

**NATIONAL UNIVERSITY OF PUBLIC SERVICE**  
**FACULTY OF MILITARY SCIENCES**

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Colonel Tamás Réti

The reverse logistics system of the Hungarian Ministry of Defense  
and the Hungarian Armed Forces

PhD Thesis

Author's guide

**Supervisor:**

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**Budapest**

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## **1. DEFINING THE SCIENTIFIC PROBLEM**

The logistics system of the Ministry of Defense and the Hungarian Defence Forces provide the continuous supply and the maintenance of the operability of the armed forces. Its organizational and procedural systems have been developed accordingly. The procedures serve to optimize the availability of products and services for users.

The organizational transformations over the past two decades, the radical reductions in the number of forces have generated unnecessary, redundant materials which have created new challenges for both commanders and logistics experts. The reduction of the extent and the rate of the accumulation and the management of existing stocks require new procedures. These could be implemented based on available experience, using the results obtained, taking into account the adaptable elements of other operating systems of similar organisations. This new procedure will be the reverse logistics itself.

The military logistics system does not manage separately the supply and reverse logistics processes. However, in my view, the reverse logistics has its independent features, which can not be ignored during execution. Hence, the exploration of the reverse logistics characteristics is necessary in the defense sector, just as its presentation and its analysis of practice and the research of new opportunities. Neither of the examination of the armed forces' reverse logistics system has been part of any scientific research before; nor thorough scientific evaluation has appeared about its operation, effectiveness and results in Hungary.

Because of the above mentioned views, an overall, but in some elements a detailed analysis is necessary, showing the specific requirements within the armed forces, revealing the existing reverse logistics processes, analyzing their characteristics and effects taking into account the operation of the organization as a whole. This may enable to develop a more effective reverse logistics system than the existing one and to improve the efficiency of the procedures.

## **2. JUSTIFYING THE CHOICE OF THE TOPIC**

In my research, I deal with the role of reverse logistics and its particular system and problems, predominantly within the Ministry of Defence and the Hungarian Defence Forces. The actuality of the theme is given by the fact that in the recent years both commanders and logisticians faced the need to address a huge amount of accumulated excess inventory in which the standard logistics procedures had not provided adequate solution.

The choice of the subject was supported by the fact that - although the supply and return flow of material always accompanied each other - science-based assessment of the reverse direction has begun only in recent years. A detailed study of the military system-wide has never been produced; hence, a detailed scientific analysis is necessary and obvious in the same time. Also, the results are assumingly applicable in practice. In my professional military career – from the level of battalion to the executive level of Defense Ministry – by fulfilling different logistic positions I gained experience in the operation of the logistics system, and it gave me additional impetus to investigate the characteristics of reverse logistics in my scientific study.

The material flow processes are closely linked to each other. Mapping their system and formulation of their features require continuous analysis and research in parallel with their development. This is confirmed by the regular appearance of new definitions to define the framework of supplies. Although the term of logistics have been used for centuries, but the researchers in the field have recognized that this definition can determine only a narrow scope of materials, information and services, in space and time. Therefore, it has become necessary to use a variety of attributes, such as manufacturing logistics, supply logistics, waste management logistics, etc... However, all this assumed a multitude of systems which is limited in size.

The definition of the supply chain served to make an interconnection among these systems. However, this category had some constraints in the meanwhile. It defined only the characteristics of the related system between the manufacturer and end-user. The economic development, the social expectations, and the sustainable development philosophy laid the foundation of the further improvement of the efficiency of business processes. The concept of eco-life required reconsideration and redevelopment of those procedures which were able to treat the remaining products and surplus after end-usage. These needs led to a result that the "extended" tag has been added to the previous supply chain. The national definitions and interpretations of this action named as inverse process - and typically only this system – is defined as inverse logistics. The foreign, especially English, literature has identified this opposite direction as reverse logistics and also used in a wider context. During my research, I considered that it is important to explore the content behind the definition and determine the appropriate term that should be used in the military.

To ensure that the system of the existing procedures in the Army, its form, effectiveness and results could be evaluated objectively, it is necessary to present and assess the processes of other similar domestic organizations. The international outlook is important

as well. Therefore, I have paid particular attention to the procedures of those countries which are facing similar problems like us with the generated surpluses in their military environment.

The military reverse logistics has significant limitations because of both the hierarchical structure of the organization and the determination of the reverse processes by the legislation. The exploration of this background, the measurement of the development and transformation, and the presentation of its effects has therefore key importance. This provides the framework for professionals involved in reverse process, and at the same time it gives an opportunity to develop regulatory changes by using the gained experience from the past as well.

