

**NATIONAL UNIVERSITY OF PUBLIC SERVICE
DOCTORAL SCHOOL OF MILITARY SCIENCE**

ATTILA SZALKAI-SZÉLL

**THE EFFECT OF FRESHWATER SCARCITY ON WORLD
SECURITY, WITH SPECIAL REGARD TO THE MIDDLE EAST**

PhD Dissertation Summary

Consultant:

Dr. Ferenc Szabó A.
university professor

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1. FORMULATING THE SCIENTIFIC PROBLEM

The freshwater supplies of our planet, which form the basic condition for life on earth and our present civilization, have decreased due to the various natural and anthropogenic factors by the beginning of the 21st century. In accordance with the climatic and hydrogeological characteristics, the available water supplies differ by region, and the danger of water deficiency manifests in more and more countries. The diverse social processes, for instance the increase of population, environmental pollution or urbanization, are all such phenomena that further deepen the water crisis of our era.

The effects of the problem on society are showing up more and more extensively. Freshwater deficiency comes to the front as one of the main causes of great migrations, furthermore, the constant increase of the number of forced-migrants can be observed, who represent a serious security policy burden for both the sender and the receiving states.

The obtainment of different strategic resource supplies, such as crude oil, have always determined the wars of historical eras, though they weren't about basic essential elements for human life. According to certain estimates the scale of water consumption – with unvarying economic growth and increase of population – will increase from 4,500 billion m³ to 6,900 m³ by 2030¹. The nearly 53 percent increase in water demand unanimously leads to the deepening of the water crisis in the near future.

The deepest social and political crisis of freshwater deficiency is thus caused by armed battles, that have the increasing of water-strategic power relations, putting and maintaining control over specific water bases, or the forcing of certain water conservancy agreements, in their backgrounds. Taking the fact into consideration, that freshwater is the determining resource for the existence of mankind and its surrounding ecosystem, and not of its strategic position or economic power, it can be concluded that an analysis of water deficiency in the aspect of security policy is becoming necessary.

¹International Finance Corporation: Charting Our Water Future Report. 2009. p. 11. http://www.mckinsey.com/App_Media/Reports/Water/Charting_Our_Water_Future_Exec%20Summary_001.pdf date of download: 2012.02.01.

2. RESEARCH OBJECTIVES

In my dissertation I reveal the causes that led to the development of armed battles that can be related to freshwater deficiency, primarily by examining the water-strategic backgrounds and the consequences of wars taken place in the Middle Eastern region. The goal of the dissertation is to contribute to the analysis of the effects of freshwater deficiency on security. I present those natural, social and economic phenomena, that potentially contribute to the emergence of such conflicts, moreover I examine the possibilities of water conservancy related armed battles in the near future, by drawing conclusions.

My objectives can be summarized on the basis of the following:

- I examine those natural, social and economical processes, that contribute to the emergence of water deficiency. On the basis of the research I prove, that the above factors do play roles in the emergence and geographical distribution of water deficiency.
- I analyze the relationship between freshwater and society, the consequences of their mutual influences. On the basis of the analysis I prove, that water deficiency does play a role in social mobility, and within that, in forced migration. I present the relation between water pollution and water deficiency and their consequences in the aspect of security policy.
- I define the notion of water war, which I consider to be absolutely necessary for the further examination of armed battles relating to water policy.
- I analyze the physical geographical and social factors of the Middle East region in the aspect of water strategy and water policy. I prove, that such armed battles have taken place in the region, that were either directly or indirectly involved with freshwater supplies regarding their background, emergence, and perhaps their spreading. I will draw further conclusions on what role will freshwater play in the region's security in the future.
- I formulate results on the security political risk of the common water bases, and I also analyze the role of freshwater in the armed battles of the near future.

- I systematize the solutions that assist the moderation of problems caused by water deficiency, and I prove that hydrosolidarity and hydrocooperation do reduce security political risks.

