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Navigating organizational excellence: a comparative study and roadmap for streamlining defense infrastructure organizational model of Georgia

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Abstract

In the face of evolving geopolitical dynamics and increasing security challenges, the efficacy of a nation's defense infrastructure is pivotal. This article conducts a comprehensive exploration of defense infrastructure organizational models, centering on the United Kingdom, France, Germany, Australia, and Latvia. Through a meticulous comparative analysis, the study delves into organizational structures, international operations, responsibilities, and strategic focuses of these nations' defense infrastructure entities. The goal is to glean insights applicable to Georgia's unique context, identifying key differences and commonalities to formulate a strategic roadmap for enhancing its defense infrastructure capabilities. The article examines each country's defense infrastructure model, highlighting distinctive features in organizational structure, international operations, responsibilities, and strategic focus. Drawing upon these insights, the study proposes tailored recommendations for Georgia, spanning organizational structure, international operations, responsibilities and focus, modernization and strategy, and integration of departmental efforts. Key entities within Georgia's defense infrastructure organizational model, such as the Department of Defense Sustainability, the J-4 Logistics Planning Department, and the Command for Logistics Support of the Troops, are illuminated to underscore their pivotal roles in fortifying the country's defense capabilities. Concluding with the identification of key areas for improvement in Georgia's defense infrastructure organization, the article outlines recommendations encompassing organizational structure, international operations, responsibilities and focus, modernization and strategy, and integration of departmental efforts. By aligning Georgia's defense infrastructure with international best practices, the nation can enhance security, contribute to regional stability, and actively participate in global security efforts. In essence, this article serves as a strategic guide for Georgia, offering a roadmap to fortify its defense infrastructure in a rapidly changing world. Through a synthesis of global insights and tailored recommendations, Georgia can position itself as a resilient and adaptable force, safeguarding national interests and contributing to a more secure global landscape.

Keywords:
defense infrastructure; organizational models; comparative analysis; Georgia; international operations; organizational structure; strategic focus; modernization.

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Introduction

In a time characterized by changing geopolitical environments and the rise of new security threats, the effectiveness of a nation's defense infrastructure is paramount. This article embarks on a comprehensive exploration of defense infrastructure organizational models, with a particular focus on the United Kingdom, France, Germany, Australia, and Latvia.
Through comparative analysis, we delve into the organizational structures, international operations, responsibilities, and strategic focuses of these nations' defense infrastructure entities: The Defense Infrastructure Organization (DIO) in the UK, the Defense Infrastructure Service (SID) in France, the Infrastructure, Environmental Protection, and Services (IUD) in Germany, the Infrastructure Division in Australia and the Logistics and Defense Investments Policy Department in Latvia.

This comparative study not only provides a nuanced understanding of each nation's approach but also aims to extract valuable insights applicable to Georgia's unique context. By identifying key differences and commonalities, we can discern areas for improvement and formulate a strategic blueprint for enhancing the defense infrastructure capabilities of Georgia.

The subsequent sections explore the intricacies of each country's defense infrastructure model, highlighting distinctive features in organizational structure, international operations, responsibilities, and strategic focus. Drawing upon these insights, the article then proposes recommendations tailored to Georgia's specific needs. The focus areas include organizational structure, international operations, responsibilities and focus, modernization and strategy, and integration of departmental efforts.

As we navigate through the current landscape of Georgia's defense infrastructure organization, we shed light on two key entities: The Department of Defense Sustainability and the J-4 Logistics Planning Department, both playing pivotal roles in fortifying the country's defense capabilities. Additionally, we delve into the Command for Logistics Support of the Troops, further underscoring the intricate relationship between effective infrastructure management and overall defense success.

The article concludes with an identification of key areas for improvement in Georgia's defense infrastructure organization. The recommendations span organizational structure, international operations, responsibilities and focus, modernization and strategy, and integration of departmental efforts. By aligning Georgia's defense infrastructure with international best practices and tailoring strategies to its specific needs, the nation can enhance its security, contribute to regional stability, and actively participate in global security efforts.

In essence, this article serves as a strategic guide for Georgia, offering a roadmap to fortify its defense infrastructure in a rapidly changing world. Through the synthesis of global insights and tailored recommendations, Georgia can position itself as a resilient and adaptable force, safeguarding national interests and contributing to a more secure global landscape.

