

# DEMANDS OF THE MARINE OPERATING GROUPS DURING THE MINUSTAH: CONTRIBUTIONS TO THE BRAZILIAN DEFENSE INDUSTRIAL BASE <sup>1</sup>

Ana Carolina Aguilera Negrete<sup>2</sup>

Eduardo Rodrigues de Sousa<sup>3</sup>

## ABSTRACT

Based on the study of the importance of Marine Material Command (CMatFN) in improving the materials used by Marine Operative Groups (GptOpFuzNav) in the United Nations Stabilization Mission in Haiti MINUSTAH, this article presents the contributions of Peace Operations under the aegis of the United Nations (UN) for the development of the productive and technological capacity of the Brazilian Defense Industrial Base (DIB), through the role of military demand in the process of the acquisition of means and operative equipment specifically used in these Operations. The theoretical reference used in this research was the Innovation Systems (SI) approach and its application focused on military production. Through bibliographic research and collection of secondary and primary data, some lessons from MINUSTAH from an economic point of view can be observed, such as the existence of a potential purchasing market in the UN system, still little explored by Brazilian companies and a strong relationship of dependence between these companies and the military client for the development of innovations, which hinders a greater performance in the purchasing system.

**Keywords:** Peace operations. Defense industrial base. Military demand.

---

<sup>1</sup>The authors thank the theoretical contributions and suggestions of the Captain of Sea and War (FN) Marcelo Ribeiro de Figueiredo, of the Captain of Sea and War (FN) José Guilherme Viegas, of the Frigate Captain (IM) André Reis Ferreira, of the Frigate Captain (FN) Gilmar Diogo Guedes and of the Corvette Captain (FN) Fernando Bellard Abdo. However, the authors are responsible for all the content presented.

<sup>2</sup>Dr. at Naval School (EN), Rio de Janeiro, RJ, Brazil. Email: anacarolina\_aguilera@yahoo.com.br

<sup>3</sup>MSc e CC (FN) of the Marine Material Command (CMatFN), Rio de Janeiro, RJ, Brazil. E-mail: capeduardofn@gmail.com

## INTRODUCTION CONTEXTUALIZATION OF THE THEME

The investigation theme of this paper is the study of the contributions of Peace Operations under the aegis of the United Nations Organization (UN) for the development of the productive and technological capacity of the Brazilian Defense Industrial Base (DIB), through the role of the military demand in the process of acquisitions of means, weapons and operative equipment. Used by the Marine Operative Groups (GptOpFuzNav), in the United Nations Stabilization Mission in Haiti MINUSTAH, from 2004 to 2017. These contributions will be analyzed through secondary and primary data. The samples used and modeled refer to purchases achieved by the Marine Material Command (CMatFN) of specific items for this mission.

According to the Ministry of Defense (2013), a Peace Operation (OpPaz) consists of the presence of the United Nations (UN), or another institution authorized by it, integrating civil and military components, in a conflict area or region, for implementing or monitoring the application of resolutions and agreements in relation to the conflict control. It may also be there to provide and ensure the distribution of humanitarian aid. A Peace Operation is essentially aimed at preserving, containing, moderating and ending hostilities between or within states. It seeks to cooperate with the efforts of the affected region or country to pursue political, economic and social restructuring through the peaceful intervention of an internationally organized and directed third party. For this purpose it employs multinational military forces, police forces and civilian elements.

For Hamann and Ramires (2017), Brazilian participation in UN missions can be presented in four phases: (1st) starts as a pioneer and includes the deployment of five Brazilians to the Balkans (1947-1949) and a battalion to the Suez (1956-1967); (2nd) comprises the period from 1968 to 1989 and was marked by the absence of Brazilians in missions of international organizations, since the period coincided with the military regime in Brazil; (3rd) from 1990 to 1999, marks the return of Brazil to multilateral operations, by sending military observers, staff officers and police on an individual mission, as well as sending troops to Angola, Mozambique and East Timor; and (4th) from 2000 to 2017, which is considered the most important in the history of Brazilian participation in UN missions, due to the size of Brazilian contingents and, mainly, to

the strategic functions performed by them in their important missions: the United Nations Interim Force in Lebanon (UNIFIL) and the United Nations Stabilization Mission in Haiti (MINUSTAH).

In the last decade, the defense sector has gained more relevance in the Brazilian government's public policies agenda. To revitalize the Brazilian industry defense, the government instituted in 2005 the National Industry Defense Policy (PNID), proposing a reduction in the tax burden and encouraging the improvement of the technological quality of Brazilian defense industry products (Brazil, 2005). But it was with the National Defense Strategy (END), published in 2008, that the government systematized important points for the revitalization of this industry, such as the preference of defense materials from countries committed to technology transfer (END, 2008).

The current Brazilian industrial policy encompasses the defense industrial complex in the structuring guideline for expansion and the creation of new technological and business skills. It includes the encouragement of activities and companies with potential for the technological development of interest to the National Defense, as well as the use of the state purchasing power to sustain the development and growth of business. In this context, the Ministry of Defense (MD) created the National Defense Equipment and Articulation Plan (PAED) in 2012<sup>4</sup>, which became the Armed Forces' main program to serve the industry, with the refitting and updating of defense materials planned to be executed between 2012 and 2030 (Brazil, 2012).

Regarding the process of purchasing defense products from the Armed Forces, END Guideline No. 22 (2008) stresses: "The formulation and execution of the defense products procurement policy will be centralized at the Ministry of Defense, under the responsibility of a secretariat of defense products, delegation allowed in their execution "(BRASIL, 2008,

---

<sup>4</sup> The National Defense Equipment and Articulation Plan (PAED) 2012, in the specific case of the Brazilian Marine, has the following priority projects plan: (1) Submarine Development Program (PROSUB): development and production of five submarines, being four conventional and one nuclear-powered; (2) Surface Media Obtaining Program (PROSUPER): construction of five escort vessels, five ocean patrol vessels and one logistical support vessel; (3) Aerodrome Procurement Program (PRONAE): construction of two aerodrome vessels; and (4) Blue Amazon Management System (SisGAAZ): monitoring and control of Brazilian waters with priority on deepwater (pre-salt) oil reserves. It is important to highlight that after 2012, as provided by Law No. 136/2010, the Executive has the responsibility of forwarding to the National Congress, every four years, updated versions of the National Defense Policy (PND), the END and the National Defense White Paper (LBDN).

p.18). The Secretariat of Defense Products was activated in 2011, but in practice there are three “purchasing systems” coordinated by the MD, one for each Force. In addition, the three Forces have their own military procurement regulations. In the case of the Brazilian Navy (MB), the Navy Staff (EMA) - 420 (Material Logistics Standards under the MB); and the Marine Corps General Command (CGCFN) - 12 (Processes and Standards for the Administration of Marine Corps Material) regulate the matter.

The remainder of the paper is organized as follows: Section 2 presents a review of the literature on military innovation systems and the role of military demand for developing the productive and innovative capabilities of the defense industrial base, in a systemic approach. Section 3 describes Brazil’s participation in the United Nations Stabilization Mission in Haiti (MINUSTAH), from 2004 to 2017; while section 4 highlights the main means and equipment used and presents an analysis of the data regarding Brazilian Government purchases related to Brazilian participation in this mission. This section aims to highlight the role of military demand for the development of IDB-related companies. In the last section the main conclusions of the research will be presented.

