

WATER AS A STRATEGIC RESOURCE AND SOME OF ITS DEFENCE ECONOMIC ASPECTS

A VÍZ, MINT STRATÉGIAI ERŐFORRÁS NÉHÁNY VÉDELEMGAZDASÁGI ASPEKTUSA

Az ivóvíz felhasználásának nemzetközi tendenciáit és a Földön rendelkezésre álló ivóvízkészlet arányainak változását figyelemmel kísérve nem kerülhető meg egyetlen ország számára sem a víznek, mint stratégiai erőforrásnak a számbavétele. Jelen tanulmányban elsőként ismertetjük mindazokat a tényezőket, melyek a vízkérdés kiemelt kezelését indokolják, majd választ keresünk arra a kulcsfontosságú kérdésre, hogy a víz lehet-e háborús konfliktusok kirobbanásának forrása. Álláspontunk alátámasztása érdekében két ország példáját is elemezzük esettanulmány jelleggel, annak érdekében, hogy a vízkérdés kezelésének véleményünk szerint optimális kezelési irányához támpontokat tudjunk nyújtani. Végezetül az elemzés során levont tanúságokra alapozva körvonalazzuk a hazai döntéshozók előtt álló irányokat, melyeket a vízkérdéssel kapcsolatban vélhetően a közeljövőben majd nekik is kezelniük kell.

The international trends and attitudes to water and how it is managed parallel with the changes in distribution of the planet's drinking water supply on the no one can avoid regard water as a strategic resource. Firstly, this paper will present the factors why the issue of water security is particularly addressed to be treated as an ultimate question than seek responses for the question whether will next wars be fought over water. The authors' standpoint will be demonstrated on the base of the examples of two countries and analysed like study cases with the aim of giving some recommendations in order to an optimum water management. Finally, it identifies the challenges and opportunities based on courses of study cases, analyses them in terms of hydro-policy and hydro-diplomacy, and highlights the points national governance level is likely to face in the near future.

ASPECTS AFFECTING THE WATER ISSUE

On the meeting of Rio+20 at Rio de Janeiro, Brazil, from 20 to 22 June 2012 Mr Áder, János, President of the Republic of Hungary judged a conference that water issue is dramatic said news agencies' reports and he was focusing on that problem.¹ With a spiteful approach we would question it and justify the importance of such a topic in his presidential talk since Hungary is not facing real political risks or crisis at present. But then again water matters are getting more and more crucial in terms of global and regional sustainable development. We are not supposed to believe malevolent preconceptions better to hope that the president has realised the importance of water issue and he is willing to encourage policy-makers with all his tools in local and international correlations to do the necessary actions. Reasons demonstrating the causes and serious dimensions why water policy is addressed urgent:

1. The available amount of the **water for human consumption** /drinking water/ is relative low to the planet's total water supply. The most common example is when the global water-supply is regarded as a four-litre tank than freshwater's proportion would only account for a tablespoon and water for human consumption just about a drop. On the Earth, water is found in four forms: in oceans and seas, rivers, lakes and in the ground, in the atmosphere and it is contained within biological bodies. However, about 70% of the planet's surface is covered

¹ Short water supply may appear as a major problem in the EU, <http://www.hirextra.hu/print/2012/06/25/sulyos-gond-lehet-a-vizhiany-az-eu-ban/> Downloaded: 01. 08. 2012

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by water, 97.25%, almost the most total volume involves salty water in the oceans, and only 2.5% of the global water-supply consists of freshwater. 68.7% of freshwater-supply is found in glaciers and ice caps, 30.1% in groundwater, 0.8% as permafrost ^{a.)} and 0.4 % on surface or in forms of solid or liquid water particles suspended in air. This last one - on and over the surface, transformed in air - is the most mobile form of water, its material distribution is the following: 67,4% in freshwater lakes or ponds, 12,2% in soil moisture, 9,5% in the atmosphere, 8,5% in other water bodies, 1,6% in rivers and 0,8% in plants and animals.²