My research predominantly concentrates upon the prevailing reverse trends during operation inside the Hungarian Armed Forces. My intention is to give a decisive role to the treatment of surplus stocks, which is one of the most serious logistical problems to be solved in these days. It is important to analyze and evaluate the existing elements of the reverse logistics system of the armed forces. It is also necessary to explore the reasons of the formation and the accumulation of surpluses, to present their backgrounds and the existing and future trends. Examining the used procedures, analyzing the anomalies, evaluating the associated costs, and the development of new procedures can be justified as the purpose of a cost effective and efficient reverse logistics system to be formed.

The examination of these elements gives also the novelty of the subject I chose and the reason of my research as well. In addition, I have been motivated by the fact that I am the first who makes a scientific research on the reverse logistics processes of the armed forces and I can define their features, components, effectiveness and potential development directions.

### **3. RESEARCH OBJECTIVES**

1. The basic objective of my research is to explore, present and analyse the operating reverse logistics processes within the armed forces. I have not found any scientific analysis on this area neither through my professional military service, nor during my research, so I consider it is important that this work will be carried out.
2. My aim is to present the deviation of military reverse logistics characteristics from the procedures of the civil society, and to compare the elements of the two components operating in different environments and the perceptions of those systems.

3. My intention is to compare the military procedures with other countries' solutions – which have similar size armed forces or which are facing the same problems as Hungary – and with the practice of other national organizations. To do this, I use the available literature revealed, my personal consultations and experiences.
4. The continuous generation of redundant materials and the surpluses accumulated during the past few years, especially the armament place a substantial burden to the military logistics system, in order to treat those effectively. Identifying and removing the surpluses, designing, organizing and implementing the associated processes are the purview of the reverse logistics. My aim is to explore in details the background, the regulations, the implementation, the results and the possibilities to develop these processes.
5. In addition to the excess stock management, my aim is to elaborate also the other elements of the reverse system. Due to the highly centralized supplying system I consider that the material flow from troop level to the supply center has a particular importance. In the case of the centralized maintenance I pay attention to the organization and accomplishment of the equipment handover. I treat the resettlement of the military troops from operational area to the permanent home base and the related reverse processes as substantial elements of my research subject.
6. My aim in my dissertation for the improvement of the military reverse logistics processes is to present opportunities, to formulate proposals, which can cause positive impact on the effectiveness and efficiency of the system.

#### **4. HYPOTHESES**

1. The exploration, the presentation, the analysis of the military reverse logistics system and its comparison with other (budgetary, governmental) organizations; to civil society even to other countries' practices and procedures have not been done before. Therefore, I can give a complex picture of components, content and function of the military reverse logistics system to fill this gap.
2. Although the civil and military reverse logistics systems are linked with each other in many ways, I suppose there are differences in their interpretations, contents and some of their core elements what I can point out.

3. Currently one of the main dominant functions of the military reverse logistics system is the management and the utilization of the accumulated surplus armament. Despite the existing regulations regarding the related processes, the works have been done do not meet with the requirements for economy, reliability, and dynamism. By exploring and analyzing the barriers I believe that the fulfillment of the requirements can be improved, and the obstacles can be removed.
4. In my view, the effective treatment of excess military equipment can only be manageable if we could define the contents of the "surplus" accurately. In order to achieve this aim, I judge that various "surplus" definitions could be introduced and applied what I have worked out. This ensures that the organizational elements and the participants in the processes can perform their tasks along the same principles.
5. My research can provide me an opportunity to formulate proposals, which can improve the efficiency of the reverse processes, can accelerate their speed and the administration can be reduced by rethinking decision making levels and methods.

## **5. RESEARCH METHODOLOGY**

To achieve my research objectives in the preparation of the thesis, the following methods were used:

- I was studying the related Hungarian and English literature in connection with my thesis, I made targeted researches in libraries and I used the available relevant literature on the internet;
- I have collected and systematized the available knowledge about this subject;
- I elaborated and evaluated from the practical aspects those domestic and EU legislations and regulations which have relevance to the topic researched;
- I was participating in topical forums, lectures and I presented the results of my research on various domestic scientific conferences for professionals;
- I studied the implementation of domestic and foreign, civilian and military reverse logistics processes on the original sites;
- I consulted with subject matter scientific researchers, experts, and institutions, applying and developing reverse logistics systems;
- I elaborated my findings with my supervisor, competent colleagues and I was taking into account their comments and suggestions in my thesis;

- I published articles in Hungarian and English printed and electronic professional publications and I took into consideration the professionals' opinions I have learned;
- I used my experience; I have gained in my logistics positions, especially since 2005, based on the knowledge and the criteria about the management of military assets.