## **2. THEORETICAL APPROACH ABOUT INNOVATION SYSTEMS (IS) AND ITS APPLICATION IN ACTIVITIES RELATED TO THE MILITARY PRODUCTION**

The research analyzes the Brazilian participation in the United Nations Stabilization Mission in Haiti (MINUSTAH), from 2004 to 2017. It aims to indicate conclusions about the role of military demand in the material purchasing process used in this mission for the development of the productive and innovative capacity of the Brazilian Defense Industrial Base (DIB), under a systemic approach. In this sense, the Innovation Systems approach was adopted as a theoretical framework and the specificities of the military innovation system and the role of military demand in this process were used as tools. A review of the literature related to these topics will be presented below.

### **2.1. INNOVATION SYSTEMIC APPROACH**

According to Lastres and Cassiolato (2003), the Innovation System (SI) comprises a “set of distinct institutions that together and individually contribute to the development and diffusion of technologies”. It considers

innovation as the force that keeps and stimulates companies. The concept of National Innovation Systems (SNI) is used as a way of visualizing the relationships between agents from all economic and social spheres. It encompasses several subsystems, which enables the analysis of phenomena in an even more fragmented, local and sectoral way<sup>5</sup> (FREEMAN, 1982; 1995; NELSON (1993; 1996) AND LUNDEVALL (1992).

The usefulness of the concept of 'national innovation systems' lies in the fact that it explicitly addresses important issues, ignored in older models of technological change - specifically the diversity one and the role of intangible investments in innovative learning activities. In addition - and based on the consideration that significant diversity exists across countries and institutions in the form, level and pattern of learning investments - a particular focus is placed on the links between institutions and their structures for incentive and capacitation. At a more decentralized level, regional, state and local innovation systems have been devised (CASSIOLATO and LASTRES, 2000 apud LESKE, 2013, p. 25).

According to Cassiolato et al (2002), the ability to generate and use knowledge is widely recognized as the most important element supporting the competitiveness and growth of firms and countries. As emphasized by the evolutionary theory of innovation, knowledge creation and diffusion are key sources of sustaining economic dynamics. Firms are at the center of this process, but they are not the only agents. Interactions between firms and between them and other organizations (including aspects such as education, training, research and development, financing and policies), as well as the regulatory, legal and institutional framework, play an important role in the process of knowledge creation

---

<sup>5</sup> As emphasized by LESKE (2013, p.24), the ideas contained in the concept of Systems Innovation (SNI) dates back to the Frederich List (1841) and were developed as the basis for the strategy of leveraging industrialization and economic growth, focusing its analysis on the development of the productive forces and the allocation of resources. For the author, the central idea of SNI is related to the importance of companies and Institutions for the performance of economy.

and dissemination. The innovation systems approach seeks to embrace this complexity (CASSIOLATO et al, 2002).

## 2.2. SPECIFICITIES OS THE MILITARY INNOVATION SYSTEM THE MILITARY DEMAND

Molas Gallart (2011) defines “Military Innovation System” as the set of institutions and other actors (mainly defense-related industry), and the relationships between themselves, who play a direct role in the development of military technologies, ie, technologies developed or adapted for use by the Armed Forces. He believes that the military innovation system is in a profound process of change, and industrial policies must respond to this “systemic” change. He uses the argument that the system is “expanding”: the close and stable relationships that connected a relatively small network of military agencies and companies specializing in military production are giving way to new actors and new institutions within a broadly defined field defined as “defense and security”. He summarizes these changes by focusing on the technological dynamics, then analyzing how strategic change is also influencing a transition in the military Innovation System.

A crucial part of the Military Innovation System is formed by the defense-related industries, which guide at least a portion of their activity, production and/or service delivery which, in part or in whole, have to be adapted, or designed especially for the use of military customers<sup>6</sup>. The group of companies that constitute this system is very broad and diverse, not clearly defining an industrial sector. However, the companies specialized in military production, with their clients from the Armed Forces and Ministries of Defense, have developed, during the second half of the twentieth century, a characteristic Innovation System.

According to Schmidt and Assis (2013), issues related to defense purchasing constitute a strand of defense economics studies which have focused on the efficiency challenges posed by this process. The growing interest would be justified by the size of defense budgets and the promise of peace dividends, which resulted in making defense purchases an inviting field for testing new propositions.

Markowski and Hall (1998) state that researchers have recognized

---

<sup>6</sup>For a detailed analysis of the different ways of defining the “military industry” and the implications of selecting one or the another definition, see Molas-Gallart, J. (1992). *Military Production and Innovation in Spain*. Chur, Harwood Academic Publishers.

that such processes are marked by challenges, such as complexity, the intensive nature of technology systems, the long periods involved in purchasing and their uncertainty. In any case, the acquisition of defense materials will always be limited to the national defense policy and to the strategic choices of each country.

Also according to the authors, the use of domestic sources for the supply of defense equipment and consumer goods has long been encouraged in most countries under the argument of self reliance. However, they question how much it is desirable in small countries, since the encouragement of 'national champions' at the expense of competition can stifle the dynamism of the domestic industry. The point made by the authors is that in order to achieve a desired level of self reliance, defense planning must not only address the structure requirements of the Armed Forces, but also determine what "defense-related industrial capabilities" really means. For issues such as defining which services and manufacturing sectors are endogenously needed to equip and support force elements, they should receive special attention.

In this sense, Schmidt de Assis and Rocha (2013) state that in the countries of the North Atlantic Treaty Organization (NATO), long-term industry strategies seem to have fallen into basically two categories: Some companies have narrowed the scope of their military involvement to focus on fewer defense products. Others have diversified their production, expanding defense capabilities and reducing their dependence on a determined product. These business strategies reflected a shared understanding of the new environmental context, where the emphasis shifted from a high volume of production of new defense systems for maintaining the technological superiority, through research and development (R&D) and demonstration technologies.

Other contemporary features of the sector highlighted by the authors are the continued application of new weapon technologies, in addition to a specially rapid rate of technological change in electronics, materials and software (Markowski and Hall, 1998). These details impact the purchases of the sector, as well as the growing demand for new requirements, which have surpassed the character of technical specifications to incorporate functional and performance attributes such as operational availability, security and interoperability, among others (SCHMIDT, DE ASSIS AND ROCK, 2013).

In this context, the authors point out that more challenges arose for



the specification of proposals and their evaluations, requiring innovation in the purchase process itself. In fact, in a context in which the production of major weapon platforms and systems is an economically viable option for only a limited group of countries, due to small and infrequent demands, many states can only sustain a critical industrial and technological mass by exporting, or by participating in consortia of other nations in a process. According to Markowski and Hall (1998), these processes are shifted from the emphasis of self reliance of actual production to the endogenous maintenance capacity through upgrading, logistical support and control of weapons and intelligence of embedded systems. Faced with a very small or even infrequent demand to induce industry to invest in such capacities, the government should offer incentives to encourage firms to make such investments, recognizing the broad sunk cost component that this entails.

Molas-Gallart (1998), however, distinguishes between the possibilities of using military equipment purchasing power between different countries. For the large developed countries, which are on the frontier of military technological development, purchases would be linked to the development and production of new systems and purchasing policy should provide the best ways to finance, monitor and possibly manage the development of new technologies and products. Smaller countries, unable to acquire the latest generation of military systems, should in turn make one choice: decide to acquire foreign systems at the best economic terms or, alternatively, use the purchasing to build a domestic industrial and technological base.

Based on the literature review presented, we may conclude that new players are entering the defense markets, while organizations, which until recently were characterized by specialization in the military area, are expanding their activities to the security markets and, generally, to civil markets. The main contribution of this literature review is to serve as a theoretical basis for the analysis of Brazilian participation in MINUSTAH, considering that the identification of the functionalities of the systems used by the Brazilian troops and of other countries, in these UN missions, contribute to the dissemination of Brazilian defense industry products, which provides opportunities for future IDB product negotiations. One of the important issues for IDB development is the identification of these activities and industries, as well as their relative importance within a much broader group of defense and security-relevant industries.



