

# WORLDWIDE WAREHOUSE REDISTRIBUTION SERVICE AND EXCESS STOCK MANAGEMENT IN THE PORTUGUESE AIR FORCE<sup>1</sup>

## WORLDWIDE WAREHOUSE REDISTRIBUTION SERVICE E A GESTÃO DE STOCKS EXCEDENTÁRIOS NA FORÇA AÉREA

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### Abstract

Faced with an increasingly unpredictable budget climate, in which several operational restructurings are both planned and underway, the Portuguese Air Force (PoAF) has the difficult task of managing its excess stocks, which are no longer useful to maintain the current and renewed fleets, but that nevertheless continue to take up storage space and are only generating loss of revenue. This study will analyse alternative ways to monetise these stocks by using a service provided by the U.S. Government as part of its Foreign Military Sales assistance programme, the Worldwide Warehouse Redistribution Service (WWRS). The study uses inductive reasoning, a case study research design and a qualitative research strategy based on content analysis of the answers to semi-structured interviews. The interviewee sample consists of 18 national and international experts who intervene at different phases of the stock management process. The findings revealed that it would

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be feasible to use the WWRS to optimise the management of the PoAF's stored inventory. Among other benefits, it would free up storage space, monetise items that are no longer useful for the Branch, providing a partial return on investment, which the organization / institution can use to finance other core capabilities.

**Keywords:** Foreign Military Sales, Excess Stocks, Worldwide Warehouse Redistribution Service.

## **Resumo**

*Num contexto cada vez mais imprevisível em termos orçamentais e, na sequência das várias reestruturações operacionais, planeadas e presentemente em curso, a Força Aérea (FA) enfrenta um desafio ao nível da gestão de material (stocks excedentários), que, embora sem utilidade para a manutenção das suas atuais e renovadas frotas, continua a ocupar espaço de armazenagem, representando apenas um custo. Neste enquadramento, afigurou-se importante analisar formas alternativas de rentabilizar este material, por alienação, através, da utilização de um serviço disponibilizado pelo Governo Americano, no âmbito do seu programa de assistência Foreign Military Sales, o Worldwide Warehouse Redistribution Service (WWRS). O presente estudo assentou num raciocínio indutivo, no estudo de caso como desenho de pesquisa e numa estratégia de investigação qualitativa, de análise de conteúdo das respostas às entrevistas semiestruturadas realizadas a 18 experts, nacionais e internacionais, intervenientes em diferentes fases do processo de gestão de stocks. Da análise dos resultados, concluiu-se que é exequível utilizar o WWRS na gestão, rentabilizada, dos stocks armazenados pela FA, permitindo, entre outra mais-valias, libertar espaço de armazenagem, rentabilizar artigos já sem utilidade para o Ramo, algum retorno financeiro e conseqüente financiamento de outras capacidades core da organização/instituição.*

**Palavras-chave:** Foreign Military Sales, Stocks Excessivos, Worldwide Warehouse Redistribution Service.

## **1. Introduction**

The 22nd Government Programme 2019-2023 (2019, p. 43) states that “the Armed Forces (AAFF) are increasingly being called upon to carry out new and complex missions, to take on new responsibilities, always respecting the principle of efficient use of public resources.”

The economic and financial crisis of the last decade led the Portuguese Government to take a series of measures to control and curb public spending, which affected the National Defence sector in general, and the Armed Forces in particular (Caldas, 2018). The “Defence 2020” reform systematises a set of measures that aim to achieve process sustainability, including selling non-essential platforms and using the revenue to modernise the capabilities of the three AAFF branches (Caldas, 2018; Ministry of National Defence, 2015).

To meet the commitments it has made to the North Atlantic Treaty Organization (NATO), and pursuant to the provisions of the Law on Military Programming (LPM) (Organic Law No. 2/2019 of 17 June) currently in force, the future of Portugal's defence sector in will be

defined by the efforts to “modernise and enhance our military capabilities” (Constitutional Government, 2019). However, the State faces strong economic constraints and its ability to finance these modernisation efforts is limited (Santo, 2011). As stated in the 21st Constitutional Government Programme (2015, p. 53), increasing the efficiency of the AAFP would require “streamlining the way capabilities are managed by selling equipment near the end of its life cycle or available in surplus to obtain resources that can be channelled through the LPM and in support programmes for the defence industry”.

In an increasingly unpredictable climate in which operational reforms are both planned and underway, the Portuguese Air Force (PoAF) has the increasingly difficult task of managing the materiel that is no longer useful to maintain the current and renewed fleets, but that nevertheless takes up storage space, which carries a cost (J.M. Monteiro, video conference interview, 18 December 2020).

Thus, alternative ways to monetise this materiel must be analysed, such as reselling it using a service provided by the US Government (USG) through its Foreign Military Sales (FMS) assistance programme. This analysis should focus on the benefits of exploiting and monetising excess stocks (J.R. Nogueira, email interview, 26 November 2020) by optimising the use of the Worldwide Warehouse Redistribution Service (WWRS), through which member countries are able to sell materiel that they no longer use or have in surplus, while generating a considerable source of revenue. In the current climate of severe budget constraints, this programme could provide a way to generate funds that can be used to meet the institution’s actual needs (WWRS Program Office, 2019). This procedure was only used once by the PoAF, after the sale of F-16 platforms to Romania (M.J. Figueiredo, email interview, 24 November 2020).

Therefore, this study will address stock management practices, and is delimited as advised by Santos and Lima (2019):

Temporally, to the present day (2020);

Spatially, to the Portuguese Air Force (PoAF) and to the practices of other countries that are also FMS customers;

In terms of content, to the concepts of WWRS and excess stocks.

Therefore, the study’s general objective (GO) is *To assess the feasibility of using the WWRS programme on a regular basis to manage the PoAF’s excess stocks*. The GO will be achieved by accomplishing two specific objectives (SO):

**SO1:** *To analyse how the AAFP of other countries use the WWRS to manage their excess stocks;*

**SO2:** *To analyse how the PoAF manages its excess stocks.*

These objectives are operationalised by answering the research question (**RQ**): *Is it feasible to use the WWRS programme on a regular basis to manage the PoAF’s excess stocks?*

## 2. Theoretical and conceptual framework

This chapter describes the key concepts addressed in the study (excess stocks and WWRS) and presents the analysis model used in the investigation.

## 2.1. Literature review and key concepts

### 2.1.1. Excess stocks

Excess stocks, as the name suggests, are stock-keeping units that are available in excessive numbers when compared to their actual annual consumption (Nnamdi, 2018). Excess Stocks or Excess Inventories include deadstock or obsolete inventory (Kakarlamudi, 2018), including materials that have reached, or are about to reach, the end of their life cycle and are no longer suitable for use (Grondys, 2014).

Based on frequency of consumption, inventory can be divided into three categories (fast moving, slow moving and non-moving). “Non-moving” inventory is also called dead stock, that is, materials that remain in storage with no prospects of ever being used (Kakarlamudi, 2018). Essentially, “anything that is outdated or out of use or [...] that, due to advances in technology, [is] improved or even replaced over time” (Alves, 2017, p. 10).

Tersine and Toelle (1984) state that the main reasons for excess or obsolete stock (deadstock) are: forecasting errors; overly conservative procurement policies; technological innovation; and decreased demand for a given material.

In the private sector, excess stock has a negative impact on the financial health of a company because it uses up storage space. In fact, the methodology used to manage obsolescence processes is rarely sustained and the decision-making methods are so bureaucratic and time-consuming that they often doom operations to failure (Alves, 2017; Kakarlamudi, 2018).