3. HYPOTHESES

- The development and distribution of water deficiency is determined by certain physical geographical, economical and social processes.
- The increased demand for water in numerous regions – related mainly to increase of population, urbanization, and economic development – is not in proportion to the quantity of available natural water resources, which eventually leads to water deficiency.
- Water deficiency is playing a growing role in great migrations of certain geographical regions as one of the inducing factors. The increase in the number of forced-migrants, and within them, the eco-migrants means a serious factor in security policy for both the sender and the receiving countries.
- Water pollution is such a global problem, whose effects manifest either directly or indirectly through certain social-political processes.
- The decrease and pollution of water bases that feed the water supplies of two or more countries means highlighted water security risk, which may lead to debates between the specific nations or interest associations.
- The areas suffering from water deficiency were scenes of armed battles in the recent past that had water political interests in their backgrounds. Maintaining or extending the water strategic positions, mainly in water deficient areas, may constitute grounds for different-level armed battles.
- Along the common water bases the security risk of water deficiency can be reduced with appropriate hydrocooperation, and hydrosolidarity of countries possessing greater water resources.

4. RESEARCH METHODS

The research of the topic is mainly based on elucidation of the facts, data acquisition, data processing, and analyzing mostly foreign scientific literature related to the topic.

By using analytical methods I explore the interrelation developed between society and freshwater, I analyze what impact does operators of this relationship have on each other, principally focusing on the role of water deficiency in the social and economic development of certain regions. On the basis of my conclusion I pursue research on migrations that – among other factors – were either directly or indirectly induced by the compelling effects of water deficiency. By taking the above mentioned into consideration, I draw conclusions to the future possibilities of migrations induced by water deficiency, and their effect on security policy.

On the basis of general analysis, I define the conceptual sphere of water war, from whose aspect I analyze those armed battles in the Middle East, whose outbreaks are in some way related to water deficiency, or to its indirect effect.

By using the methods of induction I draw conclusions regarding the common risk factors that may apply in case of a water war emergence.

Throughout my thesis I draw conclusions by employing prediction on the basis of accumulated data and correlations that aim to the recognition of future risk factors of water deficiency, and to the definition of its role in probable armed battles of our era.

5. BRIEF DESCRIPTION OF THE COMPLETED RESEARCH

CHAPTER 1. – THE CAUSES OF WATER SCARCITY ON EARTH

In the first chapter I analyzed those physical geographical, economic and social factors that play a prominent role in the development of water deficiency. I introduced the significance of climatic systems, and our planet's hydrogeographical characteristics. I analyzed the impact of population growth and urbanization on water consumption, and the water demand and usage of certain economic sectors.

With the above factors as a starting point I presented the areal distribution of freshwater deficiency, moreover, I proved that the physical geographical factors determine mainly the quantity of available water supplies, and the social and economic factors determine water demand.

CHAPTER 2. – THE SECURITY POLITICAL RISK OF FRESHWATER SUPPLIES

In the second chapter I examined the close relationship developed between the human society and freshwater. I pointed out that the lack of freshwater triggers several negative social processes, out of which I analyzed forced-migration in details. I proved that freshwater deficiency is a repulsive factor among the inducing elements of migration, and that it means a security political threat in the given region because of the migrants.

Taking the relationship between humans and freshwater as a starting point, I analyzed the problem of water pollution. I highlighted that freshwater resources have to meet human demands regarding not only quantity, but quality as well. I found that water pollution due to its anthropogenic nature and quick spread means significant risk, especially because it endangers the water quality of every beneficiary of the given water system.

In the last part of the chapter I defined the notion of water war, and I emphasized its significance in the aspect of my further research.

CHAPTER 3. – FRESHWATER SCARCITY IN THE BACKGROUND OF ARMED BATTLES, WITH ESPECIAL REGARD TO THE MIDDLE EAST

In the third chapter I analyzed the physical geographical, social and economical factors of the Middle Eastern region for the first time, then I verified the area's prominent importance from the point of view of my research. By using the determined definition in chapter two, I examined the details of the events preceding the second and third Arab-Israeli war and their consequences. On the basis of the analyses I confirmed that during the third Arab-Israeli war there were water policy-based motivations, and that the armed conflict had changed the water strategic positions of the area.

On the basis of similar standpoints I examined today's Palestinian-Israeli opposition, which formed the basis for my ascertaining that water forms one of the cornerstones of the Middle Eastern conflict and its solution. Furthermore, I showed the most important water systems of the Middle Eastern region, and I analyzed their security political risk.

In the last part of the chapter I examined such armed battles, taken place on the African continent, that might have had water deficiency and its negative consequences in their backgrounds.

Based on the performed analyses I finally proved, that along common water bases owning and protecting international water resources can play a role in the emergence of armed conflicts.