### 3. PARTICIPAÇÃO DO BRASIL NA MINUSTAH (2004 – 2017)

According to Floriano Peixoto (2017), the historical synthesis of Brazilian participation in the UN-led multinational context in meeting Haiti's emergency needs begins in the early months of 2004. At that time, the Brazilian Army Commander established a dialogue with the Commander of the Southern Command of the United States of America (USA). This contact aimed to raise awareness of the situation to be presented to the Brazilian Ministries of Defense and Foreign Affairs, regarding the terrestrial demands that could be operationally and logistically fulfilled. This rapprochement resulted in the two-week reconnaissance trip of the Forces to Haiti, organized by the MD. On this occasion the Strategic Area Survey (LEA) was conducted, on which planning for a possible deployment of Brazilian troops began. At the same time, efforts with Itamaraty were being made to analyze and approve the situation.

Some findings made explicit in the LEA deserve to be highlighted:

divided posture of the Haitian population in relation to stabilization forces; deactivation of the National Armed Forces; inefficiency of the Haitian National Police (PNH); country situation as regional drug warehouse; feeling of national pride of the population; sympathy of the Haitian people towards Brazil; precariousness of local infrastructure; limitation of the communication network to the cellular mode; decay of the hospital network; radio predominance as a means of social communication; and the lack of security as a major concern of the population.

We can consider that Brazil's trip to Haiti was a prompt response of the State to the UN-led international demand, given the need to lend national capacity to a country in total economic, social and security degradation. The United Nations Security Council (UNSC) Resolution 1542 of April 2004 established the United Nations Stabilization Mission in Haiti (MINUSTAH) and determined the employment of troops under the aegis of Chapter VII of the UN Charter, setting as priorities: the maintenance of a safe and stable environment; support for the political process; and respect for human rights. On May 29, 2004, the first Brazilian troops arrived at Port-au-Prince (FLORIANO PEIXOTO, 2017).

The political and humanitarian crisis that was the context in Haiti in the beginning of 2004, in the light of the departure of Jean Bertrand Aristide from the Presidency of the Republic, culminated in two military operations: (1) the intervention of a Multinational Interim Force in Haiti (MIF-H) led by the US along the lines of a Marine Expeditionary Unit

(MY); and (2) the Non-Combatant Evacuation Operation (ENC) conducted by a small GptOpFuzNav staffed by the Naval Battalion Police Company and carried out by the C-130 Hercules aircraft, in charge of the evacuation of the Brazilian diplomatic representation in that country. The mission was successfully accomplished and that GptOpFuzNav served as basis for the first effective Security Detachment of the Brazilian Embassy in Haiti. (ZUCCARO, 2017).

According to Zuccaro (2017), the Fleet Fusilier Force Command (ComFFE), faced with the possibility of the Brazilian participation in a peacekeeping force to replace the MIF-H, conducted the Albatroz Operation, employing the Disembarkation Troops Command (CmdoTrDbq), the 3rd Naval Fusilier Infantry Battalion, the Paissandu Battalion and all the support of an Amphibious Unit (UANf). The initial planning foresaw the deployment of a UANf, nucleated with up to two Marine Companies (CiaFuzNav), formed by staff from friendly countries, which in the mission sequence was not consolidated. A GptOpFuzNav level adjustment was required for Amphibian Element (ElmAnf), which is nucleated by a Company (Cia). After this initial constitution of GptGptOpFuzNav-HAITI, as well as the identification of the most likely tasks and the characteristics of the Area of Operation (AOp), the political and strategic environment and the possible threats, the logistic and financial planning were elaborated<sup>7</sup>.

Some singularities in Haiti's AOp, the hot climate and the frequent occurrence of hurricanes and tropical storms, the fact that Brazil begins a mission in a country seriously affected by the availability of procurement resources, and the worsening of the political and humanitarian crisis have contributed to the UN decision to return to that country with a peace mission. The attack was led by Brazil, which joined the mission under the Wet Lease logistics concept provided for in UN regulations, especially in its Department of Peacekeeping Operations (DPKO). According to this model, each contingent is responsible for maintaining its resources, relieving the UN of this function, but allowing a larger reimbursement to the country of this contingent. In this context, considerable volumes of

---

<sup>7</sup> Considering the recognition of the Marine Corps (CFN) for the readiness for operation, the planning was based on the fact that there would be no need for a high amount of combat systems purchasing, just the replacement of the means that would be deployed in the Operations Area (AOp), as well as obtaining varied supplies, ranging from food to ammunition and numerous spare parts related to the peculiarities of the mission. As each contingent would spend at least six months on site, a base with facilities and means to ensure a minimum comfort was conceived.

tooling and spare parts were provided for maintenance, mainly of vehicles and armaments (ZUCCARO, 2017).

From a financial point of view, the bottom-up approach made it possible to fund GptOpFuzNav into MINUSTAH. The initial survey estimated a value of R \$ 5 million (in mid-2004 figures), but the detailing by the new approach increased the value to R \$ 20 million, with the inclusion of vehicles and operational supplies. The Brazilian Navy was the only Force with such supplies of the necessary quality and quantity, and this detail was crucial for negotiating the amount claimed with the Ministry of Defense (MD). Throughout the mission, these initial conditions were improved, not only for GptOpFuzNav, but also for all participating troops.

According to Pinheiro, 2015 apud PILAR et al (2017), Brazilian participation in MINUSTAH can be divided into three phases: (1st) from the first to the sixth contingent, marked by fighting and confrontation, especially in the regions of Bel Air, Cité Militaire and Cité Soleil; (2nd) from the seventh to the eleventh contingent, characterized by the stabilization of the space conquered by the previous contingents; and (3rd) begins with the transition between the eleventh to the twelfth contingent, with additional support due to the January 2010 earthquake until the end of the mission. In the specific case of GptOpFuzNav, these phases entailed radical changes in the training, equipment, procedures, and doctrine of the Marine Corps deployed in Peacekeeping Operations. A more detailed description of these phases, with an emphasis on the evolution of contingent posture during the mission, due to the weather conditions and earthquakes, as well as the social, structural and political changes in Haiti, will be carried out below.

In the first phase of the mission, the actions required an offensive stance, in accordance with the UN Rules of Engagement, in which situations were defined for the execution of the gradual use of force. The last participation of the Marine Corps (CFN) in an OpPaz (*United Nations Angola Verification Mission III-UNAVEM III*), conditioned the preparation of the military for MINUSTAH, however, with the arrival in Haiti, they found a very distinct reality, which required adaptations and reformulations to fulfill the mission. The focus on operations in the urban environment, during the first phase of the mission, influenced the training during the preparation, and we observe the acquisition of the **Integrated Laser Tactical Simulator (STIL)** for greater realism of the simulated combats. In summary, this phase is characterized by the execution of large military

operations, often followed by Civic-Social Actions (ACISO), in order to liberate areas dominated by adverse forces (PILAR et al, 2017).

In the second phase, the priorities were the stabilization and maintenance of the conquered spaces, especially the change of posture of the seventh contingent, which was prepared for offensive operations and adapted to act in humanitarian aid operations. In this phase, it is worth to note the arrival of the four 8 x 8 PIRANHA Armored Vehicles, disembarked in Port-au-Prince in March 2008, to increase GptOpFuzNav's employment capacity, altering its posture and allowing patrols with armored protection. Before that, Armored Vehicle support was provided by the Army through its Urutu Armored Vehicles. With the favorable scenario for a stable situation, the joint operations with the Haitian National Police were intensified, so that it took control of the security in the country, besides enabling a greater dedication to the administrative bands for the change of the Marine Base in Haiti Acadêmica Rachel de Queiroz (BFNHARQ<sup>8</sup>). This phase ends with the occurrence of the strong earthquake in the city of Port-au-Prince on January 12, 2010, exactly at the beginning of the rotation between the eleventh and twelfth contingent (PILAR et al, 2017).