The thesis is based on the theoretical and applied researches that were concluded in May 2011.

## **6. THE STRUCTURE OF THE THESIS**

In accordance with the research objectives, with particular attention to the content of the working hypotheses, the thesis is divided into six main chapters.

The first chapter presents the organization and analysis of the most important general and military basic logistics definitions used for the examination of the subject. This helps to place the reverse logistics into the complex framework precisely. I will expound the surplus and waste definition, which are the subjects of the military reverse processes.

In the second chapter I analyze the reverse logistics processes of different organizations outside of the Hungarian armed forces. I examine the selective collection processes of the daily life, the procedures of the National Police and the National Tax and Customs Administration of Hungary. In the international outlook I describe the practices and experiences of five allied countries' armed forces which face similar problems as the Hungarian forces. These provide me a basis for a comparative analysis in the following chapters.

In the third chapter a review and an analysis is carried out about the laws and internal regulations which have significant effects on the practical implementation and effectiveness. At the same time, the analysis will also point out the possibilities which could help to improve the efficiency of the reverse logistics processes.

In the fourth chapter I explore in details, describe and analyze the existing reverse logistics processes inside the Hungarian armed forces. Doing so, I present the reasons for the accumulation of surpluses, their economical, social and historical background, the inducing factors and trends. I focus particularly on the background of the continuous formation of the excess. I elaborate the existing utilization practice as part of the reverse logistics; I examine their usefulness and effectiveness. I research the barriers of the efficiency, the existing

anomalies and I analyze the costs in connection with the procedures, predominantly associated with the storage of accumulated stocks.

In the fifth chapter, I formulate proposals for a more dynamic, more efficient and thus more effective operation.

The sixth chapter summarizes the results of my research I have justified by my thesis. I formulate my recommendations for further exploitation opportunities of my scientific results and my thesis.

## **7. SUMMARY OF THE SCIENTIFIC RESULTS**

During my research, I analyzed predominantly the practical procedures inside the Ministry of Defence and the Hungarian Defence Forces, investigated those effects which can influence directly the implementation. The significance of this is that such a comprehensive study has not happened yet.

Essential part of the thesis is an overview of the conceptual elements of reverse logistics, and their clarification and elaboration with regard to the internal life of the Army. More conceptual elements were introduced in respect of incurrent (surpluses) materials which are most dominant in the force's reverse logistics. Doing so, I determined the components of the reverse logistics system of the armed forces. This can provide opportunities both to commanders and logistics professionals in practice to develop new processes and system procedures.

To ensure, that the area has been studied will be comparable to other better known elements in scientific and every day life, I have studied the available literature sources of the business sector and civil reverse logistics both in Hungarian and in foreign languages. For the better elaboration of the subject I used the publications which could be found on the Internet, that were published by the recognized authors or organizations of this topic. I reviewed the practices of other public sector actors and with the outlook to the procedures of other countries facing similar problems like our country; I examined their achievements in this area. As doing so, I found that more efficient and economic solutions can be found both in the domestic and foreign practice than the procedures used in the armed forces. From those, the procedure of the National Tax and Customs Administration of Hungary and the Polish military are especially noticeable.

I built onto my significant experiences I have been gainig for several years in the field of logistics and particularly reverse logistics for analyzing the processes and practices which



provide a suitable base for benchmarking the military system with other systems established in business and in other areas.

During observing the law, the internal rules and regulations which basically determine the framework of reverse logistics system; I demonstrated their effects to the implementation. I made the system modification process traceable, which have had an effect for increased centralization. As a result, the constraints became apparent which reduced the effectiveness of the reverse logistics. It can be stated, that a more liberal system, in which the responsibilities are better-defined would result in a more dynamic implementation even complying with the requirements.

With the exploration and analysis of the existing elements of the reverse logistics in the Hungarian armed forces, I demonstrated differences from the supply process. With the examination of the formation and accumulation of surpluses I pointed out the reasons of their emergence, which may also provide an opportunity to streamline the existing processes. Although the practices are partly determined by regulations, a better dynamism could be achieved by rethinking the existing ones. Today the reverse logistics is struggling with several problems. These can be attributed to organizational, managerial, conceptual, economic and other factors. The analysis of the economic data did reveal those sources which usage put a significant burden on the budget, but does not contribute to the change, only perpetuate the existing situation. This can underpin the need of the reconsideration of the system and procedures in place.