### 2.1.2. Warehouse Redistribution Service

Before analysing the Warehouse Redistribution Service (WWRS) concept, this section will present the Foreign Military Sales (FMS) programme, an important tool of North American foreign policy that dates back to the 1950s (DSCA, n.d.; Godinho, 2015; Oliveira, 1998; Santos M. 1996; Yoo, Mallicoat, & Simpson, 2009).

This programme “[...] exists, not necessarily for the purpose of providing a market for the U.S. Contractors, but for the purpose of building relationships with foreign countries” (Gilman, 2014, p. 3). This principle is reflected in the legislation that governs the programme, the Arms Export Control Act, which provides that, under the authority of the State Department,

[...] it remains the policy of the United States to facilitate the common defense by entering into international arrangements [...] to achieve specific national defense requirements and objectives of mutual concern. To this end, this chapter authorizes sales [...] to friendly countries [...] to maintain and equip their own military forces [...]. (Gilman, 2014, p. 3)

The FMS is both a cooperation and an assistance instrument (DSCA, 2020), falling under the scope of “Security assistance and cooperation”. It aims, on the one hand, to support the strategic defence interests of the United States of America (US), and in that sense it functions as a cooperation programme, and, on the other, to sell defence goods and services to third countries, in which case it functions as an assistance programme (Godinho, 2015; DSCA, 2020).

FMS contracts are drafted in the form of a Letter of Offer and Acceptance (LOA) that sets

the conditions agreed to by the parties in what is commonly referred to as an FMS Case<sup>2</sup> (DISCS, 2019b; DSCA, 2020). The management and subsequent execution of the FMS Case is the responsibility of the Implementing Agencies (IA), which operate under the authority of the USG (DSCA, 2020; Godinho, 2015).

As an assistance programme with a “no gain and no loss” approach, the FMS is financed in its entirety by the amounts defined in the contracts for that purpose, or by applying an administrative fee that is adjusted according to the programme’s current funds (at the end of 2020, this surcharge rate was set at 3.2% on the value of the LOA) (DSCA, 2020; Godinho, 2015).

Based on a sampling of customers, a total of \$1.8 billion in excess FMS materiel is available for resale (WWRS Program Office, 2019). This information confirmed the assumption that the instruments available to customers for the disposal of FMS-acquired materiel were not expeditious or effective methods of selling or transferring this materiel (WWRS Program Office, 2019).

In addition to this complaint, at the time, the only way FMS customers could dispose of assets acquired via FMS was through Third-Party Transfers (TPT), which implied, on the one hand, obtaining authorization from the USG, and, on the other, a preliminary agreement between buyers and sellers specifying the conditions of the sale<sup>3</sup> (DISCS, 2019b). This was bureaucratic and slow, and many processes that were initiated were never completed (WWRS Program Office, 2019).

The WWRS was established following a study conducted by the Air Force Security Assistance Center to identify gaps and areas for improvement in the two programmes to resell excess materiel (the TPT and the FMS Excess Materiel Returns programme) (WWRS Program Office, 2019). It consists of a tri-service programme (US Navy, Army and USAF) that enables redistribution of surplus spare parts or support equipment acquired by FMS customers (DSCA, 2020) and aims to reduce lead times, reduce procurement and storage costs, and provide international partners a substantial revenue in materiel sales (WWRS Program Office, 2019).

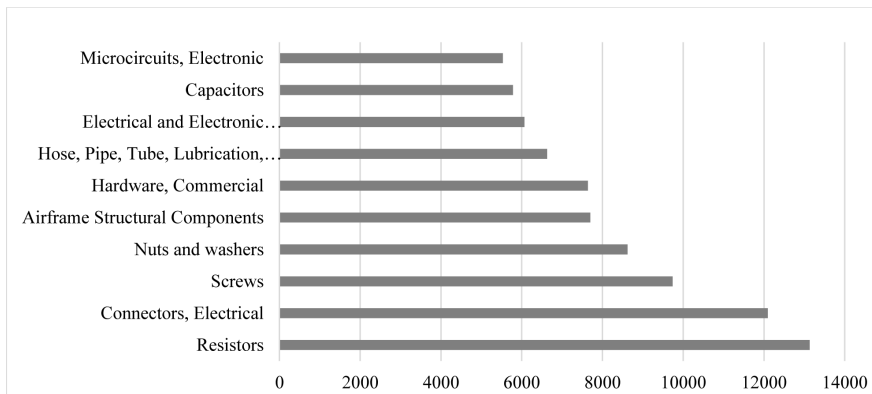
According to the Program Manager Office (PMO), the selling price of the materiel is set by the seller and the proceeds of the sale can be channelled to fund other purchases (WWRS Program Office, 2019).

The WWRS is a virtual warehouse of items to fill FMS requisitions. It is based on Ebay’s business model, in which the user can assume two roles – that of supplier and that of customer (AFSAC, 2018). Customers submit a list of their excess inventory available for sale to the PMO, who forwards it to the Air Force Security Assistance and Cooperation Directorate (AFSAC), which then lists the items on the WWRS website (AFSAC, 2018). While the list may include spares and support equipment, it cannot include Significant Military Equipment (SME) (AFSAC, 2018; DSCA, 2020). Thus, only non-SME items in condition

<sup>2</sup> FMS contracts will be referred to from here onwards as “Cases”.

<sup>3</sup> In accordance to the rules set by the U.S. Department of State (DISCS, 2019b), the seller not only must obtain authorisation to sell from the USG, but must also provide information regarding the buyer’s identity, and the sale is dependent on U.S. approval.

A, that is, Serviceable<sup>4</sup>, are eligible for redistribution via WWRS (WWRS Program Office, 2019). As of 15 December 2020, there were 211,942 listings on the programme’s website, which referred to various weapon systems with different Federal Supply Class Codes (FSC) (AFSAC, n.d.). All listings are anonymous. Figure 1 shows the ten FSC (all of which refer to spare parts) most frequently listed on the platform.



**Figure 1 – FSC Codes listed most frequently on the WWRS website (as of 15 December 2020)**

Source: Adapted from AFSAC (n.d.).

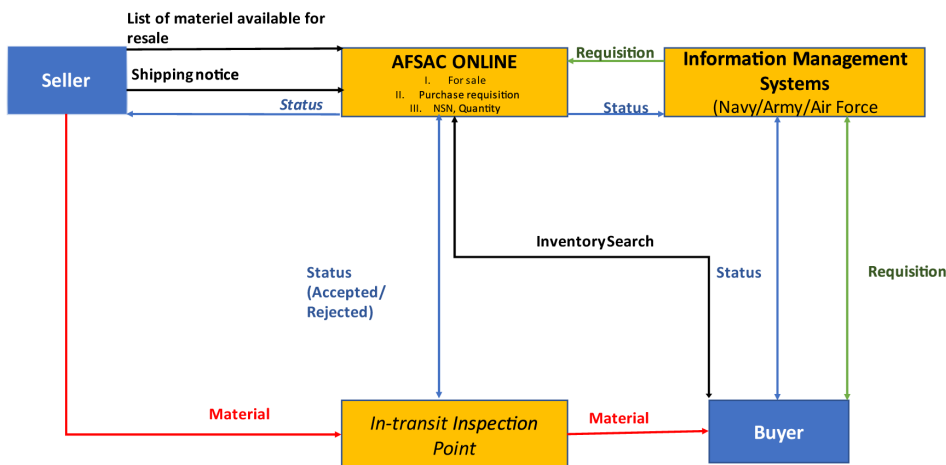
The seller country must open a Sales Case or Sellers Case, which may be created by opening a new Blanket<sup>5</sup> Order Support Case or by amending an existing contract (WWRS Program Office, 2019). This Sales Case may be contracted for any amount, however, the redistribution of the materiel will only occur if the funds (Obligation Authority) are sufficient to cover the programme fee (WWRS Program Office, 2019). To implement the Sales Case, that is, for it to become valid, a payment of 6.6%<sup>6</sup> must be made and the remaining amount will be “Balance as Billed”, that is, billed when the sale is completed (WWRS Program Office, 2019).