In the third phase, between the eleventh and twenty-sixth contingent, following the 2010 earthquake that caused more than two hundred thousand deaths and estimated damage of US \$ 7.75 billion to the country, the humanitarian approach became the priority of the MINUSTAH military component, as well as other subsidiary actions such as escorting authorities, etc. (PILAR et al, 2017). With the increase of UN authorized personnel, Brazil sent more than 900 military personnel, being 90 of them NF. This reinforcement arrived in Haiti on February 10 and allowed the GptOpFuzNav to make a major logistical effort until July 14, 2010. As the situation in the country returned to normal, the military's mission began to decline and several countries left Haiti, and Brazil was expected to fill this vacuum. There is a gradual change in posture, we see the change of status from ostensive security force to Quick Reaction Force (QRF). On October 4, 2016, MINUSTAH faced a new challenge: Hurricane Mathew. The storm hit the southwest of the country, with winds of up to 230 km/h, causing much destruction, hundreds of deaths and leaving a million citizens unattended. In view of the previous organization for the

---

<sup>8</sup> After the tenth contingent, BFNRQ changed to Field "C" along with other military contingents of MINUSTAH notably the Brazilian Battalion (BRABATT).

current phase of the mission, it was possible to deploy a detachment to the worst affected location, enabling the access to humanitarian aid convoys from the capital in less than forty-eight hours after the hurricane passed, for the provision of the region (PILAR et al, 2017<sup>9</sup>).

Finally, it is noteworthy that at the same time that Haiti was hit by the hurricane, the final direction of the mission was defined through UNSC Resolution 2,313 and the withdrawal started from April 15, 2017. Given the difficulties, the UN understood that the country had achieved political stability and could maintain, through its own police forces, acceptable levels of security for its population. In this regard, UNSC Resolution 2,350 stipulated that the mission should be closed on October 15, 2017, which indeed has occurred. With the closure of the Cité Soleil Base, all Brazilian troops were concentrated for base decommissioning tasks and shipment of materials of the longest lasting peacekeeping mission of which Brazil was part.

This section described the Brazilian participation in MINUSTAH from 2004 to 2017, through its division in three phases, focusing on the change of the contingent's posture during the mission, aiming to better understand its characteristics, to serve as a basis **for presentation in the next section, which includes mission lessons from the diplomatic, military, and police points of view, but especially from the economic point of view, by analyzing the contributions of procurement of materials used by the GptOpFuzNav from a Defense Industrial Base perspective (DIB).**

#### **4. ANALYSIS OF THE MINUSTAH'S CONTRIBUTIONS TO THE DEVELOPMENT OF THE PRODUCTIVE AND INNOVATIVE CAPACITY OF THE BRAZILIAN DIB**

This section begins by highlighting a brief summary of the main lessons of the Brazilian participation in MINUSTAH, from a diplomatic, military and political point of view. According to Hamann and Ramires (2017), from a diplomatic point of view, MINUSTAH can be considered an important foreign policy instrument to make Brazil more prominent in the international scenario, as a prominent actor in Latin America and the

---

<sup>9</sup> The main problems arising from the earthquake stand out: food shortage, poor sanitary conditions, insufficient hospital care, a large number of homeless people, interruption of water and electricity for homes, etc.

Caribbean. In this context, Brazil was a non permanent member of the UN Security Council between 2004-2005 and 2010-2011, which contributed to the country's better position on Haiti and the OpPaz in general.

From the military point of view, the highlight is the sending of 37,000 military personnel to MINUSTAH, organized in 26 contingents in rotation systems, which allowed the accumulation of experiences with positive impacts for the Armed Forces. MINUSTAH was instrumental in improving the preparation for peacekeeping missions, raising Brazil to the level of global reference. Strategically, throughout the mission period, a general officer remained as commander of the UN forces, a fact unheard of up to that moment. These facts contributed to the consolidation of Brazil as a relevant actor in the International Peace and Security Operation system (HAMANN and RAMIRES, 2017). From the police point of view, the officers sent to Haiti performed strategic roles both within the United Nations Police-UNPOL and in the support of the Haitian National Police, despite the small number, which exposes an existing gap in the debate about sending Brazilian police to missions abroad (HAMANN and RAMIRES, 2017).

In the sequence, the main contributions of CMatFN in the development of the main means and operative equipment used in this mission are presented; and finally, based on secondary and primary data, the process of purchasing of these materials by CMatFN is analyzed, highlighting the role of military demand in the development of the productive and innovative capacity of the Brazilian DIB.

#### **4.1. CMATFN CONTRIBUTIONS TO THE DEVELOPMENT OF MEANS AND OPERATING EQUIPMENT USED BY THE GPTOPFN IN THE MINUSTAH**

According to Elkfury (2017), the Marine Corps (CFN) contributed to MINUSTAH by making the necessary adjustments regarding personnel training, material adequacy, and doctrine. The GptOpFuzNav performed these actions, nucleated in operating sector units such as the Fleet Fusilier Force (FFE), and supported by the General Command of the Naval Fusilier Corps Sector (CGCFN). For operative vehicles, armaments and operative equipment, this support is provided by the Marine Material Command (CMatFN). In this context, this subsection presents some examples of the adequacy of CFN material for MINUSTAH, presenting the initial situation and the evolution resulting from the particularities of the operating

environment and phases of the operation, until the demobilization in 2017, highlighting the role of CMatFN. in the development of these actions.

According to the author, before the start of MINUSTAH, the CGCFN, through CMatFN, organized a GptOpFuzNav to guarantee the physical integrity of Brazilian citizens and diplomatic facilities in Port-au-Prince. Based on this experience, a standard was developed with the list of material for this type of mission, which became part of CMatFN's priorities for immediate use, supporting the future preparation of the means for MINUSTAH (ELKFURY, 2017). The main examples will be reported below:

### **ARMORED VEHICLES**

Demand for the purchase of armored wheeled vehicles for hostile environment tasks in the early years of MINUSTAH led CMatFN to conduct a study in 2006 that resulted in the elaboration of requirements for the new medium based on the characteristics of existing models, and especially on CFN needs.

The decision was to obtain, through international bidding, the Special Armored Wheeled Vehicle (VtrBld Esp SR) 8X8 PIRANHA IIC from the Swiss company MOWAG. The contract for the acquisition of the 1st batch of four Armored Personnel Carrier (VtrBld) and one VtrBld Relief was signed in September 2006, and the vehicles were delivered in February 2008, in Rio de Janeiro, and loaded on the Combat Cars Disembarking Vessel (NDCC) Mattoso Maia to Port-au-Prince in March of the same year. After the standardization of the environment by MB's Financial and Administrative Council, 25 more vehicles were acquired, which allowed two car fleet rotations in Haiti (ELKFURY, 2017).

### **UNARMORED VEHICLES**

In 2004, the FFE Command decided to replace the REO trucks with UNIMOG (Mercedes Benz), and as Light Cars, chose the Toyota because they did not have a sufficient number of Land Rovers for the mission. CMatFN, in coordination with the Marine Corps Technology Center (CTecCFN) and with the Marine Logistics Battalion (BtlLogFuzNav), established the spare parts and tooling list for the operation. For the preparation of Operative Vehicles (VtrOp), CTecCFN was required and



responded to that Military Service Provider Organization (OMPS) -<sup>10</sup>: in six days, 44 VtrOp were revised and painted to the UN standard. 43 vehicles were also taken to AOP: 14 UNIMOG, 16 Toyotas and 13 trailers. In January 2006, two Land Rover Defender Ambulance Intensive Care Unit (ICU) militarized vehicles were obtained to replace the Toyota Ambulance, due to the risk of engagement and climate adversity. In 2010, all Toyota were replaced by Land Rover, remaining the same until the end of the mission (ELKFURY, 2017).