2. Based on transparent figures of United Nations, 40% of the world hospital beds are filled by people suffering from diseases caused by polluted water. Another fact is that today, ten children under age five die from water-related diseases every day. The geographical distribution ratio of numerous **diseases and death cases** is not steady of course it shifts toward the less developed countries. All these shocking data have been drawing attention to the health impact of water crisis.
3. Several UN researches also stated that a risk is expected to rise and 2 billion people will live in water shortage areas by 2025 if current trends of global water use continue. ^{b.)} That means that two-third of the world's population will be facing constant water scarcity. The concerns become even more urgent by other estimations saying that every second person in the planet's population may not be able to access to safe water within one or two decades.
4. The unequal allocation and distribution of drinking water results in territories, whole countries less suitable or even not suitable for humanity. The population density within given nations and across borders may be rearranged after the mass migration processes as consequences. The water-related migration, so called water-migration is likely to evoke a risk of national or/and ethnic political crisis later interfered by any international collaboration only.
5. A fierce fight for the acquisition of control position over adequate amount of water and water allocations also increases a risk of a terror threatening. Recently, Mrs Hillary Clinton, the 67th United States Secretary of State announced the concerns occur among the American foreign officials that water-related conflicts may contribute to growth on terror threats targeting those natural resources and/or infrastructures they are in charge of providing the necessary water supply to the civil population for social, agricultural and industrial purposes³. Respectively, the control of water resources at their source has another importance too since prevention or assurance of equitable access to water becomes a weapon during political disputes or conflicts.
6. Lately, military strategists have been paying more attention to water issues and analysts are considering them **as reasons for the most future conflicts** on the climate change⁴. Recently, the Military Ministry of Great Britain pointed on the fact that in the Middle East, one of the most conflicted areas in the world the wars had been fought over oil before, nowadays they tend to be fought over water or rather, water shortage. Water-related political disputes have been already present; it is also possible that limited access to water or its control will evoke war conflicts in the future, especially, if any international institution or cooperation cannot interfere.⁵ Some experts declared that water shortage will not cause conflicts between countries but individual countries

^{a.)} Permafrost is an English expression, used for permanently frozen soil, and occurs mostly in high latitudes. The ground must remain a tor below 0 Celsius degree for at least two years in order to be considered as permafrost. Its extension depends on climate change. Permafrost comprises about 20% of the land on Earth, in temporary or continuous forms.

² HVG Extra 2011/02. Water distribution in the world, p. 44

^{b.)} The Intergovernmental Panel on Climate Change (IPCC), a scientific body under the auspices of the United Nations (UN) estimates 2.3 billion people not to have access to freshwater by 2080. Other sources predict a more severe situation the number of appr. 0.5 billion people suffering by water shortage at turn of millenium can reach 3 billion by 2025.

³ Lakner Z, Kasza G, Ózsvári L (2012) A bioterrorizmus története és jelentősége. Magyar Állatorvosok Lapja 134 (7):433-441

⁴ Lakner Z, Somogyi S, Horváth Z (1998) Az élelmiszerminőség és a piac. Agro - 21 füzetek (22):47-65.

⁵ Ne hagyjuk kifolyni az ujjaink közül! "Let us keep us hands on it (the water)!", HVG Extra Jövő 2011/02, p. 45

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will collapse principally. Cities and bigger corporations are likely to obtaining more and more different resources from the country, the small villages and weaker ethnic groups. Other researchers underlined that beside of the unequal allocation of the water for human consumption humanity is likely to face another global-scale effect, too when the same basin is shared between two countries (e.g.: beside/near river basins, lakes and underground water-supplies laid neighbouring countries). After Hillary Clinton, these difficulties are likely to increase a risk of national and crossover instability and can lead to the collapse of individual nations or out-break of violent regional conflicts among them. According to a survey of the American intelligence, this last type of conflicts is not likely to occur in the next decade but as a pressing tool water has been already used. After a decade the danger is very likely to grow and water resources will be used as weapons or become targets of terror attacks.⁶

In Hungary, the water-supply situation is traditionally said to be good and this was suggested by the president's declaration, too when he mentioned that quality water is available in the whole country, 100% is supplied with drinking water and drainage system covers 72%. That means a fairly good efficiency level in terms of sewage recycling. At the same time the president called not to disregarding the effects of global water shortage to Hungary. For Hungary it makes a critical point that 95% of its water supply comes from abroad and it is indicating a double risk:

- Eastern and Middle Europe and the Carpathian basin within will be not likely to be listed to the territories in difficult hydrological situation but there is also a worst case scenario for Hungary. It may become practically vulnerable to neighbouring or other farther countries being cistern territories of Hungarian rivers and some other water forms in terms of drinking water.
- While a significant majority of the country's water-supply comes from abroad, dangers evoked by maltreated external water and its consequences cannot be avoided and Hungary is practically defenceless against this threat as the president. A potential greater volume of maltreated water is likely to result in horror consequences with no control on stopping the flow while its interruption is not possible in the recent circumstances. In Hungary, vocational authorities could only do some protective and remedy works after.

