Assessing Nigeria's Defence Industrial Base for Enhancing Defence Industrial Autonomy in Ghana

***Fiifi Deegbe, Georgina Asabea Asare; Jerry Mensah Addai Ofori; Nathaniel Ntsiful; Eric Kuntu-Blankson; William Mingle; Meshack Kwesi-Kumah Apronti; Isaac Kwaku Abuaku Adonteng; Keolopile Mangole; Chrispine Peter Jere; Kate Opoku; Michael Asiamah Bampoe; Joseph Jeffrey Donkor; Kofi Abaka Anaman; Eino Rooster Kayoko; Anthony Dery; Kwabena Bremang Annang; Kamal Chaachoui**

Ghana Armed Forces Command and Staff College (GAFCSC), National Defence University (NDU), Ghana

***Corresponding Author**

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ABSTRACT

Contemporary security environment has reinforced the importance of Defence Industrial Bases (DIBs) in achieving Defence Industrial Autonomy (DIA). This paper assesses Nigeria's DIB to identify lessons for strengthening Ghana's defence industrial capability. Using a comparative analytical approach, it examines Nigeria's defence industrial evolution, policies, achievements and constraints, focusing on the Defence Industries Corporation of Nigeria (DICON). The study finds that Nigeria has strengthened indigenous production through the DICON Act 2023, local content policies, defence partnerships, research and development, and private-sector participation. However, challenges remain, including technological dependence, inadequate infrastructure, limited skilled manpower, weak research capacity and funding constraints. Ghana's DIB remains constrained by limited industrial capacity, weak legal institutionalisation and reliance on foreign defence procurement. The paper concludes that Ghana can enhance DIA by strengthening its legal framework, expanding public-private partnerships, investing in defence infrastructure, human capital and research, and adopting sustainable funding mechanisms to achieve long-term defence self-reliance.

Keywords: Defence Industrial Base; Defence Industrial Autonomy; Defence Self-Reliance; Public-Private Partnerships; Technology Transfer.

INTRODUCTION

Globally, the contemporary security environment is increasingly characterised by asymmetric threats, transnational terrorism and hybrid warfare. These threats have exposed the limited capacity of many states heavily reliant on external defence procurement, highlighting the strategic importance of indigenous military hardware production. The Defence Industrial Base (DIB) has long served as the backbone of military self-reliance, enabling countries to produce, maintain and sustain their armed forces with minimal external dependence (Jacob & Bhatta, 2024). In Africa, several nations have taken steps to develop an indigenous DIB, though progress varies considerably. Notable among them is South Africa, where the DIB produces armoured vehicles and Unmanned Aerial Vehicles (UAVs) for both domestic use and export (Allworth, 2021). Likewise, Egypt has invested in local production of main battle tanks, including co-production of the M1A1 Abrams and in naval vessels through the Arab Organisation for Industrialisation (Allworth, 2021). In West Africa, production of indigenous military hardware has been mainly occasioned by insecurity and the high cost of foreign products. For instance, Nigeria's 1967 civil war, insurgency, banditry and other internal security threats increased demand for foreign military equipment while stimulating limited indigenous military hardware production (Utsaha, 2025). Similarly, in Ghana, growing indications of terrorism, internal conflicts and the high purchasing cost of external defence hardware necessitate a sustainable DIB to address security

related challenges. Consequently, a viable DIB has become a critical component of national security strategy, as it enhances Defence Industrial Autonomy (DIA) and ensures the timely availability of operational assets.

DIB refers to the ability of a country's domestic defence industry to design, develop, produce, maintain and sustain military equipment, technology and services required for national security (Dunne, 1995). This entails the scale and volume at which a country can produce, repair and sustain military equipment and services over time. DIA is the extent to which a country can independently meet its military needs, such as procurement, maintenance, logistics and technology, without significant dependence on external sources (Bitzinger, 2013). Limited DIB constrains self-reliance and increases dependence on foreign defence supplies. A strong DIB would enhance self-reliance through local production, maintenance and innovation, reducing exposure to external supply disruptions and political constraints.

The attainment of DIA would enable Ghana and Nigeria to sustain military operations, reduce dependence on foreign suppliers and respond rapidly to emerging security threats. Nigeria has made comparatively greater progress in developing its DIB through institutions such as the Defence Industries Corporation of Nigeria (DICON). Others are the Nigerian Army Command Engineering Depot (CED), Air Force Institute of Technology (AFIT) and partnerships with indigenous firms, including Proforce and TerraHaptix. These collaborations have supported the local production of small arms, ammunition, vehicles, drones and other tactical equipment for counter-insurgency (COIN) and internal security operations (IS Ops). Despite these gains, Nigeria still depends on foreign suppliers for advanced military platforms and specialised technologies, thereby limiting full DIA. Although Ghana has established the Defence Industries Holding Company Limited (DIHOC), its industrial capacity remains limited to basic repairs and refurbishment, garment production and pharmaceutical services. Additionally, unlike Nigeria, Ghana's proposed Defence Industrial Development Corporation (DIDC) Bill is yet to be passed into law, thereby weakening the institutional framework required for sustainable defence industrial growth. Consequently, the Ghana Armed Forces (GAF) continue to rely heavily on imported military platforms. This dependence exposes Ghana to procurement delays, supply-chain disruptions and external political constraints that undermine operational readiness, strategic autonomy and sovereignty. It is against this background that assessing Nigeria's DIB becomes necessary to identify adaptable lessons for strengthening Ghana's DIA.

The purpose of this paper is to propose innovative ways to strengthen DIA of Ghana. The paper will first provide an overview of DIB in Nigeria and Ghana, after which it will highlight on the policies and strategies of DIB of Nigeria. The paper will then consider efforts of Nigeria in optimising DIB. Thereafter, consider constraints to developing Nigeria's DIB and measures for strengthening DIA in Ghana through Nigeria's DIB experience. The paper will finally highlight adaptable lessons from the Nigeria DIB for Ghana. The paper was limited to the period 1964 – 2026, as this timeframe began the industrial development, key reforms, modernisation initiatives and evolving defence partnerships in Nigeria and Ghana. It is assumed that the study of Nigeria's DIB could provide valuable lessons for Ghana, enabling it to avoid the challenges and pitfalls Nigeria has encountered in pursuing DIA. The aim of this paper is to assess Nigeria's DIB for enhancing DIA in Ghana with a view to drawing lessons.

Overview of Dib in Nigeria And Ghana

The overview of DIB in Nigeria and Ghana highlights their development from the post-colonial era to the present period. This includes Nigeria's DIB evolution, restructuring under the DICON Act 2023 and industrial expansion, as well as DIHOC's establishment and role in Ghana's DIB development. These are discussed in subsequent paragraphs.