## BALLISTIC PROTECTION MATERIAL

The first GptOpFuzNav-Haiti Contingent used Level II protection Ballistic Vests, which at the time were the ones available at CFN. However, as the Adverse Force had 7.62 mm caliber weaponry, CMatFN began the process of acquiring Level III-A camouflage ballistic vests, which in addition to having a M.O.L.L.E <sup>11</sup>(Modular Lightweight Load-carrying Equipment) fastening system and offering better combatant comfort, it weighted less for using KEVLAR Aramid Fiber ballistic plates. This is the current CFN standard ballistic vest model (ELKFURY, 2017).

## OPERATIVE EQUIPMENT

The Ballistic Helmets have also been replaced by Level III-A Ballistic Helmets (RBH-303), a model currently used by CFN. CMatFN has also developed the specification of various operative equipment items such as assault backpack, load carrier, radio carrier etc. For example, the Naked Back Tactical Vest replaced the use of the harness-belt set, being suitable for situations that did not require ballistic protection. It was developed to have the same dimensions and arrangement as the Level III-A General Purpose Camouflage Ballistic Vest, so that the accessories were fixed in the same position as the vest, contributing to the Amphibian Combatant's

---

<sup>10</sup> "It is the Military Organization (OM) that provides services to other OM and, the extra Navy organizations in the industrial area, charging for the services rendered, based on the costs and expenses incurred." (SGM-304, 2008).

<sup>11</sup> The Modular Lightweight Load-carrying Equipment (M.O.L.L.E) system was developed by the American Armed Forces to replace the fastening system A.L.I.C.E. (All Purpose Lightweight Individual Carrying Equipment) and adopted by the North Atlantic Treaty Organization - NATO. This system allows the fastening on the vest of any other operative equipment items that have the same fastening system. CFN has also adopted the system M.O.L.L.E and currently CMatFN is replacing the items of equipment that still have the A.L.I.C.E system in its collection.

muscle memory. The need for the development of universal bandoliers by CFN should also be mentioned. Their design takes into account the individual aspects of grip and comfort in the transportation of weapons (ELKFURY, 2017).

## ARMING

Some CMatFN contributions have corroborated CFN's concept of Light Weapon Systems, through the demands presented by the troop as a weapon accessory: the Picatinny rail hand guard, the previous tactical fist, 3-point bandits, holographic sights, laser designators, combat optical scopes that provided improved ergonomics, accuracy and applicability of lightweight arms, contributing to the gradual use of force and the reduction of collateral damage in actions (ELKFURY, 2017).

As for non-lethal weaponry, after "pacification" in the early 2006, employment in Civil-Military Operations intensified, requiring, in addition to lethal weaponry, the ability to regulate and grade the application of force as a result of the incorporation of non-lethal weaponry. Electric batons, electroshock gun, non-lethal ammunition launchers, pepper spray, smoke and tear grenades made it possible for the troops to contribute properly to maintaining a safe and stable environment. The gain obtained by CFN as a result of this type of material in Haiti has been of great relevance to Law and Order Guarantee Operations (GLO) (ELKFURY, 2017).

## EQUIPMENT AND COMMUNICATIONS

Initially, the links between the FFE Command and the GptOpFuzNav Command were made by the Military Satellite Communications System and, when necessary, by videoconferencing equipment with equipment provided by the MD. In Haiti, the networks were equipped with Tadiran (Very High Frequency) VHF equipment, belonging to the CFN collection: the PRC730 portable equipment and, for greater distances, the VRC-745 vehicle equipment. Subsequently, considering the characteristics of the operations area, there was a considerable increase in the demand for equipment to furnish the networks during operations.

The heavy weight of the radio and its accessories reduced troop mobility. The solution was the acquisition, with FFE Command resources, of Motorola EP-450 commercial equipment operating in the UHF (Ultra High Frequency) and VHC frequency range. Also purchased were

handsets contracted from local operators (ELKFURY, 2017).

Based on the description of this subsection, we can conclude that in the area of material, upon being called to MINUSTAH, a mission with special characteristics, the CFN responded expeditiously with the support from CMatFN. It had competence to adapt the existing material to the particularities of the action scene and identified the needs of new media, overcoming the difficulties inherent in the duration of the mission and the distances involved.

## 4.2. MINUSTAH LESSONS FROM THE ECONOMIC POINT OF VIEW

The Navy Strategic Plan defines that the Brazilian integration in a Peace Operation aims, among other aspects, to develop doctrinal and logistical procedures, as well as to allow the integration with other forces. The Brazilian participation in peacekeeping operations allows not only the identification of functionalities of the systems used by troops from other countries in UN missions, but also the dissemination of Brazilian defense industry products, a fact that provides opportunities for future negotiations of defense products of DIB<sup>12</sup>, defined by the National Defense White Paper (LBDN, 2012) as: “the set of state and private enterprises as well as civil and military organizations participating in one or more phases of the research, development, production, distribution and maintenance of defense strategies products<sup>13</sup>”.

From an economic point of view, it is worth to point out the possibility of this industry to generate technological innovations, since it needs to meet the demand of the military sector, which requires sophisticated defense equipment. These innovations often have a dual use, that is, they can also be used for civil purposes. As for the political aspects, we should stress the strategic role of this industry in the provision of equipment used in the defense

---

<sup>12</sup> The DIB is divided into eight segments: i) light, heavy and explosive weapons and ammunition; ii) electronic systems and command and control systems; iii) military naval platform; iv) nuclear propulsion; v) military ground platform; vi) military aircraft platform; vii) defense-oriented space systems; and viii) platform and equipment for individual use. These segments were divided according to the LBDN (2012), plus the single use segment (suggested by the Ministry of Defense) and with agglutination of two segments of light and heavy weapons and ammunition.

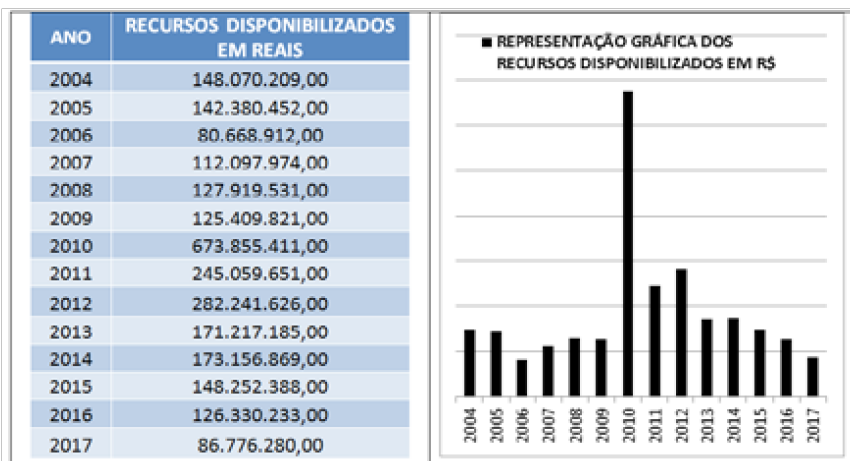
<sup>13</sup> Defense Products (PD) are the goods and services necessary to fulfill the defense and security missions assigned to the Armed Forces or Security Forces. Strategic Defense Products (PED) are goods and services that, due to the peculiarities of obtaining, producing, distributing, storing, maintaining or employing, may directly or indirectly compromise the attainment of objectives related to the security or defense of the country (LANGE, 2007, p. 294)

of a nation, otherwise it would leave the country, increasingly, technologically and politically more dependent on the external sector.