The above mentioned reasons confirm that Mr Áder, János, President of the Republic of Hungary has not chosen either a "weightless" or a "political correct" topic when he presented water-related problems, Hungary should consider discussing water issues. Referring only to its favourable potentials^{c)} the country cannot separate itself. The national concerns need responses for a potential future water scarcity and people require developed action plans to defend and release them from the unfavourable environmental, social, economic impacts of such a catastrophe. More intensive efforts are necessary to encourage regional and international cooperations to avoid water crisis in terms of water security.

Water shortage as a risk factor deriving from its strategic resource-position and as a source of conflicts is not a newly defined challenge of strategic field of defence whether we approach it traditionally or in a modern way of thinking. Safety experts generally agree on the list of the strategic challenges. It includes:

- public failures,
- terrorism,
- ethnic conflicts,
- mass migration,

⁶ Clinton: Water shortage may lead to war/Háborúhoz vezethet a vízhiány, <http://www.alternativenergia.hu/wp-content/themes/alternativenergia> Downloaded: 01.08.2012

^{c)} Water shortage will be more dramatic in Africa and South Asia in the future. According to UN's estimations, 30 countries will suffer by water shortage, water distribution-related problems by 2025 than the number of 20 in 1990. Some forecasts are more threatening and predict about 18 countries in the Middle East and Africa with serious water shortage in the near future, in a region than with full of conflicts. Among the predicted countries are found Egypt, Israel, Somalia, Lybia and Yemen. Furthermore, water shortage can be predicted in Pakistan, western and south parts of India and the northern part of China.

- organised crime,
- competition or fight for resources
- and the defence of critical infrastructure.

Water issue appears in that list as a safety challenging point at the “competition or fight for resources”. Some other authors prefer to divide safety challenges in different sectors such as:

- military,
- political,
- economic,
- social
- and environmental sectors and talk about safety questions as parts of these sectors.

Refer to this classification, people often emphasize that making a strict hierarchical order in case of safety challenges is not possible and a single challenge may occur in several sectors at once, overlapping each other. Water issue belongs to the environmental sector according to the sector-related diversification.

Should we accept any of the classification in order to identify water among safety challenges, water for human consumption has been ranked as a main one and explicitly, belongs to the strategic resources. Before, the water issue had appeared as a soft problem in the traditional way of defence approaches but due to its actuality without satisfying global resolutions it remains a source and/or a tool for different conflicts Mr Péter Rada, writes in his paper about this:

„It is an interesting question why water becomes one of the most important environmental problems in the twenty-first century. The answer is simple: water is crucial for life without any alternatives. Although it is a renewable resource but it appears as a political game of zero-amount between nations because its locations and allocations are limited. The threat is even more enhanced due to the lack of a uniform global regulation and global levels of institutions, forums and co-operations in terms of water management.”⁷

Of course, the game of zero-amount is to understand on a basis of the game theory but it perfectly illuminates the problematic nature of the water issue where conflicts are likely to develop on the allocation of a quantity⁸. One of the most common criteria of these types of problems is that after the distribution the winner can only realize its profit at the expense of the loser. Naturally, experts do not represent a single unique stance how much water can be divided on. Definition of its quantity is not eased, although some roughly estimations over the global water-supply and its freshwater proportion exist, but a significant part of the planet’s freshwater-supply is in forms of frost or underground water and these cannot be mobilized or hardly only. Whereas experts agree that mankind uses about 45% of the available freshwater-supply of the planet and they tend to agree on prognoses that ratio can reach 70% within a few decades. The questions such as where is the amount of the theoretical bottom of 100% at the level of water use or when exactly will it be reached are too difficult to response. Tough, it can be concluded from the figures that the free available water-supply per capita on the Earth is likely to decrease to less than a third of its present volume due to the constant population growth and the similarly increasing water use. Therefore, degradation of water quality can be also forecasted which will contribute to increasing death-toll numbers because of such diseases as malaria, typhoid, cholera and much more. This will be likely to affect the less developed countries more seriously. In addition, developing countries are likely to suffer more from insufficient water supply for sustaining agricultural production. They will not be able to produce a sufficient level of food and the lack of water will be likely to worsen the situation and cause famine in the relevant areas. Because

⁷ Rada Péter: Transforming safety challenges – Dimensions of safety
<http://www.grotius.hu/doc/pub/KZQSCF/rada%20p%C3%A9ter%20%C3%A1talakul%C3%B3%20biztons%C3%A1gi%20kih%C3%ADv%C3%A1sok.pdf> Downloaded: 3/10/2012

⁸ Kóbor K, Lakner Z (1994) Adalékok a magyar élelmiszeripar jövőképehez I. Élelmészeti Ipar 48 (12):356-361.