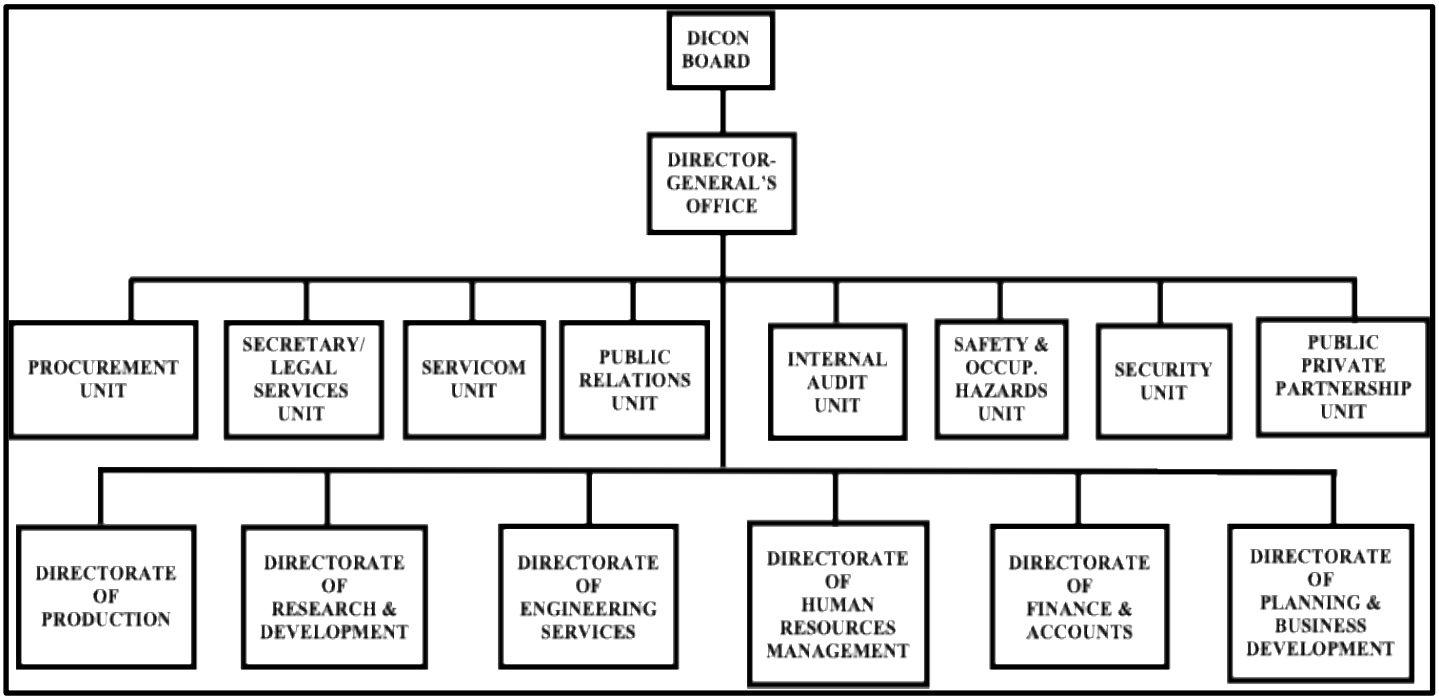
Evolution and Strategic Role of Nigeria's DIB. The evolution and strategic role of Nigeria's DIB has been steady and progressive. It plays a vital role in national sovereignty by enabling a country to manufacture its own national needs, thereby reducing dependence on foreign suppliers. Nigeria's DIB is closely tied to strategic objectives aimed at safeguarding sovereignty and enhancing the effectiveness of military operations (Olayanju, 2021). Nigeria's defence industry was established to reduce dependence on foreign arms imports and strengthen national security. Consequently, DICON was established by an Act of Parliament in 1964 to

achieve the mandate (DICON [Establishment] Act, 2023). According to Lieutenant Colonel O. Olaleye (2026), the West German firm, Fritz Werner, provided technical expertise and built the Kaduna Ordnance Factories. The company produced BM 59 Rifles, Submachine guns, 7.62 x 51 mm NATO ball and 9 x 19 mm rounds (DICON, 2026). This achievement laid the foundation for Nigeria's indigenous arms industry. The Nigerian Civil War, fought between 1967 and 1970, marked the first test of DICON's capacity (DICON, 2026). Faced with wartime requirements, the factories tripled their production output to ensure a steady supply of weapons and ammunition to sustain national defence operations. This period marked the evolution and strategic role of local manufacturing in securing Nigeria's sovereignty. After the War, reduced demand prompted diversification into civilian production, including industrial spare parts, furniture and agricultural equipment. This diversification reflected both economic pragmatism and an effort to maintain relevance during peacetime. Similarly, Brigadier General Hagan (2026) during a presentation explained that Ghana's DIB, through DIHOC, has implemented diversification strategies in peacetime by collaborating with private companies in joint ventures. These partnerships have broadened operations from footwear production into other sectors such

as electronics, oil and gas, finance, construction and onshore logistics. This approach aims to meet national needs while ensuring the industrial base remains relevant.

Restructuring and Expansion of Nigeria's DIB under the DICON Act 2023. Restructuring and expansion of Nigeria's DIB under the DICON Act 2023 were timely and necessary. Brigadier General Buba (2026) highlighted that the Boko Haram insurgency, which escalated in 2009, exposed vulnerabilities in Nigeria's defence supply chain. Reliance on imported arms and equipment often led to delays, shortages and inflated costs, undermining operational readiness in the fight against insurgents. This led to the revamping of DICON to sustain the military's war efforts. The DICON Act 1964 was repealed and replaced with the DICON Act 2023 to reform and modernise Nigeria's DIB. The 2023 Act further institutionalised local manufacturing expansion and reduced reliance on foreign defence imports. The Act restructured DICON by establishing units for Public Private Partnerships (PPP), production, research and development (R&D), engineering, and planning and business development. The organisational structure of DICON is presented in Figure 1. This restructuring and expansion significantly contributed to the development of Nigeria's DIB. For instance, PPP with firms such as Marom Dolphin produced ballistic vests, while indigenous weapons like the OBJ-006 sustained frontline units without foreign delays (Olaleye, 2026).

Figure 1: Organisational Structure of the Defence Industries Corporation of Nigeria



Source: Developed by the authors based on information obtained from DICON Headquarters (2026).

Nigeria has achieved significant advancements in its defence sector, moving beyond the production of small arms and ammunition. Under the DICON Act 2023, DICON launched the "Evolution" strategy, signing more than 50 joint ventures in its first year and attracting billions of naira in investment (Olaleye, 2026). Key partners within Nigeria's defence industry include Proforce Nigeria Limited, Rovin Guard, TerraHaptix Limited and Vanquish Industries Limited, which contribute to the production of vehicles, ammunition, and drones. The transformation of Nigeria's DIB through the DICON Act 2023 reflects Nigeria's strategic shift towards self-sufficiency in defence production to address vulnerabilities exposed by insurgency. Thus, by fostering local manufacturing and establishing PPP, Nigeria enhanced its operational efficiency and the resilience of its military capabilities. This approach significantly reduced Nigeria's reliance on foreign defence imports. Drawing lessons from Nigeria's experience, Ghana needs to restructure and expand DIHOC to strengthen local manufacturing capacity. This would enhance the resilience of Ghana's DIB and reduce reliance on foreign defence imports.

Expansion of Nigeria's Defence Industrial Ecosystem. Brigadier General Bubai (2026) during a brief stated that Nigeria's defence ecosystem expanded significantly under the Act, positioning DICON as a national defence industrial complex driven by private-sector participation and self-funding mechanisms. The Naval Dockyard Limited (NDL) and Naval Shipyard Limited (NSL) according to Naval Captain Orji (2026) now construct patrol boats, seaward defence boats and landing ships, thereby enhancing maritime security. Additionally, the Nigerian Army Vehicle Manufacturing Company (NAVMC) produces military vehicles, such as the NAC-V 4×4 APC. Furthermore, Proforce Limited produces Mine-Resistant Ambush Protected (MRAP) vehicles and protective gear for both domestic and export markets. Similarly, the Air Force Research and Development Centre (AFRDC) has operationalised indigenous UAVs, including TSAIGUMI, GULMA, and the AMEBO series, for intelligence, surveillance and reconnaissance missions (Olorunsanmi, 2026). List of defence industry enablers of the Nigerian defence industry is outlined in Table 1. The passage of the DICON Act in 2023 further institutionalised this strategic shift. By mandating expanded local manufacturing capacity and reducing dependence on imports, the Act positioned DICON as a critical enabler of Nigeria's DIB. There is a need for a legal framework, similar to the DICON Act, to drive Ghana's DIB. This would revamp Ghana's DIB by ensuring technology transfer and PPP to ensure sustainable DIA.