Based on bibliographic research, on secondary data collection from the Ministry of Defense and from the Transparency Portal, and on primary data through semi-structured interviews with CMatFN Officers, the remainder of this subsection aims to present the main lessons, from the economic point of view, of the Brazilian participation in MINUSTAH, for the development of the productive and innovative capacity of the Brazilian DIB, highlighting the role of military demand in the material procurement process. Finally, it lists the main difficulties and obstacles encountered in this process.

Data on what was spent by the Ministry of Defense (MD) with MINUSTAH between 2004 and 2017 is presented below in Table 1. These data represent the consolidated amounts passed on to the Forces by the MD for a specific action, in this case MINUSTAH, and does not involve funds from other Ministries. However, the distribution of resources to the Forces are gross values, within a prior planning. There is no centralized purchase by the MD and then distributed among the Forces. Each Force manages the resource received, always bearing the budget “stamp” of peacekeeping missions. Besides, the money is not distributed at once. The MD, like the other ministries, has contingent resources, so this distribution to the forces also follows this mechanism.

**Table 1 - Amounts transferred to the Forces by the MD, for MINUSTAH, between 2004 and 2017 and graphical representation of the values.**



Fonte: Ministério da Defesa (2018)

Based on Table 1 and its graphical representation, it can be observed that the most significant values passed on by the MD occurred in the 2004/2005 biennium, the period that marks the beginning of the operation, and had its peak in 2010, a milestone that the country was affected by the earthquake. After 2012, there is a gradual reduction in values until the demobilization in 2017. This budgetary irregularity, characteristic of the Brazilian budgetary policy, represents a major obstacle to the guarantee of military demand in the process of acquisition of materials and maintenance of companies that make up the Brazilian DIB.

Table 2 presents the budgetary evolution of the Charlie<sup>14</sup> Goal Plan in the period from 2013 to 2017. The period covered contains accurate figures, which illustrate what was spent by CMatFN in purchasing materials specifically for MINUSTAH. This data cut was performed, because in the period presented, the data have higher reliability. The importance of this table is to demonstrate CMatFN's capacity for military demand for the acquisition of materials that may contribute to the development of the Brazilian DIB.

**Table 2 – Budget Evolution of Charlie Goal Plan between 2013 and 2017**

MARINHA DO BRASIL						
COMANDO DO MATERIAL DE FUZILEIROS NAVAIS						
EVOLUÇÃO ORÇAMENTÁRIA DO PLANO DE METAS CHARLIE ENTRE 2013-2017						
	DESCRIÇÃO	2013	2014	2015	2016	2017
DESTAQUE DE CRÉDITO HAITI	PAÍS (R\$)	4.418.705	6.302.572	4.027.889	1.870.732	2.277.439
	EXTERIOR (US\$)	992.436	528.127	118.737	46.552	76.927

Fonte: CMatFN (2018)

Table 3 shows the evolution of direct expenses incurred by

<sup>14</sup>The Goal Plan (PM) is a perennial instrument used to consolidate the functional grouping of planning, execution and control of the goals of the Brazilian Navy, by areas of expertise. It is used to plan, execute and control the tasks under its responsibility, being composed of Internal Actions and their respective Internal Plans that, when executed, contribute to the fulfillment of the purpose established for the PM. The Charlie Goal Plan addresses the renewal and expansion of the Marines' means.

the executing agency in the years 2004, 2010 and 2017, according to the Transparency Portal. The importance of this table is to complement the data in tables 1 and 2, for a more detailed description of expenditures, as well as CMatFN's contribution to the acquisition of specific materials for the peace operations.

**Table 3 - Direct expenses incurred by executing agency in 2004, 2010 and 2017**

**Tabela 3 – Gastos diretos realizados por órgão executor nos anos de 2004, 2010 e 2017**

GASTOS DIRETOS POR ÓRGÃO EXECUTOR - VALORES A PREÇOS CORRENTES (em mil R\$)	2004	2010	2017
Total destinado pelo Governo Federal	732.430.152	1.044.954.184	1.481.051.968
Ministério da Defesa	26.606.450	43.312.525	86.112.270
Comando da Aeronáutica	6.590.492	11.043.369	20.395.504
Comando do Exército	12.744.104	20.667.042	40.624.170
Comando da Marinha	6.200.811	9.672.761	21.824.603
Cmat	12.339	57.707	3.601
Investimentos - Equip. E Mat. Permanente	8.338	5.937	994
Outras Despesas Correntes (material de consumo)	3.492	2.188	1.133
<b>Gastos realizados pelo Governo com a MINUSTAH em 2004 e com as Operações de Paz em geral em 2010 e em 2017</b>	<b>83.368</b>	<b>384.377</b>	<b>136.425</b>
Gastos realizados pelo Cmat	12.339	57.707	3.601
Investimentos - Equip. E Mat. Permanente	8.338	5.937	994
Outras Despesas Correntes (material de consumo)	3.492	2.188	1.133
Outros investimentos e outras despesas correntes	509	49.582	1.473

Fonte: Portal da Transparência (2018)

Table 4 shows the top five companies benefiting from CMatFN purchases for permanent equipment and materials purchased for MINUSTAH in 2004 and for the Peace Operations in general in the years 2010 and 2017. The main contribution of this data is to show the discontinuity of participation of companies throughout the acquisition processes. It is noteworthy that only one company, which stood out in 2004, remained on the list of the main participants in 2010. Another important factor is that no company highlighted in 2010 appears to benefit in 2017. This analysis confirms the difficulties of greater performance of companies in this market, especially in view of the lack of guarantee of military demand and budgetary irregularity.

**Table 4 - Main companies benefiting from purchases made by CMatFN for MINUSTAH in 2004 and for the OpPaz in general in 2010 and 2017**

2004	
PRINCIPAIS EMPRESAS BENEFICIADAS COM MINUSTAH	Valores das compras realizadas pelo Cmat para MINUSTAH (em R\$)
FORD MOTOR COMPANY BRASIL LTDA	4.144.360
SISTEMAC SA GRUPOS GERADORES	513.256
NOVO HORIZONTE JACAREPAGUA IMP E EXP LTDA	397.743
TETIS EQUIPAMENTOS PARA SANEAMENTO LTDA	269.580
EDWALL ENGENHARIA LTDA	254.060
2010	
PRINCIPAIS EMPRESAS BENEFICIADAS COM OpPaz	Valores das compras realizadas pelo Cmat para OpPaz (em R\$)
JAGUAR E LAND ROVER BRASIL	1.050.000
BERTONI BOZA & CIA LTDA	402.750
STEMAC SA GRUPOS GERADORES	522.600
SANREG RIO COMERCIO E INDUSTRIA LTDA (CIELO)	276.078
AJES COMERCIO E REPRESENTACOES LTDA	125.740
2017	
PRINCIPAIS EMPRESAS BENEFICIADAS COM OpPaz	Valores das compras realizadas pelo Cmat para OpPaz (em R\$)
RADAR COMPUTER DISTRIBUIDORA EIRELI	301.500
DIMORVAN DAVI MENEZES	27.235
BRASIDAS EIRELI - ME	5.653
STATUS MOVEIS PARA ESCRITORIO EIRELI	4.598
O FILIZZOLA E CIA (ARTEFATOS DE COURO PREMIER)	4.060

Fonte: Portal da Transparência (2018)

With regard to the participation of Brazilian companies in the UN, according to MD (2017), in addition to the defense-related benefits, Brazilian participation in Peace Operations brings advantages to the country's companies, both by purchasing products for the national troop be unfolded, and for the dissemination of domestic products used by this troop abroad, expanding the range of buyers of domestic products by other countries. Under the UN regime, troop contributing countries and the host country become potential buyers of domestic products used by Brazilian troops in peace operations. According to the Ministry of Defense, At annually, there is a market of over \$ 12 billion dollars in the UN procurement system. It can be observed that the participation of Brazilian companies in this context is not significant. However, it is possible to increase this participation through a joint action of the Ministry of Foreign Relations (MRE) and the MD. Examples of Brazilian companies involved in this process include:



## AGRALE – MARRUÁ

Brazilian Cartridge Company (CBC) - various ammunition

CONDOR - non lethal technologies

GLAGIO - ballistic helmet

INBRA GROUP – ballistic vests

Brazilian Military Goods Industry (IMBEL) - Light Weapons and Explosives

TAURUS - light weapons SANTOS

LAB - drones.