1. Overview and Comparative Analyses of International Best Practices of Defense Infrastructure Organizational Models

The study employs a comparative approach to analyze the defense infrastructure organizational models of five nations: The United Kingdom, France, Germany, Australia, and Latvia. This method involves examining similarities and differences in organizational structures, international operations, responsibilities, and strategic focuses. Each nation's defense infrastructure model was studied as a case study, with a focus on understanding the nuances of their organizational structures, international operations, responsibilities, and strategic focuses. This method allowed for in-depth exploration and contextual understanding of each country's approach.

Information on the defense infrastructure organizational models of the selected nations was gathered, including organizational structures, international operations, responsibilities, and strategic focuses. The gathered data was compared and contrasted across the five nations to identify patterns, similarities, and differences in their defense infrastructure models. This analysis helped in understanding the various approaches and their effectiveness.
Key insights from the comparative analysis were extracted to provide a basis for formulating recommendations. Based on the identified insights, recommendations tailored to Georgia's specific needs in enhancing its defense infrastructure capabilities were developed. These recommendations address areas such as organizational structure, international operations, responsibilities and focus, modernization and strategy, and integration of departmental efforts.

1.1. United Kingdom: The Defense Infrastructure Organization (DIO)

The UK Ministry of Defense (MOD) possesses a varied land portfolio encompassing 220,000 hectares, equivalent to approximately 0.9% of the total landmass in the United Kingdom, with additional rights over an additional 204,000 hectares. This substantial landholding establishes the MOD as one of the foremost landowners in the country. Predominantly rural, exceeding 80% of the estate serves as venues for military training, with many areas carrying environmental designations necessitating specialized management. The built segment comprises naval bases, barracks, airfields, and other defense-related facilities. Furthermore, the MOD oversees 25 training estates situated across the globe (DIO 2017).
The establishment of the Defense Infrastructure Organization (DIO) in April 2011 marked a significant development within the Ministry of Defense (MOD), as it

unified the management of defense infrastructure under a single organization for the first time. The DIO, a part of the MOD, comprises around 5,000 professionals with diverse expertise, spanning town planning, digital content, estate surveying, airfield pavement management, accounting, forestry, specialized engineering, and various corporate head office functions (DIO 2017).
The DIO serves as the estate expert for defense, playing a crucial role in supporting the armed forces by planning, building, maintaining, and servicing infrastructure. The organization's responsibilities span a wide range of functions aimed at enabling defense personnel to live, work, train, and deploy effectively, both domestically and overseas.

Key responsibilities include planning and delivering major capital projects and lifecycle refurbishment initiatives to ensure the ongoing effectiveness and resilience of defense infrastructure. Additionally, the organization provides utility services to support various defense activities, ensuring the availability of essential resources for defense personnel.
Moreover, DIO manages soft facilities management aspects, such as cleaning and catering services, contributing to the overall well-being and efficiency of defense personnel. DIO is responsible for providing a safe place for defense personnel to train, emphasizing the importance of secure and effective training environments.

The organization also allocates Service Families Accommodation, recognizing the significance of providing suitable housing for military families. Furthermore, DIO procures and manages routine maintenance and reactive repair services to ensure the ongoing functionality and security of defense infrastructure.
Additionally, the organization maintains a central register of asset information, contributing to effective infrastructure planning and decision-making. DIO acts as the steward of the defense estate, overseeing and safeguarding the various elements of defense infrastructure.
Finally, DIO provides both physical and electronic security systems through its Security Services Group, emphasizing the importance of protecting defense assets (GOV UK n.d.).

DIO Strategy
The organization's strategy is outlined in its 2020-2030 report, focusing on becoming one cohesive team that provides excellent advice and outstanding delivery. The strategy addresses the evolving nature of global threats, including climate change and state aggressors, and highlights the need for resilience and transformation within the Defense Estate. Key areas of focus include implementing an asset management system, improving delivery to customers, and becoming an expert in sustainability, climate change, and the environment (GOV UK 2020).

Priorities and Modernization Efforts
DIO's priorities center around enhancing its capability to advise and deliver, with a specific focus on informed asset management and improved infrastructure planning.

The organization aims to modernize by embracing new technologies, utilizing digital systems more effectively, and optimizing the Infrastructure Management System (IMS). The emphasis on cross-cutting projects and continuous improvement across enabling functions like finance, commercial, people, and corporate services reflects a holistic approach to supporting DIO's customer capability needs.

The DIO plays a crucial role in overhauling accommodation services for UK Armed Forces families, marking a significant milestone with the introduction of new Future Defense Infrastructure Services (FDIS) contracts. These contracts, part of a £3 billion program, prioritize customer service and responsiveness, aiming to provide high-quality homes and community spaces for military families across the UK (Inside DIO Blog 2022).