Once a requisition is submitted by the customer, the seller is notified and instructed to dispatch the materiel to the In-transit Inspection Point (IIP) (AFSAC, 2018; WWRS Program Office, 2019). When the materiel goes through the IIP for inspection and sanitisation, its title is transferred to the USG (WWRS Program Office, 2019). After this process, the materiel is shipped to the buyer, who assumes the tile, thus ensuring that TPT rules are not violated (DISCS, 2019b). Figure 2 outlines the WWRS logistics circuit.

<sup>4</sup> Non-SME items in condition A are “Issuable without qualification. New, used, repaired, or reconditioned material which is serviceable and issuable to all customers without limitation or restrictions” (DLA, n.d.).

<sup>5</sup> “An agreement between a foreign customer and the U.S. Government for a specific category of items or services (including training) with no definitive listing of items or quantities. The case specifies a dollar ceiling against which orders may be placed” (DISCS, 2019b, pp. AB-3).

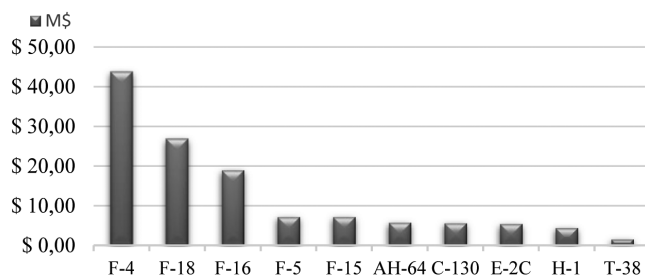
<sup>6</sup> 5% of the case line value plus half of the administrative surcharge (3.2%) (AFSAC, n.d.).



**Figure 2 – WWRS Logistics Circuit**  
 Source: Adapted from AFSAC (2018).

According to the project managers, 37 seller countries and 64 buyers (including the U.S. AAFB) registered with the WWRS from 1998 to 2018. Over \$182 million in transactions were made through the programme, and over \$181 million was returned to sellers, and the inventory available on the website increased from \$5 million to \$2.7 billion (AFSAC, 2018).

Figure 3 shows the “top 10” sales by weapon system, in millions of dollars, between June 2001 and September 2017 (AFSAC, 2018).



**Figure 3 – Top 10 WWRS sales by Weapons System between JUN01 and SEP17**  
 Source: Adapted from AFSAC (2018).

## 2.2. Analysis model

This study was carried out using the analysis model presented in Table 1.

**Table 1- Analysis model**

<b>General objective</b>	To assess the feasibility of using the Worldwide Warehouse Redistribution Service programme on a regular basis to manage the Portuguese Air Force's excess stocks.				
<b>Specific objectives</b>	<b>Research question</b>	Is it feasible to use the Worldwide Warehouse Redistribution Service programme on a regular basis to manage the Portuguese Air Force's excess stocks?			
	<b>Subsidiary questions</b>	<b>Concepts</b>	<b>Dimensions</b>	<b>Indicators</b>	<b>Data collection techniques</b>
<b>SO1</b> To analyse how the AAF of the other countries use the WWRS to manage their excess stocks.	<b>SQ1</b> How do the AAF of the other countries use the WWRS to manage their excess stocks?	WWRS	Functional	Use	Literature review and semi-structured interviews
				Benefits / drawbacks	
				Perceived usefulness	
				Alternatives	
<b>SO2</b> To analyse how the PoAF manages its excess stocks	<b>SQ2</b> How does the PoAF manage its excess stocks?	Excess stocks	Features	Origin of the material	
				Type of platform	
				Methods of identifying excess stocks	
			Processes	Procedure after ES are identified	
			Method	Storage	
				Method of disposal	

### 3. Methodology and method

This chapter contains the methodology and method used in the study.

#### 3.1. Methodology

The study used inductive reasoning and a qualitative research strategy based on a literature review and on a content analysis of the answers to semi-structured interviews, and a case study research design.

#### 3.2. Method

##### 3.2.1. Participants and procedure

Participants. The study sample included seven logistics and weapons systems maintenance experts from the PoAF's Weapons Systems Maintenance Directorate (DMSA), who manage the F-16, C-130 and P-3 fleets, which are usually renewed through FMS/DCS, and who are involved in the process of reselling this type of materiel (including the PoAF General Staff [EMFA], more specifically the Resources Division [DIVREC] and the Directorate General for National Defence Resources [DGRDN] of the Ministry of National Defence) (Table 2). The interviewee sample also included 11 Foreign Liaison Officers (FLO) from eight countries represented at the Air Force Security Assistance and Cooperation Directorate (AFSAC), in Wright-Patterson Air Force Base, Dayton, Ohio, USA: Argentina, Brazil, Canada, South Korea, Spain, Greece, Israel and Turkey (Table 2).

**Table 2 – Interviewee sample**

Position	Holder	Country	Area of expertise			
			AFSAC	MDN / DGRDN	Senior Managers (PoAF)	Fleet Managers (PoAF)
DMSA Director (and Director of the F-16 Programme Working Group)	Major General Salvada	Portugal			✓	
Former DMSA Deputy Director	Colonel Nogueira	Portugal			✓	
DMSA Deputy Director and Former Senior Foreign Liaison Officer at the AFSAC	Colonel Madruga Matos	Portugal			✓	
Foreign Liaison Officer - Brazil	Colonel Marcelo Rodrigues	Brazil	✓			
Resale and Demilitarisation DGRDN	Lieutenant Colonel Figueiredo	Portugal		✓		
Head of the Logistics Department of the EMFA's Resources Division	Lieutenant Colonel Milharadas	Portugal			✓	
Foreign Liaison Officer - Argentina	Lieutenant Colonel Adolfo Mengual	Argentina	✓			
Foreign Liaison Officer - Brazil	Lieutenant Colonel Delamonica	Brazil	✓			
Foreign Liaison Officer - Canada	Lieutenant Colonel J.F. Harvey	Canada	✓			
Foreign Liaison Officer - Greek Air Force	Lieutenant Colonel Kostas Stampoulakis	Greece	✓			
Foreign Liaison Officer - Greek Air Force	Lieutenant Colonel George Georgaras	Greece	✓			
Foreign Liaison Officer - Israeli Air Force	Lieutenant Colonel Yossi Naor	Israel	✓			
C-130 Fleet Management - DMSA	Major Monteiro	Portugal				✓
Foreign Liaison Officer - South Korean Air Force	Major Sangwon Jeon	South Korea	✓			
Foreign Liaison Officer - Turkish Air Force	Major Onur Can	Turkey	✓			
P3 Fleet Management - DMSA	Captain Viana	Portugal				✓
Foreign Liaison Officer - Ejército del Aire	Captain Victor Sanchez	Spain	✓			
Foreign Liaison Officer - Turkish Air Force	Captain Ihsan Topaloglu	Turkey	✓			

Procedure. The interviewees were contacted by email (the semi-structured interview script was sent in advance to the national participants). The interviews were conducted by email or video conference. The semi-structured interview script was sent to the international participants by email, and the answers were also sent by email. The interviewees were assured of the anonymity and confidentiality of their answers, which all waived.

### 3.2.2. Data collection instruments

Four scripts tailored to each group of interviewees were prepared for the semi-structured interviews.

### 3.2.3. Data processing techniques

A literature review was conducted and a content analysis (using *a priori* categories, as in Fachada, 2019) was performed on the data obtained in the interviews.