The main opportunities for Brazil arising from Peace Operations are: i) technical and professional improvement; ii) access to cutting edge technologies; iii) integration and coordination with other countries; iv) the improvement of Military Logistics Abroad; v) improved coordination between the singular forces; vi) the improvement of the Military Doctrine; vii) the improvement of military equipment; viii) the disclosure of National Products (Defense Products, Strategic Defense Products and others); and ix) the possibility of foreign trade increase.

United Nations budgets are used to maintain the proper functioning of its structure and Peace Operations. Most acquisitions are made through the United Nations Global Marketplace (UNGM).

UNGM is the United Nations System's procurement portal that represents a global market for all types of goods and services of US\$ 12-15 billion annually (The UN, in addition to the voted budget, also receives donations). UNGM acts as a single window. Potential suppliers can register with 18 UN agencies, totaling **95% of the total public spending of the System**. The *United Nations Procurement Division* is the division responsible for procurement. Examples of Brazilian companies selling products to the UN are illustrated in the following table:

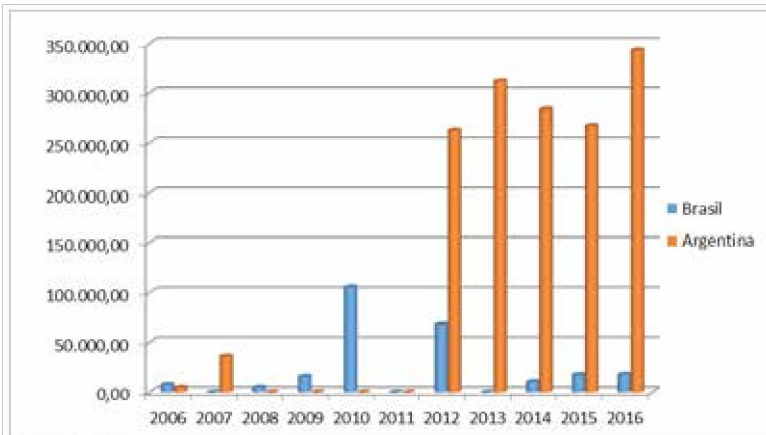
**EXEMPLOS DE EMPRESAS BRASILEIRAS QUE REALIZAM VENDAS PARA A ONU**

- Acuapura Indústria e Comércio LTDA
- Ápice Comércio Exterior LTDA
- Beraca Sabará e Ingredientes S.A
- Biolab Sanus Farmacêutica LTDA
- Ccaps Serviços de Tradução LTDA
- Centro Internacional de Conhecimento LTDA
- Comil Ônibus S.A
- Condor SA Indústria Química
- Costa Porto Logística Internacional LTDA
- Daros Imp. Exp. De Prod.Alimentícios LTDA
- France Latina Produções Audiovisuais LTDA
- IBT-International Business Translations
- Pancrom Indústria Gráfica LTDA
- Rogama Indústria e Comércio LTDA
- Truckvan Indústria e Comércio LTDA
- WEM Equipamentos Eletrônicos LTDA

Fonte: MD (2017)

According to UN data, the value of exports of products from Brazil to the UN between 2014 and 2016 were, respectively, US \$ 10,800; \$ 18,000 and \$ 18,330 (in a thousand US\$). These figures when compared to Argentina, according to graph 1, show Brazil’s small participation in this market.

**GRAPH 1 – EXPORT VALUES (IN THOUSAND US\$) FROM BRAZIL AND ARGENTINA TO THE UN**



Fonte: MD (2017)

**Table 1 - Current Scenario of Companies in the System of Strategic Defense Product Cataloging (SisCaPED)**

<b>CENÁRIO ATUAL</b>	<b>NÚMERO</b>
Empresas Cadastradas no <u>SisCaPED</u>	<b>301</b>
Empresas Credenciadas como EED	<b>63</b>
Empresas Credenciadas como ED	<b>8</b>
Produtos Cadastrados no <u>SisCaPED</u>	<b>2270</b>
Produtos Classificados como PED	<b>273</b>
Produtos Classificados como PRODE	<b>31</b>

Fonte: MD (2017)

According to Table 1, in 2015, 301 companies were registered in the Strategic Defense Product Cataloging System (SisCaPED). Of these, 63 were accredited as strategic defense companies, while only 8 were defense companies. As for strategic defense products, of the 2,270 registered, 273 are classified as strategic defense products, while 31 are defense products.

The results of the data analysis presented in this section demonstrate that MINUSTAH contributed to the development of the means, equipment and operative equipment used by GptOpFuzNav throughout the mission period. CMatFN played an important role in this process, both in the development of studies and in the guarantee of military demand for the acquisition of these materials. However, for a more effective performance of Brazilian DIB companies, there is a strong relationship of dependence between leading defense specialists and domestic military demand, from the point of view of generating incentives for the development of innovations. These incentives are made unfeasible by their irregularity and low budget, which puts these companies in a vulnerable position in terms of making investments and developing technological capabilities with long-term prospects. These characteristics are also indicators of these companies' inability to move to

other markets (either from civilian to domestic military or international military-civil). These arguments reinforce the weakness of the Brazilian defense industrial base in the development of innovations for the country.

## 5. CONCLUSIONS

The article aimed to investigate the main contributions of MINUSTAH to the development of the productive and innovative capacity of the Brazilian DIB. In this sense, the Innovation Systems (IS) approach was used as a theoretical framework and the role of military demand through a literature review that deals with these themes. Then, based on the description of the Brazilian participation in MINUSTAH through three phases, and on the description of CMatFN's participation in the development of the means and operative equipment necessary for the mission objectives, an analysis of the main contributions of this mission from the economic point of view was presented, which serve as lessons for the development of the Brazilian DIB. The analysis of the data presented shows that despite the positive contributions of this OpPaz in terms of material purchases that favored some Brazilian companies, there is a potential market for acquisitions in the UN system that is still little explored by the Brazilian DIB.

The main difficulty identified in the interviews for defense companies to achieve a more active performance and the development of innovations was the need to ensure a continued demand from the Armed Forces. They consider that the development of military technology is not economically viable in view of the high costs and the heavy dependence of the Government, which, in its turn, is subject to budgetary constraints.

Another aspect that deserves attention is the need for agility in the exportation process of defense products, through a more organized state action capable of mobilizing public and private actors, so as to offer attractive proposals to buyers, avoiding companies' loss of competitiveness against international competitors. However, this issue requires attention, because besides the legal aspect, it has the requirement of preserving the national industry, since these are defense products, which only the Armed Forces can use. It is important to highlight that the reduction of the procedural delay of defense product sales has already been happening through Law 12.598 of 2012, with the creation of the Strategic Defense Companies (EED) and the Defense Products Secretariat in 2011.