Table 1: List of Defence Industry Enablers of the Nigerian Defence Industry

Institution	**Location**	**Remarks**
Defence Industries Association of Nigeria (DIAN)	Garki, Abuja	Administrative Body
Defence Industries Corporation of Nigeria (DICON)	Kaduna, Kaduna State	Military Industrial/Engineering Facilities
Air Force Institute of Technology (AFIT)	Mando–Kawo area, Kaduna State	Research Body
Nigerian Army Command Engineering Depot (CED)	Rigachikun, Kaduna State	Military Industrial/Engineering Facilities
Nigerian Army Vehicle Manufacturing Company (NAVMC)	Kaduna	Military Industrial/Engineering Facilities
Nigerian Navy Dockyard Limited (NDL)	Ikeja, Lagos State	Military Industrial/Engineering Facilities
Nigerian Navy Shipyard Limited (NSL)	Victoria Island, Lagos State	Military Industrial/Engineering Facilities
Nigerian Defence Academy (NDA)	Afaka, Kaduna State	Research Body
Nigerian Navy Armament School (NNAS)	Kachia, Kaduna State	Military Industrial/Engineering Facilities
Nigeria Army Resource Centre (NARC)	Asokoro, Abuja	Research Body
Nigerian Navy Doctrine and Training Command (NN DTC)	Apapa, Lagos State	Research Body

Nigerian Air Force Air Warfare and Doctrine Centre (AWDC)	Makurdi, Benue State	Research Body
Defence Research and Development Bureau (DRDB)	Garki, Abuja	Research Body
National Agency for Science and Engineering Infrastructure (NASENI)		National Science & Technology Enablers

Source: Authors' Compilation (2026).

Establishment and Strategic Mandate of DIHOC in Ghana's DIB. In the case of Ghana, DIHOC represents the primary strategic initiative established under the Ministry of Defence to spearhead the development of a defence industrial complex (Hagan, 2026). DIHOC was established as a Limited Liability Company under the Company Code of 1963 and was incorporated on 7 April 2011 (Hagan, 2026). The Companies Act of 1963

(Act 179) was later repealed and replaced by the Companies Act of 2019 (Act 992) (GhanaWeb, 2018). DIHOC was established to separate the core business of industrialisation from the GAF's primary roles. The General Headquarters (GHQ) Defence Industries Department (DID) was established as the operational arm of DIHOC. Its charter, among other things, includes advising the Chief of Defence Staff on the industrialisation drive of GAF (Hagan, 2026). The strategic goal of DIHOC is to "promote civil-military collaboration through GAF defence companies, supporting socio-economic projects, industrialisation and sustainable national growth" (Hagan, 2026). DIHOC's mandate includes harnessing the skills, experience and discipline of GAF retirees while creating employment for unemployed youth. It also seeks to produce defence requirements locally, generate income, attract investment and enhance national development through industrialisation and agro-processing (Hagan, 2026). Ghana could strengthen DIHOC through legal reforms, sustainable funding, technology transfer partnerships and expanded local defence production to enhance DIA and self-reliance.

Institutional Development of DIB in Ghana through DIHOC. Institutional development of Ghana's DIB through DIHOC reflects a strategic shift from single enterprise production to diversified partnership-driven industrial expansion. As of 2018, DIHOC's only operational enterprise was its shoe factory, which manufactured combat boots and other footwear for the GAF and other security agencies (GhanaWeb, 2018). Through PPP, DIHOC has expanded its operations beyond footwear production, developing a portfolio of approximately 13 joint ventures across diverse sectors (Hagan, 2026). Its investments include the GAF Provident Fund and Service Integrity Savings and Loans, while partnerships have established the Burma Camp Pharmacy and retrofitted bullion vans (Hagan, 2026). Current initiatives include developing a 251-acre industrial park at the Battle Training Camp in Bundase for manufacturing ventures and partnering with Eban Capital to assemble electronic products locally. Other collaborations involve Ultimate Holdings to establish a maintenance and overhaul facility at Burma Camp and Centuries Cocoa to produce chocolate and other cocoa-based products (Hagan, 2026). This diversification reflects a strategic transition from a single-product enterprise to a broader multi-sector industrial platform with relevance to Ghana's defence and economic development objectives. Nevertheless, unlike DICON, DIHOC currently operates without a dedicated legislative framework, as the Defence Industries Development Corporation (DIDC) Bill 2025 is yet to be enacted. The passage of the DIDC Act would provide the statutory mandate required to establish, acquire and manage enterprises in support of national defence policy. This legal foundation is critical for consolidating existing achievements, attracting long-term investment and advancing Ghana's DIB towards greater sustainability and autonomy.

Policies and Strategies of Dib of Nigeria

Nigeria's defence industrial development is driven by sustained strategies and policies aimed at enhancing indigenous production, self-reliance, technology transfer, industrial growth and national security objectives. These policies include the DICON Act 2023, Nigeria First Policy and National Industrial Revolution Plan (NIRP). These policies are discussed in the succeeding paragraphs.

DICON Act 2023. The enactment of the DICON Act 2023 reflected a deliberate national policy and strategic drive towards strengthening Nigeria's DIB. Major General A.G.K. Myam (2026) explained that the Act expanded legal and institutional frameworks to promote indigenous production, research, maintenance, technology transfer and defence partnerships. It also encouraged collaboration between the Armed Forces of Nigeria (AFN), local industries and foreign companies involved in tactical vehicles, protective equipment and weapons maintenance. Compared to the period before the Act, Nigeria's DIB has grown significantly, demonstrating that the policy accelerated the development and expansion of the country's defence industrial capability. In contrast, Ghana's DIHOC mainly focuses on limited production activities such as uniforms, protective gear and logistics support, with lower technological and industrial capacity (Hagan, 2026). Although DIHOC collaborates with local industries and international partners, its effectiveness is constrained by inadequate investment, weak infrastructure and the absence of a comprehensive legal framework comparable to the DICON Act 2023. Nigeria's experience highlights the importance of strong legislation and institutional support in driving defence industrial growth and technological advancement. Therefore, Ghana could strengthen its DIB by reforming DIHOC through a comprehensive legislative policy that supports local production, PPP, and technology transfer. This would strengthen Ghana's DIB by building private sector confidence in defence production and advancing DIA.

Nigeria First Policy. The Nigeria first policy is anchored in Executive Order 5, 2018, and reinforced by the DICON Act 2023, promoting indigenous defence production through procurement directives. It has strengthened Nigeria's DIB by prioritising indigenous production, local content development and domestic participation in defence procurement. Consequently, government institutions, including the AFN are directed to prioritise locally produced goods and services over foreign alternatives. Through DICON, partnerships with firms such as Proforce and EPAIL have expanded the production of tactical vehicles, ballistic protection equipment, uniforms and ammunition for IS Ops (Olaleye, 2026). These locally assembled armoured vehicles have been deployed in COIN and IS Ops, reducing reliance on imports. The policy has fostered employment, technical skills development and investment in defence manufacturing and maintenance infrastructure, while promoting technology adaptation through preferential local procurement policies. This has improved industrial participation and operational sustainability within the AFN. Consequently, Ghana could strengthen its DIB and self-reliance by adopting local-content procurement policies that prioritise indigenous firms. This would support domestic manufacturing and promote sustainable defence industrial growth in Ghana.

NIRP. Nigeria's NIRP has been leveraged as a broader industrial policy to support DIB development through industrialisation, local manufacturing and technology-driven defence production systems. The policy develops strategic sectors such as metallurgy, engineering, automotive assembly and electronics, which are essential for defence production and sustainment. It has enabled DICON to access improved industrial inputs and strengthen local supply chains for arms, ammunition and military equipment production. Private firms like Proforce, Vanquish, Innoson Vehicle Manufacturing (IVM) and EPAIL have also benefited from NIRP incentives, expanding local assembly of armoured vehicles and other platforms for the AFN (Olaleye, 2026). NIRP has enabled defence-sector partners to expand indigenous production capacity and participate in Nigeria's DIB through tax holding, intervention funds, industrial clusters, technology transfer, skills development and infrastructure support. In addition, integrating civilian industries into national industrial planning has improved logistics and maintenance support for military operations. Consequently, the NIRP has reduced import dependence and strengthened indigenous defence production capacity. There is the need for Ghana to enhance its DIB and self-reliance by adopting an integrated national industrialisation policy that links defence production with broader industrial development. This would promote local manufacturing clusters and sustain investment in advanced industrial technologies.