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of the explosion-like spread of diseases and the parallel occurring chronic food shortage, a nightmare of humanitarian catastrophes is likely to come through in water-troubled regions.

Several different factors have been leading to such a huge increase in freshwater-use and they are changing constantly. Currently, researchers have found the following reasons behind this enormous growth of using freshwater:

- the increasing volumes of the agricultural and industrial activities in the world and their large needs of water must be met what is not offset by development of technologies but rather boosted for,
- an explosion-like boom in growing numbers of people in some regions, many times not in the most developed ones, e.g.: in the Northern, the Middle and the Eastern Africa, in the Middle East, in the Middle and Southern Asia and in the Far East.

In fact, laymen could be surprised by knowing that only a smaller proportion of drinking water fills needs of the civil sector, a larger one is been used by industrial, mainly by agricultural activities.

In frame of the present study the origins, the consequences and the potential resolutions of increasing freshwater-use are not analyzed, the authors have rather focused on the strategic and the defence-economic aspects of the water issue.

A gloomy vision concerning water was first issued with two statements in 1995. Boutros Boutros-Ghali, former general secretary of the United Nations claimed as a prime minister of Egypt at that time: „The next war will be fight over water in the Middle East and because of political conflicts.”⁹ In 1995, a similar view-point is stated by Ismail Seragedin, former vice-president of the World Bank published in New York Times: „If former wars were fight over oil in the twenty-century they will be over water in the twenty-first.”¹⁰

After the above mentioned visions of the two politicians the question was in the air whether they were correct and in what terms. To answer these questions, the different standpoints of the, experts make it more complicated. Rely on the historians, however, they agree that the first freshwater-related conflict, so called water-war was in 4500 B.C. when the two cities Lagash and Umma declared war on the control of rivers' certain passages, the Tiger and the Euphrates were involved. At the modern times, researchers identify two more wars declared particularly on water issues: the Arabic-Israel one in 1967 and the one between Senegal and Mauritania in 1989. However, the picture is not as clear and experts evaluate the situations very differently:

- According to *Wendy Barnaby*, there are no exclusive water-conflicts because the countries resolve these types of conflicts with discussions and negotiations and finally agree on the allocation of water resources. *Barnaby* cites the examples of conflicts over sharing water supply, concerning the Nile, the Ganges, the Israel-Palestinian one and the Israel-Jordanian. The fact that more than 400 intergovernmental conventions on water allocation were born from 1830 to present and more than a half of them were realized in the last fifty years ties in his statement with.
- Some similar results are found by researchers of the University of Oregon. A researcher-team led by *Wolf, Stahl* and *Macomber* from 1995 to 2003 has analyzed an international water-related case from 1831. They have summarized their results in the following four points:
 - Conflicts on water allocation were settled with negotiations in 1228 times and any kinds of violence between the parties took place in 504 times only;
 - Resources' allocation such as of water may occur as a problematic aspect in relation of neighbour countries and without a common agreement on it can worsen their relationship. At the same time, there are

⁹ Pátkai Mihály: It is a bigger weapon than oil/Az olajnál is nagyobb fegyver, *Hetek* – Országos közéleti hetilap 1999.06.19. (III/24.), www.hetek.hu/fokusz/199906/az_olajnal_is_nagyobb_fegyver Downloaded: 01.08. 2012

¹⁰ Gleid Viktor: Global water crisis, <http://www.fenntarthato.pte.hu/docs/glied3.pdf> Downloaded: 1/10/2012

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a great number of examples where budding partnership during a water issue had positive influences on the situation. ^{d.)};

- The most often, 86% of studied cases, there are certain elements - a build of a work of art affecting significantly the water quantity or an event having serious impact on water quality (mostly conscious pollution) - behind the military conflicts.;
- The involved nations generally settled their conflicts on a bilateral basis barely was participation of a third party or any international organization required, in about a third part of the cases.