In summary, the Defense Infrastructure Organization plays a vital role in ensuring the resilience, efficiency, and sustainability of defense infrastructure, with a commitment to ongoing modernization and transformation to meet evolving challenges.

1.2. France: The Defense Infrastructure Service (Service d'Infrastructure de la Défense/SID)

The Defense Infrastructure Service (Service d'Infrastructure de la Défense or SID) is a critical component of the Ministry of the Armed Forces in France, specializing in infrastructure and energy management. It serves as the ministerial reference for construction, property maintenance, control of non-stored energy, and administrative and technical management of assets.

The responsibilities and expertise of SID involve the management of one of the largest real estate portfolios in the French government. It is responsible for constructing, maintaining, and administering the entire real estate domain of the Ministry of the Armed Forces, both domestically and internationally.

The service supports the adaptation of infrastructure for the Armed Forces, directorates, and services across various locations. SID's operational contract entails meeting the infrastructure needs of the Armed Forces in diverse scenarios, including deterrence, external operations, and crisis prevention. SID oversees construction, renovation, and maintenance operations while focusing on cost control and adherence to deadlines.

The service actively manages and optimizes energy consumption in the ministry's real estate assets, incorporating sustainable development considerations into infrastructure projects. SID provides technical, administrative, and legal expertise to support the command of the Armed Forces, directorates, and services in their infrastructure-related needs.

The service actively contributes to local economic dynamism by supporting businesses and fostering partnerships in more than 210 municipalities. As the construction department of the ministry, SID conducts operations and acts as the contracting authority with service providers contributing to studies and construction.

SID has a territorial network close to the forces, addressing their needs through a decentralized structure. Key components include the Central Management in Versailles, the Center of Expertise for Defense Infrastructure Techniques (CETID), the National Defense Infrastructure Production Center (CNPID), seven SID establishments (ESID), and 51 Defense Infrastructure Support Units (USID). SID is an operational service involved in external operations to support French forces deployed abroad, managing infrastructure during deployment and long-term installation. Nine Defense Infrastructure Directorates, located overseas and abroad, execute SID missions to support sovereignty forces and prepositioned forces (MOAF n.d.).
In summary, SID plays a vital role in ensuring the construction, maintenance, and adaptability of defense infrastructure for the Ministry of the Armed Forces, both nationally and internationally, while actively contributing to local economic development.

1.3. Germany: Infrastructure, Environmental Protection, and Services (IUD)
The organizational unit known as Infrastructure, Environmental Protection, and Services (IUD – Infrastruktur, Umweltschutz und Dienstleistungen) plays a pivotal role within the Bundeswehr, serving as the largest civilian component with over 26,000 civilian and military positions. This unit is responsible for providing comprehensive services across the entire Bundeswehr, encompassing construction and maintenance of facilities, as well as statutory protective tasks such as occupational safety, environmental protection, and fire protection.

Key functions and responsibilities of the IUD include overseeing the construction and maintenance of approximately 1,500 military installations and more than 33,000 buildings, covering a vast area of over 260,000 hectares. It also provides statutory protective tasks that include occupational safety, environmental protection, and fire protection for the entire Bundeswehr.

IUD's service portfolio extends to catering and travel management, ensuring that these services are provided not only domestically but also for personnel serving abroad. The unit actively supports civilian operations abroad, playing a crucial role in ensuring the food supply and transportation services for service members deployed in theaters of operation.

The major organizational element comprises the Federal Office of Infrastructure, Environmental Protection, and Services (BAIUDBw) based in Bonn, the Bundeswehr Subsistence Office (VpflABw) in Oldenburg, Lower Saxony, and the Bundeswehr Firefighting and Fire Protection Centre (ZBrdSchBw) located in Sonthofen, Bavaria. Service provision at the regional level is facilitated by seven Centers of Expertise for Construction Management and six Centers of Expertise for Travel Management. Forty-two Service Centers (BwDLZ) located throughout Germany operate under the BAIUDBw, providing a comprehensive range of services. Seven Federal Republic of Germany Offices of Defense Administration abroad (BWVSt) in Belgium, France,

Italy, the Netherlands, Poland, the United Kingdom, and the United States cater to the needs of personnel serving abroad. Seven Field Offices of Defense Administration (EinsWVSt) are operated by BAIUDBw to provide support for service members deployed on operations (Bundeswehr n.d.).

In summary, the Infrastructure, Environmental Protection, and Services unit plays a crucial role in ensuring the effective functioning of the Bundeswehr by managing a diverse set of responsibilities, from construction and maintenance to protective tasks and support for operations abroad. The comprehensive service portfolio underscores its significance as a key organizational element within the Ministry of Defense.