Defence R&D Policy. Nigeria's defence R&D policy has strengthened its DIB by promoting indigenous innovation, technological adaptation and coordinated military-focused research. The policy encourages collaboration between government agencies, the military, universities and industry to develop locally relevant defence solutions. Through DICON, the Defence Research and Development Bureau (DRDB), and other research units, Nigeria has strengthened its DIB by supporting research, innovation and indigenous defence capability development (Imam, 2026). This has enabled a shift beyond traditional arms production towards

indigenous unmanned and autonomous military technologies through DICON-led initiatives and PPP. Subsequently, DICON through partnership with TerraHaptix developed the Robotech Unmanned Ground Vehicle (UGV) 'Striker', which the Nigerian Army (NA) has deployed in Operation HADIN KAI (Imam, 2026). The 'Striker' UGV platform has enhanced operational effectiveness, particularly in COIN operations in North-East Nigeria. This development has encouraged partnerships with foreign defence organisations to facilitate technology transfer and capacity building in areas such as ballistics, communications and electronic warfare. Increased engagement with civilian universities, including Ahmadu Bello University and the Federal University of Technology Akure, has improved research output and strengthened applied science and engineering capabilities (Olorunsanmi, 2026). Collectively, these efforts have reduced dependence on imported defence technologies while expanding indigenous innovation capacity. Consequently, Ghana could strengthen its DIB by establishing a comprehensive defence R&D policy that integrates defence industry enablers. This would drive innovation and ensure sustainable technological advancement.

Efforts of Nigeria in Optimising Dib

Nigeria has undertaken deliberate efforts to strengthen its DIB to enhance DIA and operational sustainability. These efforts include defence industrial partnerships and international collaboration, modernisation of military workshops and production facilities, human capital development and training, and defence research, innovation and technology development. These are elaborated in ensuing paragraphs.

Defence Industrial Partnerships and International Collaboration. Nigeria increasingly relies on defence industrial partnerships and international collaboration to strengthen its DIB and improve DIA. The growing threats of terrorism, insurgency and organised crimes in both countries necessitate strategic partnerships with regional and global partners. Consequently, Nigeria, through the DICON has partnered with countries such as China, Turkey and Pakistan to improve local production of arms, ammunition and military equipment (DICON, 2023). For example, collaboration with Turkish Aerospace Industries through the DICON-D7G partnership supports UAV assembly and maintenance, while Pakistan provides expertise in small arms production and military engineering. Nigeria has also expanded cooperation with civilian universities and indigenous firms to encourage innovation in defence manufacturing and maintenance support (Olaleye, 2026). These collaborations have supported technology transfer, facility modernisation, indigenous defence manufacturing and local maintenance capability. Gradually, Nigeria has improved its indigenous defence production despite persistent infrastructural and technological limitations. Similarly, Ghana partners with the United States (US), Germany and United Kingdom (UK) for military training, technical support, and logistics enhancement to improve GAF operational and maintenance capacity (Gov.UK, 2022). However, its collaboration with these partners offers limited opportunities for technology transfer. These strategic partnerships, though beneficial, risk overdependence on foreign aid. Ghana's DIA needs to be strengthened through expanded local defence industrial partnerships focused on technology transfer, joint production agreements and capacity building. This approach could mirror Nigeria's defence cooperation initiatives with countries such as China, Pakistan and Turkey. This would ensure strengthened diplomatic strategies and investment in local defence capabilities.

Modernisation of Military Workshop and Production Facilities. Modernisation of military workshops and production facilities has become a key effort by Nigeria in strengthening its DIB and promoting DIA. Central to Nigeria's efforts is the DICON, which has upgraded production lines for small arms, ammunition and armoured vehicle components for ongoing security operations. Facilities in Kaduna have been partially modernised with computer numerical control (CNC) machines and improved metallurgical equipment to support precision manufacturing (Ezenwa, 2025). Likewise, the CED has also expanded its capacity for vehicle overhaul, enabling local refurbishment of APC used in COIN operations in the North-East (Ezenwa, 2025). Additionally, naval workshops in Lagos and Port Harcourt have been improved to support ship maintenance and repair, reducing dependence on foreign dockyard technical support (Olaleye, 2026). Comparably, Ghana has gradually modernised military workshops and production facilities to strengthen its DIB and reduce dependence on foreign military supplies. The GAF has pursued technical cooperation with Germany in vehicle maintenance, electronics and defence engineering training to enhance local expertise and industrial efficiency. These efforts have contributed to reducing equipment downtime, improving logistics support and enhancing

the operational readiness of the GAF. However, the limited scale of industrial infrastructure, inadequate funding and overreliance on imported technology continue to constrain progress towards full DIA. The modernisation of military workshops remains an important foundation for Ghana's long-term defence industrial and operational sustainability. Therefore, Ghana could strengthen its DIB and DIA by investing in advanced military manufacturing technologies, advanced maintenance infrastructure, and promoting strategic technology-transfer partnerships with technologically advanced states. This would ensure improved operational sustainability, reduced foreign dependence and enhanced DIA within the GAF.

Human Capital Development and Training. Nigeria's efforts to strengthen its DIB and enhance DIA depend significantly on human capital development and training. Nigeria has invested in specialised military training institutions and technical programmes to develop skilled personnel in engineering, weapons maintenance, defence manufacturing and research. For example, Nigerian technicians have been trained in Turkish defence factories on the assembly of armoured vehicles and unmanned aerial systems, enhancing local competence. Additionally, collaboration between military institutions and civilian universities has promoted research-oriented training in engineering and applied sciences relevant to defence production (Imam, 2026). Conversely, Ghana has strengthened professional military education through the respective engineering training institutions and Signal Training School (STS), supporting equipment maintenance and operational support services. For instance, selected military personnel and civilian technicians have received advanced training in countries such as China, Turkey, UK and US in areas including armament technology, electronics, vehicle maintenance and defence engineering (Hagan, 2026). Furthermore, collaboration between the GAF and local academic institutions, particularly Accra Technical University, has also enhanced research, innovation

and technical capacity development (Hagan, 2026). These initiatives have improved the ability of the Armed Forces to maintain and refurbish equipment locally, thereby reducing operational dependence on foreign technical assistance. Despite these efforts, gaps remain in advanced robotics, precision engineering and systems integration skills. This highlights the necessity of a skilled workforce in driving productivity, innovation and competitiveness in the DIB. Ghana could enhance its DIB by investing in specialised defence technology training institutions and advanced technical skills development programmes. This would ensure a skilled defence workforce, improved indigenous production capacity and sustainable DIA.

Defence Research, Innovation and Technology Development. Defence research, innovation and technology development form a critical component of efforts by Nigeria to strengthen its DIB and promote DIA. Nigeria's aspiration to establish a viable and self-sustaining DIB is critical to its national security and defence autonomy. Central to this ambition is the role of R&D in driving innovation, enhancing indigenous production and fostering strategic self-reliance. Consequently, Nigeria prioritises indigenous defence research through DICON and military research centres focused on weapons design, ammunition production and counterterrorism technology adaptation (Ezenwa, 2025). Additionally, the creation of the DRDB marks a significant step toward institutionalising R&D efforts aimed at addressing the specific operational and logistical needs of the AFN (Ezenwa, 2025). By forging collaborative linkages with local industries, academia and international partners, the DRDB serves as a strategic platform for developing home grown defence technologies and systems. These initiatives have supported the gradual development of local innovation in armoured vehicles, small arms and surveillance systems. Likewise, Ghana advances defence research through collaboration among the GAF, academic institutions and international partners to enhance innovation and military maintenance solutions. For instance, Ghana has partnered with the United States Africa Command to enhance technical training, military engineering and maintenance capacity through joint exercises and professional exchanges programmes (USAFRICOM, n.d.). However, Ghana's R&D capacity remains limited in comparison to Nigeria's broader industrial efforts. Therefore, Ghana could strengthen its DIB by investing in dedicated defence research institutions, promoting military-civilian innovation partnerships and expanding funding for indigenous technology development. This would ensure improved innovation capacity, reduced technological dependence and enhanced DIA.