Barnaby and the researcher-team led by *Wolf*, *Stahl* and *Macomber* claimed principally, that a political/diplomatic settlement was the most practical and the most common manner to close water-related conflicts. In spite of that fact, the *International Alert* and *Watkins and Bartell* are having more doubts and a less optimistic vision:

- *The International Alert*, an independent British research institute done a research between 2007 and 2008 while they recorded and studied the relations of 46 countries focusing on the reasons for environmental conflicts in the regions and their consequences. The investigation determined that conflicts are the most likely to explode in those regions where countries possessed rivers such as the Ganges, the Brahmaputra, the Mekong, the Han, the Ob-Irtisz, the Limpopo, the Orange, the Senegal, the Okavango, the Zambezi and the La Plata commonly ^{e.)}.
- *Watkins* and *Bartell* – similarly to the *International Alert* – found water issue as a source of conflicts pointing out that recently military incidents were broken out on this basis and fight over water has been already happening. The authors mention the examples of Israel and Turkey in their studies which had been in disputes over water with the neighbour countries. The two countries also took a lead in certain areas of hydro-diplomacy and the establishment of ecological sustainability boundaries.

It is rather difficult to decide who is right, whether researchers believing in resolution of diplomatic settlement and intergovernmental agreements or those who count with water-related military conflicts as real options. By analyzing both examples of Israel and of Turkey, a total picture of water-related conflicts will be presented and reviewed in all correlations.

ISRAEL

During the Israel-Arab war from 1948 to 1949 followed by a period of British mandate, Israel gained a bigger territory than it possessed at the time of its establishment. „Israel has not just occupied a part of Jerusalem and the Gaza Strip but took over the control over the source of the Jordan River and started to build a reservoir in the fifties, evoking hostile reactions from Syria and Jordan.”¹¹ Israel’s main problem was that appr. a third of its water resources came from regions under an authority what its neighbours strongly disputed. There was a heavy military conflict in 1964 concerning the reservoir to build at the source of the Jordan. To impede Israel in accumulation and monopolizing its water-supply, Syria announced a sidetracking on the Jordan River feeding the Hazbani and the Bajnas. As an immediate response, Israel attacked with the artillery and struck a blow to the concerned territory. It resulted in a withdrawal of Syria that the opposite position between the two countries deepened more. The Israel-Syria water conflict had two important aspects. Partly because Israel took a strategic water-political advantage of its winning and could enlarge its control over the total

^{d.)} The Committee Mekong had been also operating during the period of Vietnam war undisturbed just like water-political discussions were constant under the military conflicts between India and Pakistane and between Israel and Jordan.

^{e.)} The same basins are shared among several countries in the cases of the following rivers: in case of the Ganges 6 countries, of the Brahmaputra 6, of the Mekong 6, of the Han 3, of the Ob-Irtisz 3, of the Limpopo 4, of the Orangen 4, of the Senegal 4, of the Okavango 4, of the Zambezi 9 and of La Plata 5.

¹¹ Szalkai Attila: Water scarcity in the Middle East: war over water after war over oil?, *Nemzet és Biztonság* November 2008, p. 31, www.nemzetesbiztonsag.hu/letoltes.php?letolt=105 Downloaded: 1/10/2012

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Jordan practically, and after the withdrawal of Syria it controlled the Golan Heights, too. Israel's winning in 1964 meant for Syria the loss of the option of "blackmailing" Israel in respect of water. Just as important to realize that it also meant serious losses for the state Jordan, especially, if they are compared to the volume of the military attacks. Namely in 1964, Jordan lost about two thirds of its water resources deriving from the Jordan River and the Jarmuk.

These former conflicts practically led to a second respect highlighting the real nature of water wars. Another significant point was in the Israel-Syria water conflict that tension had been already very high between the two countries. After the first military conflict this tension over supply and allocation became extremely strained and one potential trigger for more conflicts. Their possibility was forecasted and finally occurred in 1967. Ever since published data have proved that the main reason for wars is the control over the allocation of limited water. In a published recording, Ariel Sharon, prime minister at that time claimed clearly that water was the principle reason for its war against Arabic countries. "Occupation of water sources and cistern territories, mainly of Syria's became crucial in Israel's military strategy during the so called six-day war in 1967. Israel's victory has rearranged the "water map" of the region fundamentally. Israel managed to enforce Syria in a total disadvantageous situation (also) in terms of water-allocation. Damascus had no chance of relevant influences on the Jewish state's water-supply. In addition, Israel reached a perfect position with the occupation of the western and north parts of the Golan Heights in respect to gaining control over river Jarmuk."