1.4. Australia: The Infrastructure Division of the Security and Estate Group of the Department of Defense

The Infrastructure Division, operating as part of the Security and Estate Group, plays a pivotal role in Australia by managing the development, maintenance, and disposal of the Defense estate. This estate represents one of the largest real estate portfolios in the country, supporting over 90,000 personnel across all states and territories.

The division engages in comprehensive planning and construction activities, often projecting developments up to thirty years into the future.
The division is responsible for reviewing, developing, and constructing facilities and sites to effectively manage the Defense estate. It is involved in creating heritage and environment policies for all Defense properties in Australia, as well as those for Australian forces operating overseas.

The Capital Facilities and Infrastructure section of the division focuses on the planning and development of capital facilities and infrastructure essential to supporting Defense activities.
The Property Management section oversees the planning and management of divestment of surplus Defense properties, property acquisitions, leasing, and handling issues related to native title, offshore mining, and petroleum exploration.
The division is actively involved in initiatives related to the United States Force Posture and the Australia-Singapore Military Training Initiative (AGa n.d.).

Infrastructure and estate projects conducted by the division aim to maximize the potential of Defense-managed areas, ensuring ongoing capability, training, and support facilities.
Major capital works projects delivered by the Commonwealth require Parliamentary referral and/or approval via the Parliamentary Standing Committee on Public Works, in accordance with the Public Works Committee Act 1969 (AGb n.d.).

In essence, the Infrastructure Division is a multifaceted entity crucial to the strategic planning, development, and management of the extensive Defense estate in Australia, ensuring the provision of necessary facilities for the armed forces.

1.5. Latvian Defense Infrastructure: An Organizational Overview

Latvia's defense infrastructure stands as a testament to the nation's commitment to national security and preparedness. The organizational structure governing its development and maintenance ensures strategic planning, efficient resource allocation, and collaborative partnerships both domestically and internationally.

At the helm of infrastructure development is the Logistics and Defense Investments Policy Department of the Defense Ministry. This department serves as the nexus for gathering the needs of the National Armed Forces (NBS) and formulating comprehensive plans for the construction of new facilities and the upkeep of existing real estate. Working in tandem with the State Defense and Military Procurement Centre (VAMOIC), which handles the construction, management, and execution of environmental protection initiatives within the defense sector, the department oversees the implementation of vital infrastructure projects aimed at bolstering the nation's security (MOD of Latvia n.d.).

One of the primary focuses of infrastructure development is the enhancement of key military bases, notably Ādaži and Lielvārde. These bases play a pivotal role in hosting critical operations, including the NATO Battlegroup, underscoring their strategic importance. Major construction projects, supported by substantial funding allocations, have been launched to fortify these bases, including the construction of multi-functional barracks, sports complexes, and administrative buildings.

Despite owning a considerable portfolio of real estate, many structures within the Ministry of Defense exhibit signs of aging, prompting a gradual transition toward modernization. The demolition of outdated facilities and the construction of new ones are central to this endeavor, aimed at improving operational efficiency and overall security standards.

External funding sources play a significant role in financing infrastructure projects. Contributions from the NATO Security Investment Program (NSIP), the United States-European Deterrence Initiative (EDI), and partnerships with countries like Luxembourg provide essential financial support, enabling Latvia to strengthen its defense capabilities and fulfill its obligations as a host state.

Cooperation with local municipalities further enhances infrastructure development efforts, facilitating projects such as road reconstruction and environmental cleanup. Additionally, the integration of national financing ensures the continuity of construction projects and the provision of necessary infrastructure to support the National Armed Forces and allied forces.

Looking ahead, the organizational structure governing Latvian defense infrastructure remains focused on key priorities. These include the provision of infrastructure for hosting the NATO Battle Group, the implementation of NSIP projects, and the development of National Guard bases. Investments in training infrastructure, including shooting ranges and support facilities, underscore Latvia's commitment to enhancing its defense readiness and capabilities (MOD of Latvia n.d.).

In conclusion, Latvia's defense infrastructure thrives under a robust organizational framework characterized by strategic planning, collaborative partnerships, and a commitment to modernization. Through sustained efforts and partnerships both domestically and internationally, Latvia stands poised to further strengthen its defense capabilities and contribute to regional security and stability.