Constraints to Developing Dib of Nigeria

Nigeria faces several constraints in developing a sustainable and self-reliant DIB. Key challenges include

technological dependence and import reliance, weak industrial infrastructure, human capital and skills gaps, inadequate R&D capability and inadequate funding. These constraints are elaborated in subsequent paragraphs.

Technological Dependence and Import Reliance. Technological Dependence and Import Reliance have historically shaped Nigeria's defence sector, influencing its industrial development trajectory and policy evolution over time. Nigeria has achieved significant progress in local assembly and limited defence production through DICON partnerships, especially in small arms manufacture and maintenance activities. For instance, DICON has successfully produced the OBJ-006 assault rifle and refurbished APCs, providing the NA with locally manufactured small arms and maintenance support (Olaleye, 2026). However, Nigeria still relies heavily on foreign suppliers for advanced platforms such as aircraft, precision-guided munitions, communication systems and surveillance equipment. This dependence is driven by weak domestic capabilities in precision engineering, microelectronics and advanced weapons integration. Likewise, Ghana depends extensively on imported defence systems, while maintenance of aircraft, naval vessels and armoured vehicles often requires foreign technical support and spare parts. Although local workshops provide basic repairs and refurbishment, they lack advanced manufacturing capacity for complex systems. Consequently, both countries face high procurement costs, logistical delays, supply chain vulnerabilities and limited technology transfer opportunities. To address these challenges, Ghana could prioritise local production of selected defence equipment and expand defence industrial partnerships to strengthen indigenous capabilities. This would enhance operational sustainability, reduce external vulnerability and improve DIA.

Weak Industrial Infrastructure. Weak industrial infrastructure continues to limit DIB in meeting operational needs, thereby reducing self-reliance and increasing dependence on foreign military supplies in Nigeria. DICON and other defence producers in Nigeria face weak steel processing, unreliable power, obsolete mac-

hinery and poor engineering facilities, reducing manufacturing efficiency (Olatoye, 2026). For instance, the NDL under DICON has, since its establishment, built only 3 vessels, namely NNS ANDONI, KARADUWA and OJI, largely due to infrastructure limitations. The facility continues to operate with an aged and degraded main graving dock gate and capstans, a limited 55-ton crane, and a non-operational seawater mains system (Iluyimi, 2026). The situation in Ghana is not substantially different, as Ghana also faces limited heavy industry and inadequate defence engineering workshops, constraining local military hardware production and maintenance. Consequently, both countries continue to rely heavily on imported spare parts and specialised equipment for armoured vehicles and communication systems. These infrastructural conditions increase operational costs, delay maintenance cycles and constrain indigenous manufacturing capability, thereby sustaining dependence on foreign defence suppliers despite ongoing industrialisation efforts. However, given that Nigeria has made better strides in this regard than Ghana, the Nigeria's experience offers Ghana valuable lessons on strengthening indigenous defence production. Ghana requires targeted investment in reliable power, machine tooling centres and defence industrial clusters. This would reduce foreign dependence and support sustainable defence modernisation and DIA effectiveness.

Human Capital and Skills Gaps. A critical limitation to DIB development in Nigeria is inadequate skilled human capital and technical expertise, which continues to weaken efforts toward DIA. Although Nigeria has trained 15 Nigerian Air Force (NAF) officers and civilians to Doctor of Philosophy (PhD) level, the numbers remain inadequate for indigenous defence production demands (Olorunsanmi, 2026). The available personnel cannot adequately support local production requirements needed to address Nigeria's persistent internal security challenges and operational demands. In Nigeria, DICON and military research centres still lack trained technicians capable of operating modern CNC machines and precision weapons manufacturing systems (Olatoye, 2026). Consequently, ammunition production and equipment servicing frequently experience delays due to insufficient technical expertise and limited special manpower (Olatoye, 2026). Similarly, Commodore O.D. Ogbolugu (2026) explained that inadequate human capital continues to reduce production output at the NDL. Likewise, Ghana lacks specialised engineers in aerospace, ballistics and advanced materials, increasing dependence on foreign technical support for maintaining complex military systems (Ghana Armed Forces [GAF], 2026a). These limitations reduce innovation, constrain indigenous production and weaken operational efficiency in both countries. Furthermore, inadequate funding, weak research infrastructure and the migration of skilled personnel continue to undermine sustainable defence industrial development in both states.

Nevertheless, Nigeria has achieved relatively greater progress in indigenous defence production through advanced technical training programmes, including PhD level education. Therefore, Nigeria's experience provides vital lessons for Ghana's defence industrial development and DIA efforts. It is imperative that Ghana expands defence-related education, improves welfare conditions for defence industry personnel and strengthens industry-academia collaboration aligned with defence sector requirements. This would develop personnel skills, improve operational capability and strengthen Ghana's DIA.

Inadequate R&D Capability. Inadequate R&D capability continues to be a challenge for Nigeria's defence industrial development. Although Nigeria has expanded defence production through research institutions such as DICON, DRDB and AFIT, existing efforts remain inadequate for sustainable DIA (Ghana Armed Forces, 2026). Inadequate funding for military research institutions, weak innovation ecosystems and limited collaboration among universities, industries and defence establishments continue to hinder indigenous military technology development. (Olatoye, 2026) As a result, defence institutions still depend heavily on foreign technical expertise and imported technologies for weapons design, communication systems and equipment upgrades. The situation in Ghana is not substantially different, as limited defence research investment and inadequate defence laboratory infrastructure constrain indigenous defence manufacturing innovation (Council for Scientific and Industrial Research, 2026). For example, local institutions such as STS and the Engineer Training School possess limited capability in advanced military electronics, unmanned systems and precision engineering research (Aning & Fuior, 2022). These challenges continue to weaken indigenous innovation, defence production capacity and technological advancement in both countries. Nevertheless, Nigeria's relatively greater progress in defence production provides important lessons for Ghana's defence industrial development. Therefore, Ghana needs to increase investment in defence R&D, strengthen research partnerships and promote technology transfer to improve indigenous innovation and production capability. Sustained investment in R&D would reduce external dependence and strengthen long-term DIA in Ghana.

Inadequate Funding.Inadequate funding remains a critical obstacle to the development of Nigeria's DIB and continues to weaken Africa's quest for DIA. Major General A.K. Ibrahim (2026) stated that inconsistent budgetary allocations and competing national priorities continue to constrain long-term investment in Nigeria's defence manufacturing, military research and technological modernisation. For example, inadequate funding forces DICON to operate with aging production infrastructure, limited capital expansion capacity and continued reliance on imported raw materials and components (Olatoye, 2026). Furthermore, irregular release of appropriated funds further delays critical projects, disrupts production schedules and reduces capacity for sustained innovation in weapons systems and military hardware (Olatoye, 2026). This challenge also affects other defence industries, including the NDL, which operates with ageing graving dock gates, degraded capstans and a non-operational seawater mains system (Iluyimi, 2026). As a result, procurement decisions increasingly favour foreign suppliers, while obsolete equipment further limits the growth and competitiveness of local defence industries. Ghana faces a broadly similar situation, where constrained defence budgets and reliance on imported military equipment continue to restrict indigenous defence industrial development. For instance, Ghana's defence expenditure, averaging 0.4% - 0.6% of GDP remains low regionally, limiting sustained investment in local defence R&D and industrial capacity (World Bank, 2024). This funding gap reduces the ability of the GAF's engineering and maintenance units to transition from routine servicing to advanced systems development and production. However, Nigeria's comparatively higher defence spending base offers lessons for Ghana on scaling industrial capacity through structured funding mechanisms. Strengthening sustainable defence financing, increasing private sector participation and prioritising research-driven industrial investment would enhance self-reliance and long-term DIA in Ghana.