¹²According to analysts, this strategic view-points system is the reason why the, from Syria occupied territories in 1967 were so important to Israel. But then again Israel's water issue also tinges the relation between Israel and Palestine. One of the aspects standing behind the opposite position between the two countries, Israel and Palestine, is not the most known one but certainly is not negligible, is the water allocation. Referring to safety reasons, Israel do not permit to bore private wells in the regions of overpopulated West Bank and Gaza Strip. This measurement has primarily a serious impact on the Palestine population, living in that area and perpetuates water crisis there. According to observers one of the origins of Israel-Palestine conflicts is the cistern territory of the West Bank what after all, ensures the major part of water supply in that region. Therefore, Palestinians are convinced that forming their state must be accompanied with overtaking the control of the West Bank's water resources as they could not make up for and sustain the agricultural production.

Concerning water conflicts, the 1967 war was not the last one in history of the Jewish state, however, 35 years passed in the Middle East under strained circumstances without a serious matter. Nevertheless, the background of "wazzani conflict" between Israel and Lebanon in 2002 was that Lebanon attempted lay pipelines in the river Wazzani near the Golan Heights. „The Wazzani with the Hazbani together contributes about 150 million cubic metres of water to the Jordan a year which has a crucial role in Israel's freshwater-supply. In 2001, when Lebanon had been laying the first pipes, Israel announced planning actions. Israel's prime minister was even menacing with some military actions in case the pipelines demand more than 0.5% of use by its own country.”¹³ Although, the conflict did not end with a military interruption, it was giving a real warning signal to the world. Both the topicality and the profundity of water problems in the Middle East were underlined at once.

Certainly, Israel's water issue and a historical and strategic review of water-allocation problems can serve with more evidences:

- the process can be followed how a "fighting" state used to seek military resolutions for water conflicts reaches the level of water diplomacy,
- Israel would rather carry out alternative water management projects to resolve water-related problems recently and sets a good example.

¹² Gleid Viktor: Global water issues, p. 11, <http://www.fenntarthato.pte.hu/docs/glied3.pdf> Downloaded: 1/10/2012

¹³ Szalkai Attila: Water scarcity in the Middle East: war over water after war over oil? Nemzet és Biztonság November 2008, p. 32, www.nemzetesbiztonsag.hu/letoltes.php?letolt=105 Downloaded: 1/10/2012

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Israel's alternative water management projects involve crucial elements such as establishing factories to turn salt-water into freshwater, purification and recycling of waste water and promoting drip irrigation. In this respect, here is a summary of the most important results:

- In Israel, about 20% of water used for irrigation was already deriving from recycled municipal water at the turn of millennium and ever since the ratio keeps increasing permanently.
- Israel has established and covers all the conditions of a national level of water use even with turning salt-water into freshwater if it necessary. By formal information, in Israel both researchers and officials are ready to adjust to turn salt-water into freshwater without any problems and meet national demand for water only from that source if political, economic or strategic circumstances require it.
- Technological innovations and their results in field of drip irrigation need to be recognized and encouraged since agriculture uses and virtually wastes the majority of the available freshwater supply on the planet. According to researchers' diagnoses, only 40% of water use for irrigation is effective along with the traditional irrigation procedures. While an IT controlled drip irrigation system developed in Israel uses water minimum as twice efficiently. The system has been programmed in advance to lead water in small proportions to the plants' roots directly, so water use can reach an efficiency level of 95%. Because of rise in water prices, more international attention is called for these kinds of agricultural systems currently.

Concerning Israel however, the most positive phenomenon is the tendency to settle water issues on a peaceful manner full of compromises though, recently it is happening much more often than before. Unfortunately, the 2012 October-November events have shaded the relation between the Israel and Palestinian authorities in the reality they have had impacts on the relation of the whole Arabic world. Though, more strategic, military analysts see that conflicted situation as Hamas is responsible for where attacks again Israel cornered both parties ensuring forced reactions in Israel and financial and moral support in the Arabic world. Several international analysts highlighted Israel's ability to compromise in order to sign cease-fire and settle dispute trough negotiations.