1.6. Comparative Analysis of Defense Infrastructure Organizational Models: Similarities and Differences

Organizational Approach

- *United Kingdom:* DIO operates as a unified organization within the MOD, with a centralized structure.
- *France:* SID employs a decentralized structure with various centers, establishments, and overseas directorates.
- *Germany:* IUD operates as the largest civilian element within the Bundeswehr, with regional centers of expertise and decentralized support units.
- *Australia:* The Infrastructure Division operates as part of a larger group, focusing on comprehensive planning and construction, reflecting a centralized approach.
- *Latvia:* The Logistics and Defense Investments Policy Department collaborates with the National Armed Forces and the State Defense and Military Procurement Centre to develop defense infrastructure, emphasizing strategic planning and efficient resource allocation.

International Operations

- *United Kingdom:* DIO primarily focuses on domestic infrastructure management.
- *France:* SID actively engages in external operations, supporting French forces abroad.
- *Germany:* IUD supports operations abroad, contributing to local economic development.
- *Australia:* The Infrastructure Division actively participates in international initiatives, including military training programs.
- *Latvia:* Latvian defense infrastructure development includes collaboration with international partners, particularly through funding from sources like NSIP and EDI, to strengthen defense capabilities and fulfill host state obligations.

Responsibilities and Focus

- *United Kingdom:* DIO's responsibilities cover a wide range, from major capital projects to soft facilities management.
- *France:* SID's focus includes construction, maintenance, and energy management with a strong emphasis on sustainability.

● *Germany:* IUD provides comprehensive services, including protective tasks, catering, and travel management.
● *Australia:* The Infrastructure Division emphasizes estate planning, environmental policies, and international military training initiatives.
● *Latvia:* Latvia's defense infrastructure focuses on enhancing key bases, modernizing aging structures, and supporting future NATO initiatives, reflecting a commitment to defense readiness and regional security.

Modernization and Strategy

● *United Kingdom:* DIO's strategy includes modernization efforts, digital systems, and resilience against evolving threats.
● *France:* SID focuses on technical expertise, sustainability, and economic dynamism.
● *Germany:* IUD emphasizes ongoing capability enhancement, training support, and strategic planning.
● *Australia:* The Infrastructure Division is involved in ongoing modernization and strategic planning, projecting developments up to thirty years into the future.
● *Latvia:* Latvia's defense infrastructure strategy prioritizes modernization and collaboration with international partners to strengthen defense capabilities and contribute to regional stability.

In summary, while each defense infrastructure model prioritizes the effective management of resources and infrastructure, differences in organizational structures, international operations, specific responsibilities, and strategic focuses highlight the unique approaches of the United Kingdom, France, Germany, Australia, and Latvia.

2. Current Landscape of Defense Infrastructure Organization in Georgia

2.1. Department of Defense Sustainability: Enhancing Security and Operational Efficiency

The Department of Defense Sustainability within the Ministry of Defense of Georgia plays a crucial role in fortifying the defense capabilities of the country, with a particular emphasis on infrastructure-related processes. The charter of the Department outlines the multifaceted responsibilities assigned to the department, aligning its efforts with the broader goal of ensuring the resilience of the Defense Forces and fostering interoperability with NATO.

One of the paramount tasks assigned to the department is the formulation of the infrastructure system development policy for the entire ministry. This includes defining a strategic-conceptual framework for effective infrastructure management, determining key directions for infrastructure development, and identifying

priorities for long-term infrastructure projects. The department is charged with the responsibility of developing recommendations based on the analysis of experiences gained in the field, aiming to continually improve the infrastructure system.

The competencies of the infrastructure management division within the department are pivotal in achieving these objectives. This division is tasked with not only developing the infrastructure system development policy but also actively monitoring its implementation. By coordinating the process of developing the infrastructure program budget, the division ensures that the allocated resources align with the strategic goals of infrastructure enhancement.

Furthermore, the standardization management division focuses on establishing a NATO-compatible standardization management system, specifically in the context of infrastructure. This involves developing policies for the system's development, ensuring its proper functioning, and coordinating consultation and training activities. The division collaborates with national and international organizations to implement the standardization management system for infrastructure, identifying and overcoming challenges related to standardization and compatibility.

In parallel, the logistics policy section operates with a keen eye on infrastructure. It is tasked with developing national principles and policies for logistics, emphasizing interagency cooperation in the development of logistics systems. By monitoring the interaction and interoperability of structural units involved in the logistics system, the section ensures the seamless integration of infrastructure elements. Recommendations for logistics system development are drawn based on international experience, contributing to sustainability and readiness.

The codification section, the fourth structural unit, contributes significantly to infrastructure-related processes. Responsible for developing the codification management system, introducing a unified codification catalog, and organizing relevant training courses, this section ensures that infrastructure elements are efficiently cataloged and managed (MOD 2022).