Conscious design of the reverse logistics structure, targeted transformation of regulations, organizations and infrastructure, consistent planing and usage of the necessary resources, endorsement of the managerial interests and making more thorough claims to commanders, applying a constant controlling could provide possibility to create a more efficient and effective system than the current solutions. I wanted to facilitate this realization by my research.

## **8. NEW SCIENTIFIC RESULTS**

1. I was the first who provided a complex picture of the Hungarian military reverse logistics system components, content and function by examining with scientific thoroughness. I have proved its importance in today's economic environment.
2. I have explored, analyzed and presented the system of other governmental organizations, practices of civil society and procedures of several allied countries. I

studied and evaluated in details the operation of these systems, the internal and external factors influencing them. I used all of these as benchmarking for measuring efficiency of military system, for further analysis. As a decisive element I have processed the national (legal) control components which determine the procedures. I validate their direct impacts on operational efficiency.

3. I have revealed and proved those differences that exist between business and the military reverse logistics system. I examined the contents of reverse system within the Hungarian armed forces. I have defined and clarified its elements and components. For the categorization of the surpluses, as the subject of reverse logistics, I have introduced and defined the new terms like absolute, relative and latent surplus, which were placed in the reverse logistics system.
4. I have elaborated the procedural principles, requirements and their practical realization and fulfillment that are currently having special significance in the armed forces, with particular attention to the management of surpluses. In doing so, I have identified and explored the factors which pose barriers against implementation, slow down the process and challenge the economies.
5. Using parts of my scientific research results, taking into account the economic analysis have been done in my thesis, I have formulated different proposals in order to improve the efficiency of the reverse logistics system of the Hungarian armed forces.

## **9. THE APPLICABILITY OF THE NEW SCIENTIFIC RESULTS, RECOMMANDATIONS**

The thesis may provide a basis for the work for logistics element on ministry level and for logistics organizations and institutions under the direct purview of General Staff and Ministry of Defense, for the refinement of core logistics documents and for the generation of solid and objective management decisions.

Exploring the national military reverse logistics system and related areas, the thesis may contribute to navigate on economically sensitive areas which have been managed by military logisticians just in practice without having had a summarized theory until now, and to get relevant knowledge on the regulatory system.

It can contribute to the preparation of the logistic aspects, when the generation of a capability-based force processes begin, of the development of an efficient reverse logistics system.

The paper may be helpful for those researchers who conduct a deeper analysis on the domain of this study, as it provides an overview of the situation over the past few years and makes a complex examination on the development of current reverse logistics system.

The thesis may be eligible to be utilized in the Hungarian institutions of higher education - especially in the military higher education – to serve as help, and to provide the theoretical basis for all the logistics and economics professionals who are working with the exploitation of military surplus. It may provide general background for students taking part in courses for commanders, with regard to get specific knowledge of the area which can be useful during daily duty in order to increase the efficiency of the situation assessment on reverse logistics.

The study may be usable, by presenting the legal background, by analyzing the effect of the relevant changes in practice, for a complex reviewing and reconsideration of the existing regulatory system.

In case of the development of logistics information system, the factors and drafted proposals described in the paper may allow the development of a system which would be able to manage the entire supply and reverse chain.

Reviewing the existing logistic processes, establishing a complex vision, modeling and re-regulating of the implementing elements of the system are required. Since the reverse logistics process is directly connected to the supply flow, and to their different components, the paper gives chance for a preliminary determination of the systemic relationships.

The results of the thesis can be used during economic and logistic planning for determining the reverse flows occurring in the future. With this, the content of the induced processes and results of the decisions can be projected prior its occurrence.

It can serve as theoretical basis in case of international cooperation (NATO, EU) to understand the elements of reverse logistics systems and those potential connections with each other.

It may enrich the library of the National University of Public Service and contribute as a source for the work of future researchers.

## 10. LIST OF PUBLICATIONS

Features of defence exhibitions and their influence to the armament development process - Academic and Applied Research in Military Science (AARMS) ISSN 1788-0017 (Online) Vol. 10, No. 1 (2011) 73–84. <http://www.zmne.hu/aarms/docs/Volume10/Issue1/pdf/05.pdf>

Az inverz logisztika aktuális kérdései - ÁVF Tudományos Közlemények ISSN 1585-8960 17. issue April 2007. page 199.