Measures for Strengthening Dia in Ghana Through Nigeria's Dib Experience

The DIB of Ghana could be strengthened through the implementation of several measures. Some of these measures include leveraging legal frameworks to advance defence industrial partnerships and revamping of defence-industrial infrastructure for self-reliance. The rest are modernisation of defence industrial infrastructure, human capital development and skills enhancement, and strengthening research, development and innovation. These are discussed in the ensuing paragraphs.

Leveraging Legal Frameworks to Advance Defence Industrial Partnerships. Leveraging legal frameworks is essential for advancing defence industrial partnerships and strengthening Ghana's DIA through DIHOC development. Nigeria's experience under the DICON Act demonstrates how structured legislation enhanced its indigenous defence collaboration and production capacity. Through the DICON framework, Nigeria has expanded partnerships with private and international firms to support local production, maintenance and supply of military equipment. For example, partnerships with firms such as EPAIL, TerraHaptix and IVM have enhanced production of ballistic protection systems, tactical vehicles and logistics platforms for the AFN (Olatoye, 2026). Additionally, collaborations with Turkey, Pakistan and China have facilitated technology transfer, industrial innovation, and improved maintenance and adaptation of military systems within Nigeria's defence sector. In a similar manner, Ghana's DIHOC has partnered with 13 private firms to develop a military industrial complex aimed at defence self-reliance and national industrialisation (Hagan, 2026). These include DIHOC Black Swan, DIHOC JOSPONG, DIHOC McDan, Careworld Global Medical Services and DIHOC Radik Group, engaged in diverse production and infrastructure projects. These partnerships cover ammunition assembly, healthcare infrastructure, industrial parks, manufacturing plants and garment production for defence support systems. However, DIHOC lacks a robust legal framework, limiting structured partnerships and weakening partner confidence in Ghana's DIB efforts. Although a DIDC bill exists, it has yet to be enacted to effectively drive Ghana's DIB growth. Therefore, Ghana could strengthen its DIB by enacting the DIDC Act, granting statutory authority to DIHOC for structured partnerships with local and international defence industries. This would enhance indigenous manufacturing, maintenance capacity and technological innovation, while enabling joint production of military hardware and shared maintenance facilities for sustainable DIA.

Revamping of Defence-Industrial Infrastructure for Self-Reliance. The revamping of defence industrial infrastructure has emerged as a critical measure for strengthening DIB and enhancing DIA in Nigeria. Through the DICON, Nigeria has modernised selected production facilities, engineering workshops and maintenance depots to improve indigenous manufacturing and sustainment capability. For example, upgraded DICON, AFIT and Nigerian Defence Academy (NDA) facilities support local arms production, while military workshops refurbish armoured vehicles and tactical trucks for COIN operations (Bubai, 2026). Similarly, NDL and NSL in Lagos and Port Harcourt, respectively, have improved ship repair and maintenance capability for the Nigerian Navy, reducing dependence on foreign technical facilities (Shehu, 2026). Additionally, renewed investment in Nigeria's strategic industries, including the Ajaokuta Steel Plant, is expected to strengthen local supply chains and provide essential raw materials for defence production. The availability of locally sourced steel, aluminium and other essential materials would reduce dependence on imports and improve the production of military platforms, ammunition, naval assets and aerospace components. These infrastructural improvements have reduced maintenance turnaround time, strengthened local technical expertise and enhanced operational readiness, thereby contributing to improved DIA. Expanding GAF's Base Workshop and engineering units into modular production facilities would support indigenous manufacturing of military components and spare parts. Leveraging partnerships with local steel plants such as Tema Steel Company Limited and other public firms could bridge the infrastructure gap and align civilian production with military requirements. Therefore, Ghana could enhance DIA by upgrading military workshops, investing in modern defence-industrial maintenance and production facilities. This approach would not only lower procurement costs but also strengthen operational resilience, thereby advancing sustainable defence self-sufficiency.

Human Capital Development and Skills Enhancement. Nigeria has prioritised human capital development and skills enhancement as important measures for strengthening its DIB and improving DIA. Defence institutions have invested in technical education, specialist training and professional development programmes to produce skilled personnel capable of supporting indigenous defence manufacturing, maintenance and innovation. For instance, through partnership with the Tertiary Education Trust Fund, 15 NAF officers and civilian personnel received PhD-level training in aerospace engineering, armament, electronics and artificial intelligence (Olorunsanmi, 2026). Nigeria's defence cooperation with Turkey, involving ASELSAN and ROKETSAN has enhanced local expertise in defence manufacturing, particularly in armoured vehicle production and assembly partnerships. Furthermore, collaboration between private institutions such as

TerraHaptix, Proforce, EPAIL and civilian universities has encouraged research, innovation and practical skills development relevant to indigenous military production (Bubai, 2026). These initiatives have contributed to Nigeria's growing capability in the local production of small arms, ammunition, tactical vehicles and protective equipment for COIN operations. Equally, Ghana has partnered with Germany, UK and US, alongside local universities to build technical capacity (GAF, 2026b). Ghana could learn from Nigeria by investing in specialised defence engineering education through Ghana Education Trust Fund partnerships and strengthening academia-industry links for innovation and technology transfer. This would ensure the country produces the necessary skilled human resource to support its drive towards achieving sustainable defence industrial growth and long-term DIA in Africa.

Strengthening Research, Development and Innovation. Research and innovation remain critical drivers of a sustainable and technologically independent DIB in both countries. Nigeria's institutions, such as DICON, AFIT, NDA and DRDB, have expanded research initiatives in areas including UAVs, ballistics, communication technologies and battlefield surveillance (Musa, 2026). In the short term, Nigeria expanded indigenous production of small arms, ammunition, tactical vehicles and protective equipment tailored to local operational environments to support North-East COIN operations. Accordingly, Nigeria has increasingly relied on locally developed solutions capable of supporting IS Ops in real time (Olaniyi, 2026). In the medium to long term, Nigeria's defence industries are projected to evolve into strategic hubs for indigenous innovation and advanced military manufacturing (Olaniyi, 2026). Similarly, Ghana could improve its indigenous defence capability by facilitating collaboration among the military, universities and private industry to develop locally adaptable military technologies. Although funding and technological limitations remain a challenge, PPP and collaborations could support technology transfer, joint research projects and specialised technical training for Ghanaian defence institutions. With these measures, Ghana could gradually build a foundation for sustainable defence innovation and reduce foreign dependence. Therefore, Ghana could strengthen its DIB by establishing dedicated defence innovation hubs, increasing R&D funding and promote military-academic-industrial collaboration to enhance indigenous technological capability. This would reduce dependence on foreign military imports and position both countries as key regional and global defence contributors.