## 4. Data presentation and discussion of results

This chapter analyses and answers the research questions.

### 4.1. How the AAF of other countries use the WWRS to manage their excess stocks

The eight countries analysed have different methods to manage their excess stocks. This is largely due to each country having its own types of organization and constraints.

The Canadian Armed Forces have a directorate that answers to the Assistant Deputy Minister, which deals directly with obsolete or excess inventory (J.F. Harvey, email interview, 22 October 2020).

The Turkish Air Force

[...] uses quarterly material requirement calculations to review their last three years of material consumption and determine the material needs for the next ten years. During this process, some assets are deemed as excess inventory. This is either the main weapon system is no longer in use or the stock levels are more than enough to cover the next ten years of consumption. This list is reviewed by material managers [...]. The [...] excess inventory is passed to a special office to sell, recycle or get rid of these assets. (I. Topaloglu, email interview, 02 November 2020)

Despite owning large quantities of materials for obsolete systems and having opened a sales Case with the WWRS, due to internal policy reasons, the Hellenic Air Force has usually opted for storing this materiel and there are no plans to use or dispose of it (G. Georgharas, email interview, 5 November 2020).

In the Brazilian Air Force, “the item is sold or donated to Brazilian institutions [...] or neighbouring countries in South America, [it is] a time-consuming process, that must be authorised by the USG [...]” (M. Rodrigues, email interview, 21 October 2020), and, in the case of products acquired through the FMS, authorisation is also required for the TPT.

South Korea, Turkey and Israel (and Brazil, in some cases) – countries that have usually opted to dispose of the materiel – two distinct situations have occurred, depending on the conditions for this procedure described above. Thus (A. Mengual, email interview, 03 November 2020; I. Topaloglu, op. cit.; J.F. Harvey, op. cit.; M. Rodrigues, op. cit.; N.F. Delamônica, email interview, 21 October 2020; O. Can, email interview, 06 November 2020; Y. Naor, email interview, 06 November 2020), if the materiel is acquired through the FMS and is classified as: SME, when the seller country finds an interested buyer, it must request U.S. authorisation to complete the transaction; to increase the likelihood of a successful

redistribution, if the country has a Sales Case with the WWRS, non-SMEs in usable condition are advertised on the programme website.

The Spanish *Ejército del Air* has never used the programme because it rarely has excess stocks and thus the fee would be too high. When they exist, they are usually offered to other countries (V. Sanchez, email interview, 25 October 2020).

#### 4.1.1. Awareness, utilization and perceived usefulness of the WWRS by the AAF of other countries

Of the eight countries analysed in the study, all of which were familiar with the WWRS programme, only one, Canada, stated it had never used it as a buyer because it did not perceive it as useful, as “[...] the fees are too high”. Despite this, it did not consider it to be a “disadvantageous” programme as a whole (J.F. Harvey, op. cit.). Spain does not use the programme as a seller, and made no comments on the perceived usefulness of the programme.

As Table 3 shows, five of the eight countries in the study have opened a Sellers Case and regularly update their portfolio.

**Table 3 – Countries with a Sellers Case**

Country	Yes	No	Comments
Argentina		✓	“It was considered but benefits against cost analysis was found negative.”
Brazil	✓		
Canada		✓	
South Korea	✓		
Spain		✓	“[...] having to have an open case with funds just for selling few stocks is the main drawback for not having a seller case.”
Greece	✓		“Although we are officially sellers, there is no possibility of the Law of my country to sell [...] via WWRS. (just an issue in the procedure)”
Israel	✓		
Turkey	✓		“The procedures and processes are similar to having another supply case. Limited items are eligible, and limitations are making it easy to control. Turkish Air Force is also a predominant seller of WWRS.”

#### 4.1.2. Perceived benefits and drawbacks of the WWRS

The benefits for buyers are that it provides a user-friendly platform that can be used to search for material available for redistribution, as well as an alternative source for procuring items that are difficult to find with shorter lead times (S. Jeon, op. cit.; M. Rodrigues, op.cit.) and at more competitive prices (K. Stampoulakis, op. cit.) than when buying directly from the market or through the PROS programme<sup>7</sup> (A. Mengual, op. cit.). These acquisitions can be funded through a Blanket Case (for spare parts or equipment) that has already been

<sup>7</sup> “Parts and Repair Ordering System procurement system is managed by AFSAC to support FMS customers’ logistics requirements. [...] procurement and maintenance support for [...] nonstandard and hard to support standard items as well as providing a contracting vehicle for specialized engineering and technical services through task orders” (Parts and Repair Ordering System, n.d.).

implemented by international partners, that is, FMS clients (WWRS Program Office, 2019).

Other advantages for sellers are the possibility of freeing up storage space in crowded warehouses and saving on storage costs, obtaining a financial return that can be used in new purchases from the FMS, as well as a guaranteed return on part of the investment made by these countries' AAFF (I. Topagluglo, op. cit.; M. Rodrigues, op. cit.; K. Stampoulakis, op. cit.; O. Can, op. cit.; S. Jeon, op. cit.), in addition to the fact that "you don't need to go through selling approval process [and] you don't have to put effort into promotion" (Y. Naor, op. cit.).

The drawbacks for sellers do not reside in the organization of the programme, but on internal processes inherent to the "functional" idiosyncrasies of each country, as in the case of the Turkish Air Force.

Excess inventory resale is not a mission critical operation and therefore does not get enough attention and/or personnel. This leads to delays in material shipment times and worsens the reputation of WWRS as a source of supply for all countries [...]. (I. Topaloglu, op. cit.)

The following drawbacks for buyers were identified (Table 4): the time-consuming nature of the process; the need to confirm if the information published in the system is up-to-date, which it frequently is not; and the anonymity of the process may make it harder to identify the origin of problems when they occur.

**Table 4 – Perceived drawbacks of the WWRS for buyers**

Country	Drawbacks
Argentina	"Regularly, acquisition is easy. The only exception is when the original requisitions is against a CLSSA case."
Brazil	"The timeframe to receive the materiel is sometimes a challenge because the seller country has up to 60 days to ship the materiel to the IIP. [...] essential [...] items are not procured via WWRS [...]. The price is set by the seller and sometimes the sale is made by minimum lot, [...] which can make a purchase expensive".
Canada	"No."
South Korea	"No."
Spain	"[...] process is so blind for the buyer and one doesn't know what is going on when something goes wrong."
Greece	"The only difficulty [...] is that you must first ask if the material is still available [...] and [in what condition and price] [...]. [...] [Many] sellers do not update their listings [...] and [...] [sometimes] the item is not available any more or the price is way higher [...]. Additionally, some sellers are too slow when it comes to confirm/reply/ship the item to the US distribution point."
Israel	"[...] it is a bit harder than the standard procurement process when you try to find unlisted items, but not dramatically."
Turkey	"Due to its distributed and reverse supply chain, WWRS has a reputation for shipping late, being unresponsive (seller related issues), and being an unreliable source in general."

#### 4.1.3. Other mechanisms used by other countries' AAFF to resell materials acquired via FMS/DC

As shown in Table 5, the following mechanisms are available for the disposal of material acquired via FMS/DCS: disposal via TPT; in the case of NATO countries, through NSPA programmes; donation and / or sale for scrap, in the case of items that are not in usable / repairable condition.