In conclusion, the Department of Defense Sustainability in Georgia's Ministry of Defense is at the forefront of fortifying the country's defense capabilities through strategic infrastructure development. The integration of various divisions and sections with explicit responsibilities for infrastructure-related processes underscores the department's commitment to fostering a robust and resilient defense infrastructure.

2.2. Navigating the Future: The Strategic Role of the J-4 Logistics Planning Department

Nestled within the intricate framework of the J-4 Logistics Planning Department of the General Staff of the Defense Forces of Georgia, the Infrastructure Planning

Division emerges as a specialized entity dedicated to the orchestration of pivotal infrastructure-related processes. This division shoulders a spectrum of competencies crucial for steering the Defense Forces toward enhanced operational efficacy and resilience.

At the heart of the division's mandate lies the astute ability to identify and delineate the primary directions for the development of infrastructure. This discernment is carefully calibrated to align seamlessly with the overarching Strategic Development Plan of the Defense Forces. By setting strategic priorities, the division becomes an architectural visionary, shaping the infrastructure landscape in concordance with broader defense objectives.

Delving into the realm of foresight, the division is tasked with crafting comprehensive long-term plans for infrastructure facilities. This spans the spectrum from construction to design and repair, ensuring a holistic approach to infrastructure development. Through meticulous planning, the division seeks to fortify the foundations of functionality, fostering facilities that stand the test of time and evolving operational needs.

Acknowledging the intrinsic interplay between infrastructure and vital resources, the division extends its influence into offering recommendations for the provision of heating and energy resources to infrastructure facilities. This foresighted approach ensures that the facilities not only stand robust but are equipped to navigate the complexities of energy demands, thereby enhancing sustainability (MOD 2021a).

In summary, the Infrastructure Planning Division stands as a beacon of strategic prowess within the broader landscape of defense logistics. Its commitment to strategic and long-term planning, coupled with the nuanced provision of recommendations for crucial resources, underscores its indispensable role in fortifying the infrastructure backbone of the Defense Forces. By navigating the intricate intersection of vision and pragmatism, the division propels the Defense Forces toward a future marked by resilient and strategically aligned infrastructure capabilities.

2.3. Logistics Empowerment: A Pillar of Defense Forces Infrastructure

The Command for Logistics Support of the Troops within the Defense Forces stands as a linchpin in the realm of infrastructure-related processes, with a steadfast focus on the effective provisioning, management, and maintenance of essential resources. This pivotal command shoulders a range of tasks and functions intricately tied to infrastructure, ensuring the seamless operation and sustenance of critical assets.

The command is entrusted with the responsibility of ensuring the timely and comprehensive provision of essential property to ministry subdivisions. This mandate extends across diverse situations, necessitating meticulous planning and adherence to relevant requirements. A critical facet involves accounting for

immovable property and implementing measures for its effective management and maintenance, which is given meticulous oversight by the command.
Collaborating with entrepreneurs, the command orchestrates the gradual repair of material and technical facilities within ministry units. This strategic approach ensures that infrastructure remains operational, supporting the sustained functionality of Defense Forces assets. The command assumes control over the intricate web of electrical, thermal, water supply, sewage, natural gas, and other engineering networks within ministry facilities. This encompasses not only monitoring but also meticulous accounting for utility expenses, ensuring efficient resource utilization.

In line with its comprehensive infrastructure-related role, the command spearheads construction, repair, and emergency work on relevant objects falling within the ambit of the ministry's competence. This proactive approach contributes to the ongoing enhancement of infrastructure capabilities. The command extends its influence into design and construction activities within the Ministry system. This holistic involvement reinforces its commitment to shaping and evolving the infrastructure landscape to meet evolving needs.
As the custodian of Defense Forces infrastructure, the command takes charge of ensuring smooth relations pertaining to the registration of real estate. This involves navigating legal and administrative intricacies to uphold the integrity of property records (MOD 2014).

These tasks collectively underscore the command's pivotal and multifaceted role in steering infrastructure-related aspects. By emphasizing the efficient logistics and management of property, the Command for Logistics Support of the Troops fortifies the operational readiness and capabilities of the Defense Forces. It stands as a testament to the critical nexus between effective infrastructure management and the overarching success of defense operations.

3. Identification of Key Areas for Improvement in Georgia's Defense Infrastructure Organizational Model

Georgia's defense infrastructure plays a critical role in fortifying the country's security and operational efficiency. To enhance its capabilities, it is crucial to analyze successful defense infrastructure models globally and identify key areas for improvement. Drawing insights from the comparative analysis of the United Kingdom, France, Germany, Australia, and Latvia, Georgia can develop a nuanced strategy tailored to its specific needs.