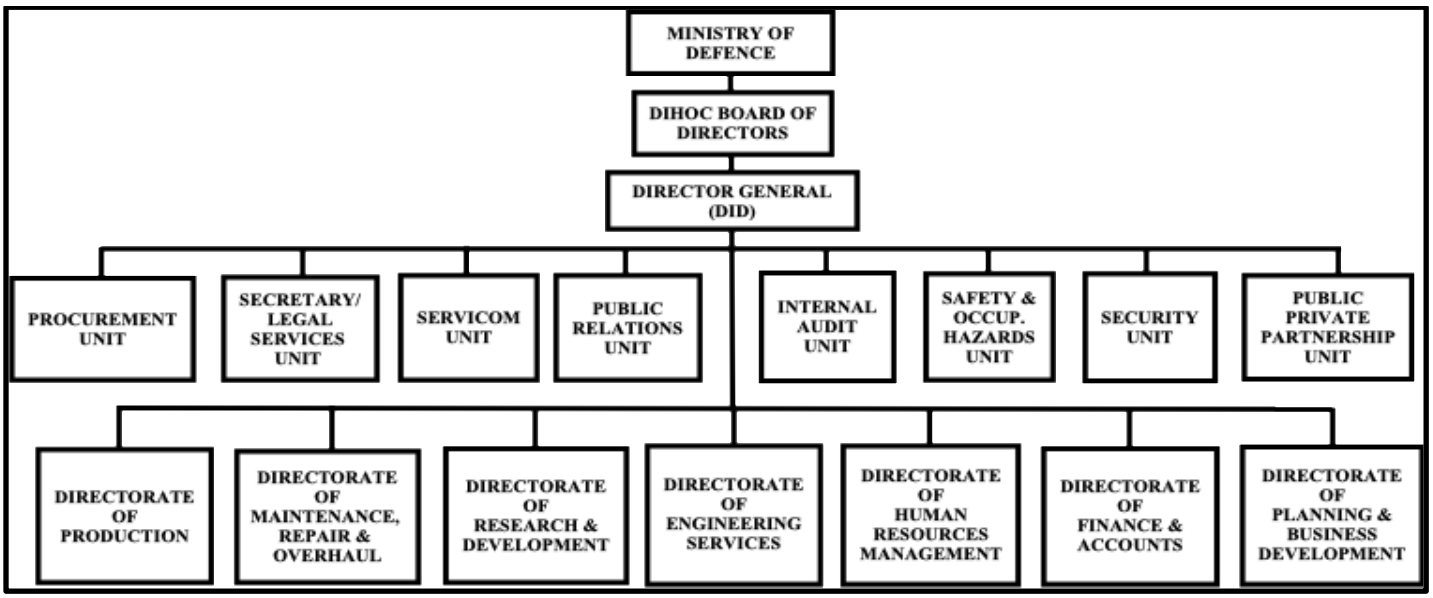
Alternative Funding to Enhance DIB. Alternative funding mechanisms are essential measures for strengthening DIB development and enhancing DIA in Ghana. Nigeria has supplemented conventional defence budgets through defence-industrial partnerships, off-budget procurement arrangements and collaboration with public and private enterprises (Olaniyi, 2026). As a result, DICON has benefited from partnerships with indigenous firms such as Proforce, which provide financial and technical support for producing armoured vehicles and protective equipment (Olaleye, 2026). Additionally, revenue from maintenance contracts has been reinvested into upgrading production facilities and research activities, while international defence cooperation agreements have supported concessional financing and technology transfer (Shehu, 2026). These measures have sustained gradual progress in indigenous defence manufacturing despite financial constraints. Again, Nigeria demonstrated that diversified funding is critical for building resilient defence industries. On the other hand, Ghana relies on government support, donor-funded security programmes, international partnerships and private-sector collaboration to improve defence infrastructure and technical capabilities. For example, cooperation with the US provides funding support for GAF training, communication equipment and maintenance capacity (MyJoyOnline, 2021). It is imperative for Ghana to strengthen its DIB by establishing dedicated defence industrial funds, reinvesting local procurement revenues and securing concessionary loans through defence cooperation agreements. This would promote revenue generation into local defence production and innovation.

Adaptable Lessons From Nigeria's Dib for Ghana

The DIB of Nigeria presents some strategic lessons for sustainable defence industrial growth and long-term DIA of Ghana. These lessons include the need to encourage PPP, invest in military workshops and local maintenance facilities and the need to develop skilled human capital. Others are the need for integration of defence R&D into the national innovation ecosystem and a diversified funding mechanism. These lessons are discussed in the ensuing paragraphs.

Need to Encourage PPP. One key lesson from Nigeria's defence industrial development is the importance of strong PPP in enhancing DIB and achieving DIA. Nigeria has increasingly involved private firms and universities in defence production, logistics, vehicle assembly and technology services through collaboration with the DICON (Olaleye, 2026). This progress has been supported by the DICON Act 2023, which provides a strong legal framework that strengthens confidence in PPP and drives indigenous production. These partnerships have enabled local production of ammunition, armoured vehicles, protective equipment and surveillance technologies used by the AFN in COIN and IS Ops. In contrast, Ghana's defence industrial sector remains largely state-controlled, with limited private sector participation due to weak policy and limited restructuring of the DIHOC. Strengthening DIHOC through an Act of Parliament, similar to DICON, would improve Ghana's defence industrial capacity. Increased involvement of local industry, technology firms and research institutions would enhance innovation, efficiency and investment in defence production. Partnerships with Ghanaian firms and universities could support local manufacturing of spare parts, tactical vehicles, communication systems and drones. Therefore, Ghana should restructure DIHOC through legislation that promotes PPP, indigenous production and defence research collaboration to reduce foreign dependence and strengthen DIA. A proposed organisational structure of DIHOC is presented in Figure 2. This would ensure PPP remains essential for the development of Ghana's DIB and for enhancing DIA.

Figure 2: Proposed Organisational Structure of Defence Industrial Holding Company Limited



Source: Authors' Construct (2026).

Need to Invest in Military Workshops and Local Maintenance Facilities. Another important lesson Ghana could learn from Nigeria's defence industrial experience is the need to invest in military workshops and local maintenance facilities to improve DIA. Nigeria has upgraded facilities under the DICON, DRDB, AFIT and NDL to support the repair and refurbishment of armoured vehicles, ships, weapons systems, and military transport platforms. For example, locally conducted maintenance on MRAPs, tactical trucks and local ship repair and maintenance has reduced reliance on foreign repair facilities (Ezenwa, 2025). These investments have enhanced equipment availability and reduced maintenance turnaround time. In comparison, Ghana's military workshops remain limited in advanced repair and production capabilities. Increased investment in modern diagnostic equipment, fabrication machinery and technical training would improve the GAF's ability to service armoured vehicles, communication systems and weapon platforms locally. Such investments would reduce equipment downtime, minimise foreign maintenance costs and strengthen operational readiness during security emergencies. Therefore, Ghana could prioritise the expansion and modernisation of military workshops and maintenance facilities to promote indigenous technical capability, reduce import dependence and enhance long-term defence industrial self-reliance. This would ensure a strong local maintenance infrastructure, which is essential for sustaining an effective DIB.

Need to Develop Skilled Human Capital. Ghana could draw lessons from Nigeria's defence industrial development by building skilled human capital to sustain indigenous defence production and maintenance. Nigeria has heavily invested in specialised military and technical education through institutions such as the NDA and AFIT, which train personnel in engineering, armament technology, electronics and aerospace maintenance (Imam, 2026). For example, technical personnel trained abroad have contributed to local assembly and maintenance of tactical vehicles and ammunition systems used by the AFN (Olorunsanmi, 2026). These efforts have contributed to Nigeria's growing capability in local weapons production, equipment servicing and military research, improving local expertise and reducing reliance on foreign technical support. In contrast, Ghana still faces shortages of highly specialised defence engineers and technicians required for advanced defence manufacturing and technological innovation. Expanding technical training, defence engineering education and partnerships with universities and foreign defence institutions would improve local expertise and industrial efficiency. Therefore, Ghana could prioritise continuous human capital development through specialised defence training, research collaboration and technology-oriented education. This would strengthen indigenous defence production and enhance long-term DIA.

Need for Integration of Defence R&D into National Innovation Ecosystem. Ghana could learn from Nigeria's defence industrial development by integrating defence R&D into the national innovation ecosystem to enhance self-reliance. Nigeria has progressively linked its defence institutions with research bodies, universities and industrial partners to support indigenous innovation in military technology, development of systems and logistics solutions. DICON collaborates with local and international defence partners and academic institutions to improve the design and production of small arms, ammunition, armoured platforms and ships for operational use. This integration has enabled the gradual development of local technical capacity and reduced dependence on imported defence equipment. However, in Ghana, defence R&D remains relatively fragmented and insufficiently connected to national innovation systems and industrial policy frameworks. Strengthening collaboration between the GAF, universities, research institutes and private technology firms would enhance the development of indigenous defence solutions. Therefore, Ghana needs to institutionalise defence R&D within its broader science and innovation agenda to promote coordinated technological development and industrial application. This is essential in building a sustainable and self-reliant DIB for enhancing DIA in Ghana.