**Table 5 – Other mechanisms used by the AAFF of other countries to resell materials acquired via FMS/DC**

Country	Mechanisms
Argentina	-
Brazil	"[...] unserviceable material is sold as scrap to local buyers. It is mostly [...] sold in Brazil to private companies, and in that case we do the TPT [...]. In some cases, we donated it to other countries in South America (politics)."
Canada	"Our own Disposal Directorate [...] is doing the disposal/sale. As a note, we bought from Australia, used F-18's to gap our capabilities until we get a 5th generation fighter. The purchase was done via our normal procurement channels with the TPT process executed in coordination with Australia, Canada and the US [...]"
South Korea	"No, it is very limited because of the characteristics of items through FMS/DCS. These items require approval from USG to sell other countries, which make it impossible to devise our own system."
Spain	"[...] usually, we offer surplus directly to other users of same material (TPT)."
Greece	"No, for materials purchased through FMS. For the disposal as row material/sale as scrap mainly, when applicable."
Israel	"Yes, we are selling our excess inventory (mostly SME) through direct sells (under USG approval)."
Turkey	"NATO logistics stock exchange (NLSE). FMS/DCS regulations mandates the use of either WWRS or country-to-country agreements for the disposal/sale of materials purchased from US manufacturers. If an asset cannot be sold via these solutions, Turkish Air Force mainly uses internal recycling and disposal capabilities."

NATO member countries have access to alternatives to the WWRS programme within the Alliance, under the umbrella of the NATO Support and Procurement Agency (NSPA), such as the COMMIT (Common Item Management) programme, of which Portugal is a member, and the NLSE, which are optional methods of redistribution among adhering partners (J.F. Harvey, op. cit.; M.J. Figueiredo, op. cit.; O. Can, op. cit.).

#### 4.1.4. Brief overview and answer to SQ1

Based on the above analysis, the answer to SQ1: *How do the AAFF of other countries use the WWRS programme to manage their excess stocks?*, is that the programme is well integrated into the procedures used by seven of the eight analysed countries (Argentina, Brazil, South Korea, Spain, Greece, Israel and Turkey), five of which (i.e. excluding Argentina and Spain) have opened Sellers Cases.

For buyers, the main benefits of this programme are that they can use it to procure materiel that is no longer actively required by the USG and is sometimes difficult to find, at competitive prices and with more efficient lead times, through a user-friendly platform. The benefits for sellers are freeing up storage space in crowded warehouses while saving in storage costs and providing a guaranteed financial return on part of investments made (on acquiring the items), which can be used for new purchases.

The drawbacks – which refer to less positive aspects that do not affect the perceived value of the programme as a whole – are the high fees charged for using the service, for sellers, and for buyers: the process can be somewhat time consuming; the need to confirm regularly if the information in the system is up-to-date; and potential difficulties in determining the origin of problems that may occur due to the anonymity of the parties involved in the process. Other drawbacks relate to countries' internal procedural issues, which sometimes

to condition or delay the process of identifying, listing and selling excess inventory.

Finally, the countries analysed here tend to use other methods to manage their excess stocks, usually one of the following four: storage; donation; sale for scrap when the materiel is no longer usable or repairable; and / or, in the case of materiel in usable condition, resale. Non-SME materiel acquired via FMS/DCS can be resold by advertising it on the WWRS website when the country has a Sellers Case (in order to maximise the success of the redistribution) or through other mechanisms such as a TPT or, in the case of NATO countries, through NSPA programmes.

## 4.2. How the Portuguese Air Force manages its excess stocks

This sub-chapter analyses the process used by the PoAF to manage its excess stocks, focusing on the process to resell them, and answers SQ2.

### 4.2.1. Origin of the materiel and methodology for identifying excess stocks

Origin of excess inventory. The PoAF's excess stocks, on the one hand, "come from weapon systems that are no longer in service, or systems that have been replaced in a given weapons system" (M. M. Matos, email interview, 01 December 2020) and, on the other hand, from "management criteria used in the *Guerra do Ultramar*, a time when three years' worth of stock was a requirement, leading to the acquisition of unused materiel" (P.A. Salvada, email interview, 26 November 2020).

Therefore,

excess stocks come, for the most part, from past processes rather than current ones, [and] were acquired together with weapons systems, at a time when large quantities of materiel [were] supplied with the aircraft, known as Initial Provisioning Lists<sup>8</sup>, as well as with other procurement processes [...] which, due to lack of knowledge and experience of consumption and failure rates, resulted in the additional acquisition of materiel that proved to be in surplus. (P.A. Salvada, op. cit.)

Methods of identifying excess stocks. The lack of systematic stocktaking and analysis procedures to identify the materiel in store is a gap in the process. For example, the C-130 review is performed once a year through an undocumented procedure based on an

analysis of the recent consumption history, usually five years [...] we compare it with what we have in storage (shop stock and bench stock) and calculate the delta, [...] [however, this] is not done systematically. [Thus] a [routine] procedure should be implemented to identify criteria to analyse and assess what we have in storage, and what is and isn't surplus. (J.M. Monteiro, op. cit.)

Given the PoAF's priority areas of operation, identifying excess stocks "is not a concern", and is largely done in an "[...] *ad hoc* manner, when someone remembers that there are unused items in storage and makes efforts to ensure that [the] resale procedures are initiated or that a request for a decision is sent to the manager" (J.T. Viana, op. cit.).

This means that "there are multiple opportunities to improve materials management" (P.A.

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<sup>8</sup> "Quantity of items (i.e., spares and repair parts, special tools, test equipment, and support equipment) required to support and maintain an item for an initial period of service" (Military Factory, n.d.).

Salvada, op. cit.). The “big boosts come when Weapons Systems are dismantled and sold” (J.R. Nogueira, op. cit.), and it is usually only when “fleets are phased out or after major modifications, [...] that someone warns that there is unnecessary material” (P. A. Salvada, op. cit.). For example, [...] from 2014 to 2016, some ad hoc initiatives [were undertaken] to achieve specific objectives, [as a result] of the restructuring of the Aeronautical Material Supply Chain, [which aimed] to remove the Air Force General Materiel Depot from the circuit, and [...] free up space in the warehouses of this Unit and the Base Units. (J.R. Nogueira, op. cit.)

As described, the current process is perceived as irregular (J.M. Monteiro, op. cit.) and inefficient (P.A. Salvada, op. cit.) and is only

[...] rarely successful. There are different reasons for the process to fail, but all essentially lead to the inability to prepare credible lists of inventory for resale due to lack of human resources and automated mechanisms. The focus is always on meeting the procurement / repair needs and not on write-off and resale. (J.R. Nogueira, op. cit.)

#### 4.2.2. Resale methods and procedures

Procedures. In Portugal, the resale of war materials and other equipment that is no longer required by the AAFF in general, and the PoAF in particular, is regulated by Decree-Law (DL) No. 48/89 of 22 February. The way this process is executed varies depending on whether it refers to a Defence Related Product (DRP) (Decree-Law No. 98/2019 of 30 July) or to dual use items (CE Regulation No. 428/2009 of 05 May). The DL determines that

[...] in order to cut down on spending and meet the current needs, it is urgent to resell certain materiel. [This process] aims to recover revenues for the State’s coffers, which can be used to replace the resold items with other materiel more technically up-to-date and more operationally useful, thus relieving the Armed Forces of the costs of storing and maintaining items that are obsolete and have no use. (p. 741)

Also according to DL no. 48/89 of 22 February, “[...] the sale of war materials is processed through the Directorate-General for Armaments, [currently operating at the] DGRDN”, and the Chiefs of Staff of the Navy, Army and Air Force are responsible for determining the availability of the materiel for resale, after the Council of Chiefs of Staff gives its opinion [...] (M.J. Figueiredo, op. cit.).