CHAPTER 4. – POSSIBILITIES FOR REDUCING THE SECURITY POLITICAL RISK OF WATER SCARCITY

In the fourth chapter I analyzed the solutions that may reduce the security political risk of water deficiency. I presented the expected tendency of water consumption in the future, and I highlighted the significance of handling the problem. I defined the notions of hydrocooperation and hydrosolidarity, and I made a proposal to the classification of the possible solutions. I presented the more important water conservancy agreements of the Middle East, furthermore I analyzed their efficiency and significance in reducing the risk of water deficiency. I proved that the solidarity of the countries in favorable water strategic

positions, and the close cooperation of countries sharing a common water system, may lighten the dangers caused by water deficiency.

6. SUMMARY OF CONCLUSIONS

In my dissertation the aim was to analyze and assess the water political risk of water deficiency. During my research, the built-up theories were examined in accordance with the objectives, and proved them primarily by analyzing the social processes and armed battles taken place in the recent past from the aspect of water security. During my research I came to the following conclusions and assessments:

- The physical geographical characteristics, mainly climate, determine the quantity of available natural water resources in the different parts of our planet. The water demand of human civilization has increased due to growth of population, urbanization, and economic development, which has exceeded the capacity of water resources mainly in countries poor in water, thus it has led to water deficiency. The strengthening of the factors that are the causes of water deficiency lead to the spreading of water deficient areas.
- Freshwater and humans are in close relationship with each other, which is based on a system of after-effects. As a result of this system of interactions, the lack of freshwater triggers self-generating negative processes, that in most instances endanger the given area's security. Among the repulsive factors of forced migration water deficiency is gaining a more and more important role, which through ecomigrants increase the security political risk of both the sender and the receiving countries.
- Society influences the quality of water resources through pollution, therefore the quantity of utilizable capacities. In case of common water systems pollution can affect other countries' water supply, which can lead to debates and conflicts in water deficient regions.
- In the Middle Eastern region, taking the physical geographical, social and political terms into consideration, the security political risk of water deficiency is relevant. Strengthening the water strategic position has played a significant role in certain Arab-Israeli conflicts of the recent past. This proves, that water deficiency can be among the fundamental causes of armed battles. Regulating water distribution determines the

Israeli-Palestinian relationship today, and indirectly has effect on the shaping of the current situation. Settling the water-debates will be one of the cornerstones of the Middle Eastern peace processes.

- In water deficient areas the common water bases may result in armed battles between hostile countries, and debates between peaceful countries. Nations that are in favorable water strategic positions can reduce the assigned water quantity and can influence its water quality. Countries that have stronger military potential use their water strategic superiority obtained by fighting to threaten, manipulate or oblige the nations who are in a state of dependency with them.
- The moderation of the security political risk of water deficiency lies within the hydrosolidarity of the counties in more favorable water strategic positions, and the hydrocooperation of countries that share common water supplies. The countries should make an effort on a national level to protect the water bases and to lower water demand. The keeping of the obligations – especially the well-proportioned water distribution – stipulated in the international water policy agreement should be guaranteed, furthermore it should be pressed that all relevant countries join the treaty. In case of agreements that lead to close water strategic dependency, armed battles may take place in order to maintain the water conservancy agreement.

7. NEW SCIENTIFIC RESULTS

1. I revealed the physical geographical, social and economical factors that play a fundamental role in the development of water deficiency, and I proved that the physical geographical factors determine the quantity of the available water resources, and the water demand is affected by the increase of population, urbanization and the water consumption of the economy.
2. Taking the close relationship between freshwater and society as the starting point, I proved by analyzing certain armed battles from the aspect of water policy, that along common water systems, the obtaining and securing of water bases may become a motive for the outbreak of armed battles.
3. I proved that the hydrosolidarity of the countries that are in a more favorable water strategic position, and the hydrocooperation of countries sharing a common water supply means a solution to the challenges of water deficiency.

8. RECOMMENDATIONS

- My research reveals the different natural, social and economic effects that lead to global water deficiency, which allow the various grouping and classification of certain regions of the earth according to elements of water deficiency.
- The interactions, revealed during the research on the relationship and connection between water and society, afford possibility to further and more thoroughly examine forced migration and other social phenomena from a security political aspect.
- The definition of the notion of water war can form the basis of future research, gives direction to further clarify its meaning and compositing its classification system.
- The research method of the armed battles with water political backgrounds in the Middle East, can provide help to analyses of other regions by similar standpoints.
- The examination of the conditions of the emergence of water wars allow the pointing out of possible focal points and crisis areas, whose exhaustive examination from a security political aspect may become reasonable in the future.
- By the examination and the analysis of the different solutions, it becomes possible to assess that in connection with prevention and problem handling which is the most appropriate method to employ in case of the different water deficient regions in the future.