A Honvédelmi Minisztérium inverz logisztikai rendszerének aktuális kérdései - Hadmérnök ISSN 1788-1919 2007. Különszám <http://hadmernok.hu/kulonszamok/logisztika/reti.html>

Honvédség és környezetvédelem – Honvédségi inkurrencia a környezetvédelem szervezeti és jogszabályi tükrében - Hadmérnök ISSN 1788-1919 2. volume 3. issue September 2007. page 22-35. [http://hadmernok.hu/archivum/2007/3/2007\\_3\\_reti.html](http://hadmernok.hu/archivum/2007/3/2007_3_reti.html)

Feleslegessé vált ingóságok hasznosítási gyakorlata néhány NATO tagország haderejében - Katonai Logisztika ISSN 1588-4228 2008. 1. issue page 296.

Gondolatok a honvédségi feleslegekről és azok képződési okairól - Katonai Logisztika ISSN 1588-4228 2008. 2. issue page 3.

Hogyan tovább? Változások a Honvédelmi Minisztérium ingó vagyonának vagyonkezelési gyakorlatában a vagyontörvény hatálybalépését követően - Költségvetés, Pénzügy, Számvitel ISSN 1789-3062 March 2008. page 53.

Az inverz logisztika tartalma a haderőben - Katonai Logisztika ISSN 1588-4228 19. volume 2011. 1. issue page 36-46. [http://www.honvedelem.hu/container/files/attachments/36379/kl\\_2011-1.pdf](http://www.honvedelem.hu/container/files/attachments/36379/kl_2011-1.pdf)

Gondolatok a logisztika és az inverz logisztika tartalmáról - Katonai Logisztika ISSN 1588-4228 2010. 1. issue page 75-85.

## 11. CURRICULUM VITAE

### EDUCATION

<i>Date</i>	<i>Institution and qualification</i>	<i>Place</i>
2006-	ZRÍNYI Miklós National Defence University – Ph.D studies	Budapest - Hungary

2008-2009	NATO Defense College <i>Senior military leader</i>	Rome –Italy
2002-2005	ZRÍNYI Mikló’ National Defence University <i>Military logistics leader</i>	Budapest - Hungary
1995-1997	University for Economics of Budapest <i>Expert of defence economics</i>	Budapest - Hungary
1985-1988	ZALKA Máté Military Technological College <i>Home air defense missile artillery maintenance officer, communication technical engineer</i>	Budapest - Hungary
1981-1985	ALPÁRI Gyul’ High School for Economics <i>Computer programmer</i>	Eger - Hungary

## COURSES

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<i>Date</i>	<i>Course Name</i>	<i>Place</i>
2012	European Armament Co-operation Course Awareness/Expert level	Brussels – Belgium Stadtschlaining-Austria
2011	NATO Staff Officer Orientation Course for Peace Support Operations	Szolnok-Hungary
2011	NATO Orientation Course	Oberammergau - Germany
2003	NATO Logistics Course	Aachen - Germany
2001	European Computer Driving License Course (ECDL)	Budapest – Hungary
2001	NATO STANAG 6001 English Language Course	Saint Jean sur Richelieu - Canada
1999 – 2001	Certified Accountant Course	Budapest – Hungary
1992	Battalion Logistics Leader Course	Budapest – Hungary

## MILITARY CARRIER

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<i>Date</i>	<i>Branch and position</i>	<i>Place</i>
01. 07. 2011 -	Permanent Delegation of Hungary to NATO Defense Policy Section – <i>Head of defence economic branch (Deputy Head of Section)</i>	Brussels - Belgium
01. 10. 2010 – 30. 06. 2011	HU MoD Department for Economic Planning <i>Head of department</i>	Budapest – Hungary
02. 16. 2010 - 30. 09. 2010.	HU MoD Department for Defense Planning and Assets Management- <i>Deputy head of department - Acting head of department</i>	Budapest – Hungary
01. 04. 2005– 15. 02. 2010	HU MoD Department for Defense Economics <i>Head of Assets Supervisory Section - Head of</i>	Budapest – Hungary

*Assets Supervisory Section (Deputy head of department) - Deputy head of department*

01. 04. 2001 – 31. 03. 2005 HU Defense Forces Joint Logistics and Budapest – Hungary  
Supporting Headquarter - *Head of Human Materials Section*
01. 07. 1996 – 31. 03. 2001 HDF Logistics Center of Human Materials - Budapest – Hungary  
*Deputy Head of Material Management Section - Deputy commander - Commander*
- 1989 – 30. 06. 1996 HDF Air Defense Missile Artillery Battalion - Alcsútdoboz /  
*Logistics officer - Deputy battalion commander* Zsámbék – Hungary
09. 01. 1988 – 1989 HDF Air Defense Missile Artillery Brigade - Budapest – Hungary  
*instructor*

**FOREIGN LANGUAGE SKILLS**

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English - NATO STANAG 6001 — 3333, ITK Origo Intermediate C  
France – level B1