In the PoAF, the process of dismantling and reselling military assets is defined in a directive issued by the Chief of Staff of the Air Force (CEMFA), Directive No. 18/2017 of 16 August. Thus, the

gaps in the process occur before the Directive is issued, [and stem] from lack of routine procedures / criteria for identifying stock levels at any given time, and, depending on their value, to propose this excess inventory for write-off and subsequent resale. Naturally, these routines are not easy to establish, as largely they depend on: the number of flight hours for each aircraft; the durability of the components; whether it is easy or difficult to replenish a given item if needed; the price; and the type of item (consumable or repairable). (J.R. Nogueira, op. cit.)

In operational terms, “the DIVREC liaises between the PoAF and [the DGRDN]” (M.A. Milharadas, email interview, 16 December 2020). The process to resell excess inventory can be initiated by one of the three departments listed in Table 1.

**Table 1 – PoAF departments that initiate in the resale process**

PoAF department	Reasons
The Air Force General Staff proposes the deactivation (or reduction in number of aircraft) of a Weapons System to the CEMFA	Planned replacement due to obsolescence when the operational costs are too high, etc.
Air Force Logistics Command (CLAFA)	Logistics-related reasons and deactivation or reduction in the number of aircraft of weapons system (the proposal is assessed by the General Staff and submitted to the CEMFA for a decision)
The Technical Directorates	Certain components, equipment or aircraft are propodes dor sesale for logistical reasons (cannot be repaired due to technical problems / excessive costs, unnecessary stock, etc.). The Technical Directorate prepares an Information (the process may be coordinated with EMFA), which is submitted to the CLAFA for an opinion and to the CEMFA for a decision on dismantling and resale.

Source: Adapted from M.A. Milharadas (op. cit.).

Once the materials for resale are identified, the decision on how this will be done is taken by “[...] the DGRDN. However, the PoAF has an active role and the decision is discussed and coordinated [with the Branch]. If we identify resale avenues that we believe are more advantageous, an agreement can be reached with the DGRDN” (M.A. Milharadas, op. cit.).

Items procured through the FMS have specific “[...] requirements for resale [...] which refer to whether or not the USG authorises the operation and the nature of the materiel for disposal. [This] process is, as a rule, time-consuming and complex” (J.R. Nogueira, op. cit.).

Furthermore “if an item is classified as be war material, according to the Common Military List of the European Union<sup>9</sup>, the procedure is even more complex. If the item is classified as dual use, the process tends to be much faster” (J.R. Nogueira, op. cit.). However, as

[...] DL No. 48/89 does not [use] the terms “defence-related products” or “dual use”. [Thus, as] the classification is sometimes [...] unclear, [its use] should be harmonised in both the branches and the DGRDN, [so] what is classified as war materials can be dealt with by the DGRDN and the rest by the branches. (M.J. Figueiredo, op. cit.)

Methods. The sale mechanisms most commonly used by the National Defence sector are defined in the Public Procurement Code (CPC) and consist of-

publishing an international invitation to tender, awarding contracts directly (when there are no bidders) and initiating a prior consultation procedure (with at least three companies listed in the DGRDN database, usually in the case of materials sold for scrap). [Another method that is not as commonly used is] through a direct sale (which does not require a tendering procedure) to another nation / government, which has the advantage of not requiring demilitarisation, in most cases, as long as the country of origin of the material authorises it [...] or loaning or transferring the equipment to entities external to the PoAF, which evidently does not generate a financial return, and sometimes carries costs with the preparation or transportation of the materials. (M.A. Milharadas, op. cit.)

In general, the decision to write-off materiel through one of the procedures described above “[...] usually depends on the total sale value of the materiel for disposal” (J.R. Nogueira, op. cit.).

<sup>9</sup> Lists the equipment covered by Council Common Position 2008/944/CFSP, which defines common rules to control exports of military technology and equipment.

Until now (late 2020), the DGRDN has relied mainly on solutions that did not involve the WWRS (Table 2), “with the exception of the DTC [Data Transfer Cartridges] acquired with the proceeds from the sale of 12 F-16/MLU aircraft to Romania, without which it probably would not have been possible” (M.J. Figueiredo, op. cit.).

**Table 2 – Most frequent disposal methods used by the DGRDN**

Method	Examples
Government-to-Government	Aviocar (Uruguay), F-16 (Romania), etc.
International Invitation to Tender	3 to 18 lots F-16/OCU to U.S. company DTE
Prior consultation with national companies registered in the DGRDN database that are qualified to recycle this type of material	T-33 and FTB for dismantling, C-130 and P-3 materials for recycling
Donation to Public Entities	-
Sinking to create natural reefs	Ships

Source: Prepared from M.J. Figueiredo (op. cit.).

As Table 6 shows, the ways in which the PoAF has disposed of materiel acquired through the FMS have generally involved storing the materiel to the point where selling it for scrap is the only alternative. This is perceived as costly and has no economic benefits (for the Branch and, naturally, for the State), resulting in perceptions of low, or even null, effectiveness and profitability (Table 6).

**Table 6 - Perceived effectiveness and profitability of the methods used by the PoAF to dispose of material acquired via FMS**

Functional area	Position	Perceived effectiveness and profitability
PoAF senior manages	DMSA C-130 Director	“The only example I know of that was both successful and effective was the sale of F-16s to Romania (two contracts, 181M€, and 130M€ respectively).”
	Former DMS Deputy Director	“The key requirements for the sale of [...] FMS materiel are [...] the authorisation of the US government to [...] resell and the nature of the materials [...]. [This] process is generally time-consuming and complex [...] [A] system for sales, [...] between Governments would provide a simplicity that may be worth exploring.”
	DMSA Deputy Director	“To the best of my knowledge, sometimes the material is only sold when it is no longer good for anything but scrap, which is costly for the state. If [...] the process is more expeditious, it may be possible to resell the materiel when it can still be used by other operators, generating a financial return for the state.”
	Head of the DIVREC Logistics Department	-
Fleet manages	C-130 fleet manager	“Naturally, it is not [profitable] [...]. If it's equipment [...], with some monetary value – it's certainly not going to be profitable in storage. I only see costs, not benefits, when we know beforehand that we are not going to use it [...] [we] don't have a faster procedure to dispose of this materiel.”
	P3 Fleet Manager	-

#### 4.2.3. Brief overview and answer to SQ2

The above analysis provided an answer to SQ2: *How does the PoAF manage its excess stocks?* The process to manage excess stocks in the PoAF before the decision making process

for the disposal of excess inventory is perceived as unsatisfactory in terms of systematisation. This surplus is generated, on the one hand, when dismantling or modernising weapons systems and, on the other hand, from past processes in which weapons systems were acquired and large quantities of materiel were supplied with the aircraft.

Even though the legal framework regarding the disposal of war materials clearly defines the entities responsible for the process (the DGRDN and the PoAF's DIVREC, the latter being responsible for coordinating the procedures between the PoAF and the DGRDN), the need to obtain approval from the USG to dispose of materiel acquired via FMS is usually a time-consuming, complex process, which, in the opinion of most interviewees, would greatly benefit from a more systematic use of the WWRS.

Some gaps were also identified in the process used by the PoAF to manage its excess stocks – despite the fact that the process for write-off and resale of materiel is clearly defined in the ministry directives – due to the lack, on the one hand, of official procedures to identify the optimum stock levels and surpluses that may be redistributed, and, on the other, of sufficient human resources or automated mechanisms to streamline the process and draw up lists of items for disposal. In other words, there is an urgent need to “correct” (intervene and reverse) the process in an initial phase, as it is currently perceived as: not systematic, inefficient, only rarely successful and not a priority when compared to other PoAF activities and missions.

### **4.3. Feasibility of using the WWRS programme on a regular basis to manage the Air Force's excess stocks, and answer to the RQ**

To provide a detailed answer to the RQ, the main benefits / drawbacks are analysed below along with the perceived threats / opportunities of using the WWRS in a more systematic manner to manage the PoAF's excess stocks, more specifically in the write-off phase.