Regarding the policy implications, based on what was presented

and analyzed in the interviews, the irregularity of military demand, the motor parameter for the development of innovations, was also the major obstacle found in the structure of the military naval innovation system actors. This limitation necessarily generated the need for diversification in industrial production and the pursuit of acting in markets beyond the initial conceptions of companies. Linked to the low availability of investment resources, the development of the Innovation System has been extremely degraded. There has been a high turnover of suppliers and a need to adapt corporate policies to serve other consumer markets.

The use of the “military demand” instrument as an incentive for the development of innovations requires a more detailed knowledge of the peculiarity of national actors. Regarding defense industrial policy, the major problem is the lack of a shared governmental line with the internal actors. There is a lack of an adequate funding structure, a factor that directly harms the generation process of innovation. These issues require an open and national discussion about the problems of the Brazilian industrial policy and the allocation of budget resources for investments.

## REFERÊNCIAS BIBLIOGRÁFICAS

BRAZIL. Decree 5.484, of June 30, 2005. Aprova a Política de Defesa Nacional, e dá outras providências.

\_\_\_\_\_. A Estratégia Nacional de Defesa. MINISTÉRIO DA DEFESA, Brasília, December 2008.

\_\_\_\_\_. Law 12.598, of March 22, 2012. Estabelece normas especiais para compras, contratações e o desenvolvimento de produtos e de sistemas de defesa; dispõe sobre regras de incentivo à área estratégica de defesa; altera a Lei nº 12.249, de 11 de junho de 2010.

\_\_\_\_\_. National Defense White Paper. Brazil: 2012. Available from:

<[http://www.camara.gov.br/internet/agencia/pdf/LIVRO\\_BRANCO.pdf](http://www.camara.gov.br/internet/agencia/pdf/LIVRO_BRANCO.pdf)>. Accessed: June 15, 2014.

CASSIOLATO, J.E.; BERNARDES, R.; LASTRES, H. Transfer of technology for successful integration into the global economy. A case study of Embraer in Brazil. United Nations: New York and Geneva, 2002.

CASSIOLATO, J. E. The Brazilian System of Innovation: policy challenges. Position Paper prepared for the InterAmerican Development Bank. Jan. 2007.

CASSIOLATO, J.E.; LASTRES, H.M.M. Discussing innovation and development: converging points between the Latin American School and the Innovation Systems perspective? Globelics Working Paper Series, n.08-02, 2008.

FLORIANO PEIXOTO, V.N. Epopeia militar brasileira no Haiti. In: Instituto Igarapé e Centro Conjunto de Operações de Paz no Brasil Sergio Vieira de Mello. (Org). A participação do Brasil na MINUSTAH (20042017): percepções, lições e práticas relevantes para futuras missões. Rio de Janeiro: October 2017.

FREEMAN, C. The national system of innovation in historical perspective. Cambridge Journal of Economics, Cambridge, v. 19, n. 1, 1995.

FREEMAN, C.; SOETE L. A Economia da Inovação Industrial. Campinas: Editora Unicamp (Col. Clássicos da Inovação), (1982 [2008]).

ELKFURY, J.H.S. O desenvolvimento dos meios, equipamentos e equipa-

gens do Grupamento Operativo de Fuzileiros Navais – Haiti. In: O Anfíbio. MINUSTAH 13 Anos (Org). Revista do Corpo de Fuzileiros Navais. Rio de Janeiro: v.35, p.63-68, 2017.

HAMANN, E.P.; RAMIRES, C.A. A participação do Brasil na MINUSTAH (2004-2017): percepções, lições e práticas relevantes para futuras missões. Instituto Igarapé e CCOPAB: Rio de Janeiro, October 2017.

IPEA. Mapeamento da Base Industrial de Defesa Brasileira. Brasília: IPEA/MD/ABDI, 2016. Available from: [http://www.ipea.gov.br/portal/index.php?option=com\\_content&view=article&id=28101](http://www.ipea.gov.br/portal/index.php?option=com_content&view=article&id=28101).

LASTRES, H.M.M.; CASSIOLATO, J.E. Sistemas de Inovação e Arranjos Produtivos Locais: novas estratégias para promover a geração, aquisição e difusão de conhecimento. Revista Cent. Ciências Admin. Fortaleza: v.9, n.2, p. 189-195, 2003.

LESKE, Ariela D.C. Inovação e políticas na indústria de defesa brasileira. Doctorate Thesis presented at the Institute of Economics of UFRJ in 2013.

LESKE, A. D. C. Armas e Munições Leves e Pesadas e Explosivos. In: Agência Brasileira de Desenvolvimento Industrial; Instituto de Pesquisa Econômica Aplicada. (Org.). Mapeamento da Base Indústria de Defesa. 1ed.São Paulo: (Câmara Brasileira do Livro, 2016, v.1 p. 1-737).

LIST, F. Das Nationale System der Politischen Okonomie. Basel: Kyklos (translated and published under the title The National System of Political Economy by Longmans, Green and Co. London, 1841.

LUNDVALL, B.A. National Systems of Innovation: Towards a Theory of Innovation and Interactive Learning. London: Pinter Publishers, 1992.

MARINHA DO BRASIL. CGCFN-12. Normas para Administração de Material do Corpo de Fuzileiros Navais, 2012.

\_\_\_\_\_. EMA-420. Normas para Logística de Material no âmbito da MB, 2002.

\_\_\_\_\_. SGM-401. Normas para a Gestão do Plano Diretor, 2014.

MARKOWSKI, S.; HALL, P. Challenges of defence procurement. Defence and Peace Economics, 9: 3-37, 1998.

MOLAS-GALLART, J. Defence Procurement as an Industrial Policy Tool:



the Spanish Experience. *Defence and Peace Economics*, 1998.

MOLAS-GALLART, J. El vínculo entre innovación militar y civil: hacia um nuevo marco de relación. *ARBOR Ciência, Pensamiento y Cultura*, anejo 2, p.73-87, 2008.

MOLAS-GALLART, J. La indústria de seguridade y defensa ante um nuevo sistema de innovación: implicaciones para la política industrial española, 2011.

NELSON, R. *National Innovation Systems a Comparative Analysis*. New York: Oxford University Press, 1993.

NELSON, R. *As Fontes do Crescimento Econômico*. Campinas: Editora Unicamp, (1996 [2006]).

NEGRETE, A.C.A. Indústria naval de defesa e inovação tecnológica: um estudo do sistema de inovação naval militar no Brasil. Doctorate Thesis presented at the Institute of Economics of UFRJ in 2015.

PILAR et al. Alteração da postura nos 13 anos do GptOpFuzNav – HAITI. In: *O Anfíbio. MINUSTAH 13 Anos (Org)*. Revista do Corpo de Fuzileiros Navais. Rio de Janeiro: v.35, p.44-53, 2017.

SCHMIDT, Flávia de H.; ASSIS, Lucas R.S. A dinâmica recente do setor de defesa no Brasil: análise das características e do envolvimento das firmas contratadas. Texto para discussão 1878. IPEA: Rio de Janeiro, October 2013.

ZUCCARO, P.M. O início da MINUSTAH e os ensinamentos para a mobilização de Grupos Operativos de Fuzileiros Navais. In: *O Anfíbio. MINUSTAH 13 Anos (Org)*. Revista do Corpo de Fuzileiros Navais. Rio de Janeiro: v.35, p.6-13, 2017.

#### ASSIGNMENT OF RESPONSIBILITIES:

ANA CAROLINA AGUILERA NEGRETE: Conception and design; data analysis and interpretation; manuscript writing.

EDUARDO RODRIGUES DE SOUSA: Data analysis; manuscript writing; relevant and critical revision of intellectual content.