9. CATALOGUE OF PUBLICATIONS

Szalkai Attila: Vízhiány a Közel-Keleten: Olajháború után vízháború? [*Water deficiency in the Middle East: Water war after oil war?*]

Nemzet és Biztonság Vol. I. No. 10. pp. 25-36.

ISSN: 1789-5286

Szalkai Attila: A vízhiány és társadalmi következményei [*Water deficiency and its social consequences*]

Nemzet és Biztonság Vol. II. No. 2. pp. 23-36.

ISSN: 1789-5286

Szalkai Attila: Az 1967-es izraeli-arab konfliktus vízpolitikai háttere és következményei [*The water political background and consequences of the Arab-Israeli conflict*]

Társadalom és Honvédelem Vol. XIII. No. 2. pp. 97-105.

ISSN: 1417-7293

Szalkai Attila: A kényszermigráció biztonságpolitikai kockázata a XXI. század elején [*The security political risk of forced migration at the beginning of the 21st century*]

Nemzet és Biztonság Vol. III. No. 2. pp. 58-69.

ISSN: 1789-5286

Szalkai Attila: Water Strategic Importance of West Bank In The Israeli-Palestinian Conflict

AARMS Vol. IX. No. 2. pp. 241-250.

ISSN: 1588-8789

Szalkai Attila: Security Political Analysis of Freshwater Pollution in view of Hydrocooperations

Hadmérnök Vol. V. No. 4. pp. 77-85.

ISSN: 1788-1919

Szalkai Attila: The Sociocultural Background of the Palestinian Child Suicidal Terrorism in the Second Intifada

AARMS Vol. X. No. 2. pp. 359-366.

ISSN: 1788-0017

Szalkai Attila: Az édesvíz fegyveres konfliktusok háttérében Nyugat- és Dél-Afrika országaiban [*Freshwater in the background of armed conflicts in the countries of West and South Africa.*]

Hadtudományi szemle Vol. IV. No. 3. pp. 99-106.

ISSN: 2060-0437

Szalkai-Széll Attila: Az 1956-os szuezi válság előzményeihez [*To the preliminaries of the 1956 Suez crisis.*]

Társadalom és Honvédelem Vol. XV. No. 1-2. pp. 81-92.

ISSN: 1417-7293

Szalkai-Széll Attila - Varga Gábor - Pajtókné Tari Ilona: Az éghajlat és a közel-keleti vízhiány [*Water deficiency and climate in the Middle East*]

Természet Világa Vol. CXLIII. No. 3. pp. 113-117.

ISSN: 0040-3717

10. CURRICULUM VITAE

Personal Data

Name: **Attila Szalkai-Szél**
Address: 3300 Eger, Gyulafehérvári u. 6/a.
Place and Date of birth: Eger, 1979.07.18.
Nationality: Hungarian
Marital status: married
Email: aszalkai@hotmail.com
Telephone: +36/20/423-9322

Professional expertise

2008 - **Central Police Station of Eger – Department of Crime**
3300 Eger, Klapka Gy. u. 3.
Chief official

2008 **MH. Supporting Brigade – Maléter Pál Guard Battalion**
1101 Budapest, Zách u. 4.
Military guard

2004-2008 **County Waterworks Unit in Eger – Technical Group**
3300 Eger, Hadnagy u. 2.
Technical administrator

Educations

2009 – 2012

National University of Public Service

PhD School of Military Science

PhD training

Title of dissertation: The effect of freshwater scarcity on world security, with special regard to the Middle East

2004 – 2005.

University of Debrecen

Department of Natural Science

Professional rapporteur of environmental protection

(field of study: industry)

1998 – 2003.

University of Debrecen

Department of Natural Science

Certified geographer

(field of study: area and urban development)

Title of thesis: Eger from the aspect of city marketing

Knowledge of Languages

„C”-type, intermediate level, national language exam in **English**

„C”-type, basic level, national language exam in **German**

Scientific organizations

Police Scientific Counsel - member

Hungarian Hydrological Association - member