Here are recommendations and key areas for improvement:
Recommendation 1 – Establish a Dedicated Defense Infrastructure Organization as a Centralized Unit with Regional Adaptations:
Georgia can consider centralizing its defense infrastructure management, following

the UK's centralized model. This promotes streamlined coordination and efficient resource allocation. It is advisable to detach the infrastructure function from the Command for Logistics Support of the Troops and establish a separate Defense Infrastructure Organization (DIO), considering creating a legal entity of public law for this purpose.

The DIO would specifically focus on undertaking infrastructure-related functions currently provided by the Command for Logistics Support of the Troops, including design and construction activities, registration of real estate, forming infrastructure requirements, managing and maintaining real estate, providing communal and household conditions, offering bath-laundry services, and overseeing engineering networks and utility costs. Addressing the identified shortcoming of lacking a dedicated structural unit for infrastructure development, the establishment of the DIO aligns with international best practices, as highlighted by the comparative analysis. The DIO would have a comprehensive mandate, planning and conducting day-to-day infrastructure-related activities and supporting the Defense Forces throughout the lifecycle of infrastructure projects, from acquisition to disposal.

While the Department of Defense Sustainability focuses on policy development and monitoring, the DIO would complement these efforts by executing operational tasks, and conducting day-to-day infrastructure-related activities to support the Defense Forces "by enabling military capability through planning, building, maintaining and servicing infrastructure over the lifecycle of acquire, operate, maintain and dispose of," (MOD UK 2020, 36) thereby ensuring a more efficient and streamlined approach to defense infrastructure. The DIO will be entrusted with *managing the infrastructure program budget, with its Head serving as the program manager.*

It is worth mentioning that the lack of a specific department tasked with overseeing infrastructure development and conducting day-to-day infrastructure-related activities within the Ministry of Defense was identified as a deficiency in the findings of the State Audit Office's assessment of real estate management effectiveness in 2019 (SAO 2019). While the Department of Infrastructure Management, Standardization, and Codification was founded in 2021 (later renamed as the Department of Defense Sustainability), its responsibilities, as mentioned earlier, focus on formulating policy for Ministry infrastructure system development and overseeing its execution, rather than directly managing day-to-day infrastructure-related tasks (MOD 2021b).

The Department of Defense Sustainability, particularly its infrastructure management division, will assess the requirements of the Georgian Defense Forces (GDF) and develop or review policies for infrastructure system development in alignment with the overall Ministry of Defense policy. Moreover, it will actively supervise the implementation of these policies. Through coordinating the development of the infrastructure program budget, the division will ensure that the allocated resources align with the strategic objectives of infrastructure improvement.

As for the Command for Logistics Support of the Troops, it will concentrate on delivering logistical support to Defense Forces units during peacetime and wartime. It will serve as the primary operational unit for the logistical function, aiming to centralize the administration of limited resources and guarantee their distribution to tasks of utmost importance.

By establishing a dedicated Defense Infrastructure Organization, Georgia can enhance its infrastructure management capabilities, align with international models, and address the identified shortcomings in the current organizational structure. This separation of functions allows for a more specialized and effective approach to infrastructure planning, development, and maintenance within the Ministry of Defense (Okromtchedlishvili 2022).

It is recommended to establish the Defense Infrastructure Organization (DIO) as a centralized unit operating under the legal framework of a public law entity within the Ministry of Defense. Drawing inspiration from the United Kingdom's successful DIO, this centralized structure will streamline operations and ensure cohesive management of defense infrastructure projects.

Furthermore, it is advisable to incorporate regional adaptations inspired by France's decentralized model. By decentralizing certain functions or establishing regional branches, Georgia can better address localized needs and ensure the efficient allocation of resources across diverse geographical areas. This hybrid approach, combining the centralized framework of the UK's DIO with the regional flexibility of France's model, will allow for greater responsiveness to both national and regional defense infrastructure requirements.

Responsibilities and functions of the DIO will include:

- *Planning and Delivery:* Planning and executing major capital projects and lifecycle refurbishment initiatives to ensure the ongoing effectiveness and resilience of defense infrastructure.
- *Utilities Services:* Providing utilities services to support various defense activities, ensuring the availability of essential resources for defense personnel.
- *Soft Facilities Management:* Managing soft facilities management aspects, such as cleaning and catering services, contributing to the overall well-being and efficiency of defense personnel.
- *Safe Training Environments:* Providing a safe place for defense personnel to train, emphasizing the importance of secure and effective training environments.
- *Service Families Accommodation:* Allocating Service Families Accommodation, recognizing the significance of providing suitable housing for military families.
- *Routine Maintenance and Reactive Repair:* Procuring and managing routine maintenance and reactive repair services to ensure the ongoing functionality and security of defense infrastructure.