#### **4.3.1. Awareness, utilization and perceived usefulness of the WWRS by Air Force (senior and fleet) managers**

Of the six managers interviewed, three (including the two fleet managers) were not familiar with the WWRS programme prior to this study. However, despite some difficulties in terms of utilization, all perceive it as useful. These difficulties relate, on the one hand, to high lead times (M.M. Matos, op. cit.), including in establishing the required LOA (P.A. Salvada, op. cit.), and, on the other, to some scepticism within the PoAF due to lack of knowledge about the programme (J.R. Nogueira, op. cit.), as well as the associated costs. However, these costs are perceived as a “[...] sensitive issue [because] they are largely outweighed by the benefits of advertising the material we have to sell to a broader range of connoisseurs and potentially interested parties” (J.M. Monteiro, op. cit.).

Therefore, the programme is perceived as useful even though it is only intended for “[...] some types of materiel (P.A. Salvada, op. cit.) because the PoAF has a considerable amount of U.S.-made materiel for disposal (M.A. Milharadas, op. cit.) and because “[...] it is a way to find operators interested in the items that are still in usable or repairable condition; [to handle] all the property transfer licences and associated documentation; [and] to establish a minimum

sale price, selling in lots, etc.” (M.M. Matos, op. cit.).

Moreover, the perceived benefits of the programme for sellers are that it provides access “[...] to a wide range of operators who are potential customers” (M.M. Matos, op. cit.), “[...] creating routine procedures that will be used more systematically than those currently used by the PoAF because it is an established programme” (J.R. Nogueira, op. cit.), and “facilitating the administrative part of the process for third countries, [as well as providing] clarity and transparency” (P.A. Salvada, op. cit.).

#### 4.3.2. Perceived benefits and drawbacks of the FMS/WWRS programme for senior managers

As shown in Table 7:

- The main benefits are that it enables economies of scale in the acquisition / repair of essential equipment to support our fleets at more competitive prices and provides access to otherwise inaccessible materiel;
- The main drawbacks are the timings and deadlines to open and implement a Case, the long lead times for the delivery of some items, and the impossibility of contacting suppliers directly, as the process is always mediated by the USG.

**Table 7 - Benefits and drawbacks of using the FMS programme to sustain the PoAF fleets**

Position	Benefits	Drawbacks
DMSA Director	“[...] obtaining material at prices similar to those charged to the U.S. Air Force, and gaining access to material that would be impossible to obtain by other means, including classified material.”	“[...] the lead times of some items that are not widely used in the U.S.”
Former DMSA Deputy Director	“[...] it would expedite the process of obtaining equipment that cannot be obtained through other procurement mechanisms. Furthermore, [...] the prices tend to be extremely advantageous compared to other procurement solutions”.	“[...] limited flexibility in finding the appropriate times to formalise the FMS Cases, as the financial availability to support them does not generally coincide with the date of need.” “[...] is a solution for procuring U.S.-made aircraft only [...].”
DMSA Deputy Director	“[...] acquiring items in larger lots, [at] more competitive prices. [It is also possible to] obtain items in small quantities from suppliers that only sell a minimum quantity, [...] and items that are in stock for U.S. services [as well as] opening a case for bench stock acquisition [...].”	“Contacting the manufacturer directly is difficult or impossible, and all logistical and / or technical questions must go through the Implementing Agency responsible for the FMS Case”.

Regarding the use of the WWRS to resell material purchased via FMS/DCS (Table 8), according to senior managers:

- The main benefits are that it provides transparency, simplifies the administrative aspects of the transaction for third countries, and increases the visibility of the materiel to be sold and the potential revenue for the PoAF;
- The main drawbacks are the administrative fee required to use the service, the fact that partners may not be interested in the materiel that the PoAF has to sell, and the fact

that the revenues from the sale remain in the holding account in an initial phase, and are therefore more easily channelled into another FMS case than to meet another need.

**Table 8 – Benefits / drawbacks of using WWRS to resell material acquired via FMS/DCS**

Functional area	Position	Benefits	Drawbacks
PoAF senior managers	DMSA Director	“Simplifying the administrative aspects of the transaction for third countries, clarity and transparency.”	“The main [advantage] is that the fee [...] implies that [...] the item is likely to be sold.”
	Former DMSA Deputy Director	The same as in the previous table.	“[...] the fact that our excess materiel, [...] due to its nature, age or purpose, may be of little interest to users of the platform [...].”
	DMSA Deputy Director	“[...] obtaining revenue from items that are no longer useful to the PoAF.”	“[...] the revenue remains in the PoAF’s Holding Account, so it will be considerably easier to use it in other FMS cases than to use it, for example, to buy directly from the market.”
	Head of the DIVREC Logistics Department	“[...] selling through this system can facilitate [obtaining authorisation to sell]”. [...] Increase the material’s visibility and [...] the likelihood that it will be sold [...] [...] [eliminating] the need for publishing invitations to tender, which require constant follow-up, [freeing] human resources [...] for other tasks that generate more value.”	“Many of the systems [...] available for sale are obsolete or very outdated, so demand may be scarce [...]. It implies a fee, even when the materiel is not sold.”

However, “the remaining funds may be transferred to an alternate FMS case, withdrawn to the seller’s national treasury, or left in the WWRS cash holding account at DFAS-Indianapolis” (AFSAC, n.d.).

Furthermore, the idea that

[...] the revenue [can] only [be] used on other FMS [Cases] via holding account, [...] is not a problem for the DGRDN, as the funds obtained in all sales will be directly allocated to reinforce the funds of the branch of origin of the materiel (legal basis or opinion of the Directorate General). (M.J. Figueiredo, op. cit.)

#### 4.3.3. Perceived threats and opportunities of the FMS/WWRS programme

Threats. There may be no interest in the available materiel (J.R. Nogueira, op. cit.; M.J. Figueiredo, op. cit.) because

the buyer market is not as big as one might think, precisely due to the obsolete nature of the items being sold. [...] In fact, most advanced modern AAFP who are FMS customers have weapons systems as up-to-date as, or more up-to-date than Portugal. Therefore, if we list a lot with a few thousand article lines on the WWRS website, we may [only] sell a few items. (M.J. Figueiredo, op. cit.)

Opportunities. Promoting the material through this platform increases its “[...] visibility [...] for resale and, consequently, the likelihood that it will be sold” (M.A. Milharadas, op. cit.). Therefore, “even if there is a cost [...] that cost would be largely exceeded by the advantage of having access to a wider range of connoisseurs and potential interested parties in the materiel we have to sell” (J.M. Monteiro, op. cit.).

Furthermore, there appear to be several windows of opportunity for the PoAF to monetise the programme, such as the modernisation of the C-130, in which

[...] much of the equipment we have on board the aircraft is being replaced, [and there is] no advantage in keeping material that implies storage costs (even if they may seem insignificant to the PoAF). [Hence the interest in implementing] a procedure that allows us to sell this materiel in a more expeditious manner, [as it] can still be of use to a wide range of C-130 operators worldwide [...] who may be interested in buying this materiel, however, if they are not aware [of our intention to sell] they will certainly not make an offer to buy it. (J.M. Monteiro, op. cit.)

This is also the case of the P-3C fleet, for which there is material (spare parts and equipment) left over from previous configurations that cannot be used in the aircraft's current configuration, but which may be of interest to countries / international partners that continue to operate the previous configuration (J.T. Viana, op. cit.).

Furthermore

[...] components with a shelf life, [which is] something that our Bases do not usually assess [but that could be carried out through an] integrated procedure [to] determine in advance when an item's shelf life is about to end and [...] list it on this type of platform. (J.T. Viana, op. cit.)