Actually in terms of water, Israel has already made many positive gestures to surrounding countries concerning hands-on experiences of desalination. In the respect of practice, Israel has unique experiences one of the world's biggest desalination factories operates there, in Askelon. The factory has a capacity of producing 320 000 cubic metre of freshwater a day supplying 13% of the national population. The technology is expensive and it comes with a great volume of polluting gas emission as very often mentioned by analysts but after eliminating all these burdens establishments similar to Askelon could resolve the problems of water-troubled countries in the Middle East. In 1999, *Ariel Saron* negotiating as Foreign Minister with the EU's ambassadors has already asked them to support and assist the implementation of a two-step program in order to release the Middle East's water problems by turning salt-water to fresh one. Israel has a vision to establish desalination-yards in the region in order to resolve water-related scarcity in Israel, Jordan and Palestine in the long run.

TURKEY

Considerable water-related conflicts were also witnessed linking two rivers, the Tiger and the Euphrates in the last period they were developed between Turkey and two other countries, Syria and Iraq. The main conflict was based on the South Eastern Anatolian Project started by Turkey. The project targeted a rise of local people's standard of living involving a territory of 75 000 square metre. The local population accounts for 10% of the country and Turkey was planning to raise the standard of living with energy-related investments. Three huge dams were realized in framework of the project; the biggest one, the Ataturk Dam has a capacity of 48.7 billion cubic metres. In 1987, the countries agreed that Turkey will pass a certain volume of water to Syria until temporary completes the uploading of the dam. The agreed amount of water

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was recommended to be not less than 500 cubic metres in a second. In spite of Turkey's agreement, it has finally resulted in a conflict, because the water proportions sometimes reached 800 cubic metres in a second but often not even more than 40 cubic metres/second. In Syria's respect, the volume of water was incalculable and did not meet its needs. The break-out of the conflict was likely to link to the one-month long test period of Ataturk Dam in 1990. Turkey practically trapped the Euphrates justifying its action simply as a necessary for uploading the water storage. Certainly, there were some political motivations as Turkey stirred to blackmail Syria not to back off the Kurdish people. The water shortage had occurred not only in Syria but also in Iraq but Turkey was hoping on the tension in the relation between the two countries linking to another water-related conflict¹⁴ and therefore, their separate actions. In spite of the Turkish expectations, the two countries combined so, that they were also discussion the option of a combined military attack. Before having given an order to the single armies, however, both Syria and Iraq requested foreigner mediation in the interest of a peaceful arrangement. Because of the cooperation of two countries, a real threaten of military conflict and the international pressure from, Turkey finally opened the dam. This step has largely reduced the tension between the countries involved but the self conflict was far away from its closure. Syria and Iraq were disapproving that Turkey had been depriving a large amount of water of them through detaching streams and building dams. Turkey defended itself saying that the concerned water volume was re-added, after use. However, part of the truth was that caught-up water was already filled with fertilisers and some other toxic substances since it was mainly used for irrigation in the agriculture. The estimated results of the South Eastern Anatolian Project after completing it did not forecasted that water volume of the Euphrates's passage in Syria would be reduced by 40% compared to its volume from 1980 in a case of its completing. In addition, the rest of the water was significantly more polluted. All these reasons selves would have been sufficient to escalate the old conflict but Turkey had been already planning to utilise the Tiger's water-supply after the Euphrates. That would have caused more dramatic effects. According to preliminary estimations the utilisation of the Tiger would have also had a significant impact on Iraq's water supply since it might have reduced the volume of the river by 90% in that region.

To resolve the conflict the first major step happened in connection with the water-related world congress in 2007. Turkey had recognized by that time that its "thirsty" neighbours would easily become anomies unless it moderated its own water needs and passed an appropriate proportion to both countries Syria and Iraq. In this spirit, on congress meeting Turkey promised changing its aggressive water policy and would rather seek the options of a peaceful collaboration. Due to this announcement a positive approach was experienced in the water diplomacy of the three countries. Representatives of different states engaged negotiations to resolve former conflicts and decisions were made on establishing a collective water-related institution in charge of hydro-cooperation. Each of the three countries has delegated 18 members to the board. The centre of this institution is located near the biggest Turkish establishment, the Ataturk Dam. Both the institution and the body declared the aim to resolve a more economical and equitable utilisation of the Euphrates. One of the remarkable signs of the effective body work was a joint decision to build the Asi Dam within the framework of Turkish-Syrian collaboration and use it later together. The questioned Ilisu Dam has also reached a fair resolution within the framework of the cooperation between Turkey and Iraq.