● *Asset Information Management:* Maintaining a central register of asset information, contributing to effective infrastructure planning and decision-making.
● *Stewardship of the Defense Estate:* Acting as the steward of the defense estate, overseeing and safeguarding the various elements of defense infrastructure.
● *Unarmed Guarding Service and Security Systems:* Providing both physical and electronic security systems, emphasizing the importance of protecting defense assets.

By implementing this organizational structure and delineating clear responsibilities and competencies, Georgia can enhance its defense infrastructure management capabilities, ensuring a more streamlined and efficient approach to infrastructure planning, development, and maintenance within the Ministry of Defense. Additionally, incorporating regional adaptations will allow for a tailored approach to address diverse defense infrastructure needs across different regions of the country. Establishing regional centers or directorates of the DIO would address local nuances, ensuring a more tailored approach to diverse defense infrastructure needs.

Recommendation 2 – Adopt a Comprehensive Approach with Emphasis on Sustainability, Digital Systems and Technical Expertise:
Georgia can adopt a comprehensive approach similar to the United Kingdom, covering major projects, soft facilities management, and strategic planning. The state should prioritize modernization efforts akin to the United Kingdom, emphasizing digital systems, informed asset management, and resilience against evolving threats. This ensures a holistic defense infrastructure strategy.

Emphasizing sustainability in line with France's model can prepare Georgia for long-term effectiveness and resilience in the face of environmental and geopolitical challenges. Incorporating France's focus on technical expertise will build a skilled workforce capable of managing complex defense projects, enhancing overall effectiveness.

Recommendation 3 – Actively Participate in Internal and External Operations and International Initiatives:
Following Australia's example, Georgia can explore active participation in international initiatives, strengthening capabilities and fostering diplomatic ties.
Learning from France's active engagement in external operations, Georgia can assess the potential benefits of international collaborations. Establishing capabilities to support operations abroad could enhance Georgia's strategic influence and contribute to global security efforts.
Georgia may explore collaboration with businesses and local economic development initiatives, similar to Germany. This approach not only strengthens defense capabilities but also fosters economic growth, creating a symbiotic relationship between defense infrastructure needs and local businesses.
Georgia can learn valuable lessons from Latvia's expertise in obtaining international financial assistance for the development of defense infrastructure.

Recommendation 4 – Ensure Integration of Efforts for Synergistic Effect:
Ensure seamless coordination between the Department of Defense Sustainability, the J-4 Logistics Planning Department, and the Defense Infrastructure Organization (if established), creating a collaborative environment for strategic planning and implementation.
Within the Department of Defense Sustainability, enhance collaboration between the infrastructure management division, standardization management division, and codification section to ensure efficient cataloging and management of infrastructure elements.

Conclusion

In conclusion, this in-depth exploration of defense infrastructure organizational models, both on a global scale and within the specific context of Georgia, yields valuable insights for strengthening the country's operational efficiency and effectiveness in defense infrastructure management.
The comparative study of defense infrastructure organizations in the United Kingdom, France, Germany, Australia, and Latvia presents a diverse array of strategies and structures that can be tailored to meet Georgia's distinct requirements. The establishment of a dedicated Defense Infrastructure Organization, active engagement in external operations, adoption of a comprehensive approach, emphasis on sustainability, and strategic modernization efforts collectively lay a robust foundation for enhancing Georgia's defense infrastructure.

In synthesizing insights from the United Kingdom, France, Germany, Australia, and Latvia, Georgia can craft a nuanced strategy for enhancing its defense infrastructure capabilities. A centralized yet adaptable organizational structure, a focus on sustainability, active participation in international collaborations, and an emphasis on ongoing modernization and strategic planning are key takeaways. By leveraging these insights and aligning defense infrastructure organization with international best practices, Georgia can fortify its defense infrastructure to effectively address contemporary security challenges and contribute to regional and global stability.
As Georgia navigates the complexities of the future security landscape, the opportunity arises to craft a nuanced strategy, drawing inspiration from international best practices while considering its unique context. Through these concerted efforts, Georgia can propel its defense infrastructure toward resilience, adaptability, and effectiveness in safeguarding the nation's interests.

Disclaimer
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