Therefore, when balancing threats and opportunities, the WWRS is perceived as an excellent option to manage the PoAF's excess stocks (M. M. Matos, op. cit.), and its implementation in the Branch is feasible in the current context, "[...] as long as [it is used] in a targeted manner, for the items that are more likely to be sold" (P. A. Salvada, op. cit. ) and if "[...] managers are immediately informed of stocks available for resale, in order to expedite the internal procedures while the FMS case is opened, and more information is available regarding [its] use by other operators [...]" (J.R. Nogueira, op. cit.).

#### 4.3.4. Brief overview and answer to the RQ

The above analysis provided an answer to the RQ, *Is it feasible to use the WWRS programme on a regular basis to manage the Air Force's excess stocks?* The answer is yes because the programme has benefits, as long as the conditions listed below are met.

Specifically, the benefits associated with: the possibility of advertising the material for resale to potential customers; simplifying the administrative aspects of the transaction for third countries and the clarity and transparency of the process; the fact that it allows the PoAF to monetise and obtain a financial return on items that are no longer useful; and avoiding the bureaucracy inherent to traditional sales processes (i.e., difficulties and delays related to obtaining authorisations, licences and associated documentation), which is somewhat mitigated because the programme is responsible for the administrative aspects.

In addition to these benefits, there are other advantages that depend on windows of opportunity, which outweigh one possible threat that may limit the success of using the WWRS on a regular basis. It refers to the fact that there may be lack of demand for the materiel available because it is considered obsolete and useless to potential buyers registered with the programme. These windows of opportunity refer to the modernisation of: the P-3P to the current configuration, which has generated material with a shelf life that will no longer be

used, but that is still within its expiry date; the C-130H, which has generated large quantities of spare parts and rotating equipment still in useable condition, which may be of interest to international partners.

Finally, one “advantage that is also a disadvantage” is the cost of implementing the contract (payment of an administrative fee to use the service), which is perceived as highly disadvantageous if the materiel is not sold, but also highly advantageous as it increases the range of potential buyers who may be interested in the materiel to be resold.

Therefore, for the programme to be used in a systematic manner by the PoAF, certain conditions must be met, including the development, before the programme is implemented, of

- Formal, routine and automated procedures to identify optimum stock levels and surpluses that can be resold before they reach a condition in which they can only be sold for scrap;
- A list / inventory of the material available for resale through the FMS and a list of potential clients, as well as a financial forecast of potential revenues (after deducting the fee);
- An internal communication campaign to advertise the programme and its potential benefits (as the fact that it is not considered advantageous mainly relates to lack of advertising and awareness within the PoAF).

## 5. Conclusions

The 21st Government Programme 2019-2023 tasks the AAFF with new mission and responsibilities, which must be met while respecting the principle of efficiency in the use of public resources.

To tackle the economic and financial crisis of the last decade, the Government has made efforts to curb public spending, which has naturally affected the AAFF. The “Defence 2020” reform systematises a set of measures that aim to achieve process sustainability, including selling non-essential platforms and using the revenue to modernise the capabilities of the three AAFF branches.

In this increasingly unpredictable climate, in which several operational restructurings are both planned and underway, the PoAF must tackle the increasingly difficult task of managing materiel that is no longer useful to maintain the current and renewed fleets, but that nevertheless continues to take up storage space in the depots and is only generating loss of revenue. Therefore, it is crucial to find alternative ways of monetising this material, one of which is the possibility of systematically using a service provided by the USG through its FMS assistance programme, the WWRS.

This study on stock management practices was delimited: temporally, to the present time (2020); spatially, to the PoAF, complemented by an analysis of the practices of other countries that are also FMS customers; in terms of content, to the concepts of WWRS and excess stocks.

Therefore, SO1, *To analyse how the AAFF of other countries use the WWRS to manage their excess stocks*, was achieved by answering the corresponding SQ1, which was operationalised by performing a content analysis of semi-structured interviews to 11 experts from nine countries represented at AFSAC. Despite some drawbacks (high fees, the need to regularly

check the materiel listed for sale on the platform, and the difficulty in identifying potential malfunctions due to the anonymity of the seller country), the programme is considered a useful tool by FMS partners. For countries using the programme as buyers, the benefits are that it allows them to purchase non-standard material at lower prices and provides an alternative source to procure hard-to-find items at competitive prices with faster lead times. Despite some limitations related to countries' internal procedures, which some interviewees mentioned, the main benefits for seller countries are: freeing up storage space and saving on storage costs; and obtaining a considerable financial revenue (and a return on part of the investment made) that can be used for new purchases.

SO2, *To analyse how the PoAF manages its excess stocks*, was achieved by answering SQ2. This answer was based on the content analysis performed on the semi-structured interviews to seven PoAF officers (senior managers and fleet managers). It was found that the lack of a systematic process to manage the PoAF's surplus stocks before a decision is made to sell the materiel is a significant limitation. These excess stocks come either from scrapped or modernised weapons systems, or from weapons systems acquired in the past along with large quantities of materiel. In the PoAF, the problem is not in the process of dismantling and disposing of materiel (Directive no. 18/2017, of 16 August 2017) but, again, in the phase that precedes it. Due to the lack of automated routine procedures to identify optimal stock levels and surpluses that can be redistributed, the process is carried out sporadically and inefficiently. In addition to this lack of efficiency, the human resources required to identify the inventory available for resale are insufficient, as this activity is not seen as a priority for the PoAF.

In light of the above analysis, the GO, *To assess the feasibility of using the WWRS programme on a regular basis to manage the PoAF's excess stocks* was achieved and the corresponding RQ answered. Using the programme in a systematic manner is not only feasible, but has several benefits, including advertising the materiel that the PoAF has available for resale to a wider group of potential customers, that is, all FMS customers; using a single platform to sell spare parts and support equipment acquired via FMS/DCS; simplifying the administrative aspects of the transaction for third countries, in addition to the clarity and transparency of the process, and reducing the bureaucratic processing time, which is usually long in traditional sales processes, as the USG would be responsible for obtaining authorisations, licences and other required documentation; monetising items that are no longer useful to the PoAF and obtaining some financial revenue that can be used to finance other capabilities. However, this would imply (re)structuring some of the PoAF's internal procedures in the initial phase, specifically: implementing formal, routine and automated procedures to identify excess inventory; preparing an updated list of materiel available for resale via FMS and a list of possible buyers; preparing a financial forecast of potential revenues; and creating an internal communication campaign to advertise the programme and the benefits of using it more regularly.

The study's main **contribution to knowledge** is the fact that the PoAF is now aware of the potential benefits of this stock management instrument, as well as the potential revenues that may be obtained by optimising and monetising materiel that is not useful for the fleets in operation.

The main **limitation** is the fact that, due to the current pandemic situation, it was not possible to conduct face-to-face interviews. However, this did not significantly limit the relevance of the study.

**Future studies** may address the implementation of a uniform, cross-cutting process to manage the surplus stocks of the different branches of the AAFB. Another study may assess the feasibility of creating an office at the ministry (e.g. DGRDN) to manage the materiel to be redistributed by the AAFB branches, which would also be responsible for monitoring / updating the portfolio of materiel available for resale, also in coordination with the branches.

Some **practical recommendations** are proposed:

- The EMFA (the DIVREC, in coordination with the Directorate of Finance) may analyse the benefits of reselling materiel in this manner (by analysing how the use of the programme correlates to the financial gains);
- The EMFA (DIVREC) may use the Sales Case that has already been implemented to test the programme's potential by listing a specific lot, in coordination with the DGRDN;
- The DMSA may operationalise a systematic process to inventory / identify excess stocks.

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