to efficiently developing, managing, and operating smart cities and related industries. Consequently, South Korea has implemented specific projects like Sejong City, designed as a smart city from its inception. Sejong incorporates advanced technologies such as automated trash collection, zero-waste food disposal, electric car charging stations, solar-powered buildings, interactive digital signage, and comprehensive security systems.[8] These features exemplify the country's commitment to integrating technology into urban living.

In contrast, legislation for smart city development in Nigeria faces several challenges. Key challenges include the absence of a comprehensive smart city legal framework or a unified legal framework to regulate and guide smart city initiatives. Existing laws for example the Urban and Regional Planning Act do not address emerging technologies. While the Nigeria Data Protection Act (NDPA) 2023 exists, it lacks specific provisions for data security in smart cities. There is weak enforcement of cyber security laws leading to cyber threats/attacks and data breaches which pose significant risk/attacks. The legal frameworks for IoT security and AI ethics remain

[7] South Korean AI Basic law, https://artificialintelligenceact.com/south-korean-ai-basic-law/..., accessed 19 November 2024.

[8] Asia Business Law Journal, Analysis of AI regulatory frameworks in South Korea, https://law.asia/ai-regulatory-frameworks-south-korea/, accessed 12 December 2024.

[8] Leem, Y., Han, H., Lee, S.H. (2019). 'Sejong Smart City: On the Road to Be a City of the Future.' In: Geertman, S., Zhan, Q., Allan, A., Pettit, C. (eds) *Computational Urban Planning and Management for Smart Cities*. CUPUM 2019. Lecture Notes in Geoinformation and Cartography. (Springer, Cham).

Article DOI: 10.52589/AJLPRA-GTNCVJKA
DOI URL: https://doi.org/10.52589/AJLPRA-GTNCVJKA

underdeveloped. Other challenges include funding constraints: infrastructure deficits and digital divide as low digital literacy and limited access to technology in some areas hinder widespread adoption of smart solutions.[8]

RECOMMENDATIONS

a. Development of a comprehensive smart cities policy and legal framework. This requires the enactment of a National Smart City Act that defines the legal guidelines for planning, funding, and managing smart cities. This law needs to establish clear roles and responsibilities for federal, state, and local governments in smart city governance.

b. Strengthening Existing laws relevant to smart cities development

i. This involves an amendment of the Nigeria Data Protection Act (NDPA) 2023 to include specific provisions for smart cities, ensuring that data collected through IoT and AI systems is securely managed.

ii. Review of the Cyber Security Act and implementation of cyber security standards for critical smart city infrastructure is essential to prevent hacking and cyber threats. A regulatory body dedicated to overseeing data ethics and AI usage in urban management is important. Successful data management in smart cities requires the establishment of a legal and regulatory environment that promotes both intellectual property protection and the responsible use of data for public benefit.

iii. Revision of the Nigerian Urban and Regional Planning Act to incorporate smart infrastructure guidelines for energy, transport, and housing is essential. In the same manner, Intellectual Property laws also need to be reviewed.

iv. Due to the significance of AI to smart cities development discussed earlier in this paper, establishment of Artificial intelligence regulations is critical.

c. The encouragement of Public-Private Partnerships (PPPs) can be achieved by creating legislation that incentivizes private investment in smart city projects through tax breaks and funding schemes. It must be ensured that PPP contracts include transparency measures to prevent corruption in smart city projects.

d. The lack of political will and governance structures are among the main obstacles to the implementation of key policies in Nigeria. Political will is essential for the implementation of policies and strategies in any clime.[8] However, political will is often influenced by factors such

[8] Nigerian Housing Market (NHM), Development of smart city initiatives in urban areas like Lagos and Abuja, https://www.nigeriahousingmarket.com/real-estate-guide-nigeria/development-of-smart-city-initiatives-in-urban-areas-like-lagos-and-abuja, accessed 12 November 2024.

[8] Khuong Vu and Kris Hartley (2018). Promoting smart cities in developing countries: Policy insights from Vietnam. *Telecommunications Policy*, 42 (10), 845-859.

Article DOI: 10.52589/AJLPRA-GTNCVJKA
DOI URL: https://doi.org/10.52589/AJLPRA-GTNCVJKA

as short-term political gains, corruption, and lack of public participation. In many cases, political leaders prioritize their interests over the common good, leading to inconsistent and ineffective management of resources.[8] [4]

e. Citizen-centered development by ensuring inclusivity and stakeholder engagement in policy formulation to create cities that reflect the needs of the people.

CONCLUSION

Nigeria's aspiration to develop smart cities is significantly influenced by its legal and policy environment. The review of existing laws and policies above indicates gaps in infrastructure regulation, data protection, digital governance, and urban planning. Outdated or inadequate policies hinder the seamless integration of technology in urban development. A well-structured legal and policy framework is essential for fostering smart cities in Nigeria. By addressing regulatory gaps, leveraging technology-driven governance, and ensuring stakeholder collaboration, Nigeria can pave the way for sustainable and efficient urban growth. Actualising a smart city in Nigeria and other developing countries would require radical and ambitious policies on development of human and infrastructural capacity, as well as institutional reinforcement.[8]

[8] Chiziterem (note 10 above). [4]

[8] Nkwunonwo, U.C., Dibia, F.E. and Okosun, J.A. (2023). A review of the pathways, opportunities, challenges and utility of geospatial infrastructure for smart cities in Nigeria. *GeoJournal* 88, 583–593.

Article DOI: 10.52589/AJLPRA-GTNCVJKA
DOI URL: https://doi.org/10.52589/AJLPRA-GTNCVJKA