The merger negotiations of hydro-policy in the three concerned countries having had measurable water conflicts with each other before and the approaching viewpoints were major initiatives at international level, too. It has represented the importance and the vision-role of sub-national co-operations that their water-policy agreement became one of the main topics of the global conference on water in Istanbul in 2009. About the bilateral water-related co-operation, the Environmental and Forestry Minister of Turkey has declared the followings:

¹⁴ The opposite reaction between Iraq and Syria is also related to the Euphrates. The dam Thawra built by Syria was close to cause military conflict between them in 1978.

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„In our region, water sources and allocations will not cause war conflicts. Instead of water-related disputes with our neighbours, we would rather carry out common water projects.”¹⁵

FINAL THOUGHTS

The paper “Water scarcity in the Middle East: war over water after war over oil” published by *Szalkai Attila* in 2008 has even indicated the international risks of water-related conflicts based his opinion partly on the profound knowledge of the situation of Israel and of Turkey:

„The collectively owned water-supplies make relations between countries explosive, in places they lead to armed confrontations and formation of alliances based on the existence of the common enemy. Old opposite relations are likely to turn up serving as reason for takeover of control or it may be used for manipulation of foreign policy. Though, water scarcity warns countries in monopolistic position and with abusing attitude that the same water-supply shared between two countries easily causes armed conflicts, even because of their opposite relation. Collaboration is clearly needed for living permanent peace.”¹⁶

Of course, it do not exist any explicit parallel lines between Hungary’s position and its water-related problems and of Israel’s or Turkey’s. However, it is worth to pay attention to the lessons of their water issues described in this paper earlier, and the handling manners. Certainly, a positive aspiration appears in Hungary when the decision-makers at top governance are also considered and express their willingness to create a new area for local water policy and water management. Because of the global rearrangement of water-allocations and the national geopolitical and hydro-political positions, Hungary is likely to consider the following aspects in order to carry out its water-management duties in the future:

- It is recommended that the country invests in development and establishment of new agricultural methods in order to improve the efficiency of water use. Basic and implementing researches on new technologies, and new solutions to revitalize irrigation technology, practices and institutions should be identified as highlighted fields of the national innovation-ability and innovation sources.
- The “reverse” ability of the old sewerage system must be improved parallel with its extension continuous development. It means “grey” water (greywater) needs to be recollected and recycled. The consumption habits of individual household are also to review beside of the establishment of better infrastructural conditions, just as supporting the relevant research and innovative activities.
- Similarly to agriculture, the growing industrial water demands require implementing new applications and facilities changed toward to the more economical use of water. It is necessary to recollect and recycle the “industrial” water accumulated with production and new technologies must be assisted by a relevant research and innovation background.
- It will be also important to analyse the currently not available or at a high price available water allocations and develop better conditions.
- Regional cooperation is essential to creating transboundary relationships that result in optimal levels of quality water. It is recommended to encourage co-operations and a global framework is needed around which countries Hungary shares water supply including surface and underground allocations.

¹⁵ Szalkai Attila: Water scarcity in the Middle East: war over water after war over oil? , Nemzet és biztonság, November 2008, p. 34, www.nemzetesbiztonsag.hu/letoltes.php?letolt=105 Downloaded:1/10/ 2012

¹⁶ Szalkai Attila: Water scarcity in the Middle East: war over water after war over oil? , Nemzet és biztonság, November 2008, p. 33 www.nemzetesbiztonsag.hu/letoltes.php?letolt=105 Downloaded: 1/10/2012

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- International co-operations must involve sanitation coverage not only water use and water management in order to avoid pollution. Parallel with that aim, national defensive ability must be significantly developed resulting in water security both on the surface and underground.

All these aspects should enjoy priority because Hungary currently spends the majority of its financial sources linked to water management on inland-water exemption and flood protection. The importance of those actions cannot be questioned of course, but it would be worth to reconsider the problems in the different respects referring to the “new water paradigm” cited nowadays more often by professionals parallel with the broader “grey”, urban, industrial water engagement as well as rainfall’s in the development of new water management and water policy in the future.

Kulcsszavak: ivóvíz, stratégiai erőforrás, vízháború, hidropolitika, hidrokooperáció

Keywords: drinking water/potable water, strategic resource, water war, hydro-policy, hydro-cooperation,

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