Need for Diversified Funding Mechanism.One important lesson Ghana could learn from Nigeria's DIB experience is the need for a diversified set of funding mechanisms to sustain indigenous defence production and technological development. Nigeria has complemented traditional defence budget allocations with alternative financing approaches such as PPP, defence-industrial collaboration and reinvestment of maintenance revenues into local production facilities (Shehu, 2026). For instance, revenue from ship maintenance services for foreign military vessels from Benin, West African partners and international commercial shipping lines is reinvested in local production facilities (Shehu, 2026). Through the DICON Act,

partnerships with indigenous and international firms have supported the production of tactical vehicles, arms and ammunition, ships, drones and protective equipment despite fiscal constraints (Olaniyi, 2026). On the contrary, Ghana faces budgetary pressures due to competing socio-economic priorities, making sole dependence on government defence expenditure unsustainable for long-term DIB. Although Ghana has benefited from security assistance and technical cooperation with countries such as the US, Germany and the UK, local defence-industrial financing remains limited. Existing collaboration with local engineering firms and universities has also not yet translated into sustained industrial investment for indigenous military production. For this reason, diversified funding remains essential for expanding Ghana's defence manufacturing and maintenance capabilities. Therefore, Ghana could establish dedicated defence industrial development funds, encourage private-sector investment and adopt revenue-reinvestment mechanisms. This would support local defence innovation and infrastructure for sustainable DIA.

CONCLUSION

Nigeria's DIB was established through DICON in 1964 to reduce import dependence and strengthen national sovereignty through local arms production. Its evolution, reinforced by the DICON Act 2023, expanded PPP, diversified manufacturing and significantly improved operational readiness across land, sea and air domains. This expansion reflects a strategic shift toward self-reliance, industrial resilience and reduced reliance on foreign defence imports. In contrast, Ghana's DIHOC has begun diversifying through joint ventures but remains constrained by weak legal institutionalisation. Ghana could strengthen its DIB by enacting the DIDC Bill to support sustained industrial growth and advance DIA. Nigeria's DIB has been strengthened through the DICON Act 2023, Nigeria First Policy, NIRP, and Defence R&D Policy. The DICON Act provides a robust legal framework for indigenous production, technology transfer and PPP. The Nigeria First Policy prioritises local content in defence procurement, boosting domestic manufacturing and operational sustainability. NIRP integrates defence production into broader industrial development, strengthening supply chains, industrial clusters and private sector participation. Nigeria's Defence R&D Policy promotes collaboration among government, military, industry and universities, enabling innovation in unmanned systems and autonomous technologies such as the "Striker" UGV. These coordinated policies have reduced import dependence and expanded indigenous capability. Collectively, they demonstrate that integrated legal, industrial and research frameworks are essential for sustainable defence industrial growth. Ghana could reform DIHOC through a comprehensive legislation modelled on Nigeria's approach, integrating a Ghana First policy, industrial strategy and dedicated defence R&D for indigenous capability development.

Ghana and Nigeria have strengthened their DIB and DIA through partnerships, modernisation of workshops, human capital development and research and innovation. Nigeria's collaborations with advanced states, alongside private firms and universities, have enhanced technology transfer, local production and maintenance capacity. In contrast, Ghana's partnerships with the US, UK, Germany and China are largely focused on training, logistics and operational support, with limited technology transfer. Both countries have upgraded military workshops, improved technical training and invested in R&D, though Ghana remains constrained by limited infrastructure, skills gaps, and weak innovation systems. Strengthening Ghana's DIB requires deeper technology transfer partnerships, joint production agreements and expanded local industrial collaboration to build sustainable DIA. Technological dependence, weak industrial infrastructure, human capital shortages, inadequate R&D and limited funding continue to constrain DIA in Ghana and Nigeria, despite Nigeria's relatively greater progress through DICON. Both countries still rely heavily on imported advanced systems due to weak engineering capabilities, poor infrastructure and limited skilled personnel. This reliance leads to high costs, delays and supply chain vulnerabilities, while local workshops remain limited to basic repairs, resulting in reduced operational efficiency. Nigeria's experience shows modest gains in indigenous production, while Ghana remains more dependent on external support across maintenance, production and research. Ghana could strengthen its DIB through integrated investment in industrial infrastructure, skills development, R&D and sustainable defence financing mechanisms to strengthen indigenous capability and improve DIA.

Nigeria has strengthened its DIB and DIA through integrated investments in human capital development, defence partnerships, modernised infrastructure, R&D and diversified funding mechanisms. These efforts, supported by advanced training, PPP and upgraded production facilities, have enhanced indigenous manufacturing of arms, vehicles and military systems while reducing external dependence. Nigeria's experi-

ence demonstrates that coordinated institutional, industrial and financial reforms are essential for sustainable defence capability. Ghana could strengthen its DIB by expanding specialised defence education, deepening industry–academia partnerships and institutionalising continuous advanced technical training to build a highly skilled and innovation-driven defence workforce. The DIB of Nigeria offers valuable insights for enhancing sustainable defence industrial growth and long-term DIA in Ghana. Key lessons include promoting PPP, investing in military workshops and local maintenance facilities and developing skilled human capital. Strengthening PPP could spur innovation and efficiency, fostering local production capabilities with significant involvement from the private sector and universities. Moreover, investing in advanced military workshops and maintenance facilities is crucial for reducing reliance on foreign services and enhancing operational readiness.

Equally important is the need for robust technical training to build a capable workforce that supports indigenous defence production. Furthermore, integrating defence R&D into the national innovation ecosystem is essential for fostering technological advancement. Lastly, establishing diversified funding mechanisms could ensure sustained investment in Ghana's defence sector, moving away from reliance solely on government budgets. By adopting these strategic lessons, Ghana could work towards a self-reliant and resilient DIB, ultimately enhancing its national security and industrial development.

Disclaimer

The views, interpretations, and conclusions expressed in this study are those of the authors and do not necessarily reflect the official policies or positions of any government, organisation, or institution mentioned. Additionally, the study relies on publicly available sources and data, and any interpretations or inferences drawn are subject to the limitations inherent in such materials.

Ethical Approval

The study adhered to established institutional ethical guidelines and standards governing academic research. Relevant permissions were obtained from appropriate authorities, and all information collected from participants and sources was handled with confidentiality and integrity. Where primary data were required, informed consent was obtained from participants, and their identities were protected to ensure anonymity. The study avoided the disclosure of sensitive defence-related information that could compromise national security or operational effectiveness. All secondary sources and official documents were appropriately acknowledged, while the analysis was conducted objectively to ensure academic integrity and responsible research practices.

Conflict of Interest

The authors declare that there is no conflict of interest associated with this study. The views, analyses, interpretations and conclusions presented are solely those of the authors and do not necessarily represent the official policies, positions or perspectives of any government, organisation or institution referenced in the study.

Data Availability

The datasets generated and analysed during the study are available from the authors upon reasonable request. Given the nature of the research and the potential sensitivity of certain information, access to some data may be subject to appropriate confidentiality safeguards and ethical considerations. Where applicable, anonymised datasets, relevant supporting materials and research summaries may be shared with qualified researchers who agree to comply with applicable ethical standards and data protection requirements.

Artificial Intelligence Use Declaration Statement

This article was developed with limited support from artificial intelligence (AI) tools to improve language clarity, coherence, grammar, and the overall presentation of the manuscript. AI-assisted tools were used primarily for language editing, paraphrasing, and refining the structure and readability of the paper. All substantive aspects of the study, including the research conception, literature review, analysis of Nigeria's defence industrial development, comparative assessment of Ghana's defence industrial framework, identify-

cation of challenges, interpretation of findings, and adaptable lessons, are the original work of the authors. The arguments concerning defence industrial development, indigenous defence production, defence partnerships, technology transfer, and the enhancement of Defence Industrial Autonomy in Ghana were independently developed, critically analysed, and validated by the authors. The authors have carefully reviewed and verified all AI-assisted outputs to ensure factual accuracy, originality, and compliance with academic integrity and ethical publishing standards. The use of AI did not replace independent scholarly judgement, critical analysis, or intellectual contribution, and full responsibility for the content of this article rests solely with the authors.

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