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WATER (IN) SECURITY – MODERN SECURITY PARADIGM

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Abstract

Water. In the existence and activities of each individual it is water that (un) consciously essentially defines them. Therefore, water is called the source of life, but nowadays we know it under the new concept: blue gold. The reason for such a modern understanding of the role of water lies in the increasing limitations of access to sufficient quantities, which first results in water stress – the situation where needs remain unmet, but water scarcity does not yet interfere with the foundations of the activities of societies. Water stress is thus the first form of threat to water security, especially when deficiency destroys all basic social systems that cannot function without water. The question of the role of water between them is increasingly being raised, as the operation of one system in the area of water consumption or management can mean interfering with the water potential of another system. This confronts us with the effect of the definite quantities of water, although countries with ample water resources and quantity (still) often do not understand or perceive it. Of course, this does not mean that the debate is not necessary; it is, conversely, necessary, and it is only in this way that it is possible to prevent or at least control the situation in which many countries around the world have found themselves and there is a total lack of water resources in the most existential aspects. Under these conditions, water security has become the most essential element of national security of these countries and thus a potential weak link in ensuring security.

Key words

water security, national security, drinking water, water footprint, water stress, water consumption

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1. Limited access to water – water stress and water footprint

More than ever, globalized world and demographic imbalances increase social differences in the world, based on an absolute shortage on the one hand and overabundance on the other. Inequalities cause and direct migratory flows and in their extremes, which are increasingly noticeable, they are increasing the potential for destabilization between societies and

within themselves as well (Dobkowski, Wallimann (eds.), 2002). If at the forefront of this kind of scarcity there are goods, such as water, that define life, it is important to pay attention to both the reasons and the possible consequences of its scarcity. Water in its original form is almost without color, odor and taste. And yet indispensable for living beings. A person needs it for its biological existence, it provides basic and urgent hygiene, is indispensable in everyday life and is the basis for food production and is needed

in all industries. Because its shortage means great stress, disruption and, in the extreme, disintegration of the functioning of societies and threatens the existence of both the individual and a group of people, the issue of water has become a geopolitical issue and a challenge for many political elites.

Water is the only substance that occurs naturally in three aggregate states: hard represented by ice, liquid by water and gaseous state – water vapor. Otherwise, the water covers more than 70% of the planet Earth's surface, which is about 1,386 million km³. However, out of all the amount of water, 97% is salt water, therefore it is non-potent and is not directly applicable to the biological part of satisfying the needs of man, fauna and flora. Of the remaining 3% of fresh water on the planet, about 69% of it is stored in the form of ice on both Earth's poles and in the areas of continental glaciation of mountain peaks and ridges. Of the remaining 30%, there are underground reserves of fresh water, but they are not always accessible for the direct exploitation either for humans or even less for the remaining part of the Earth's biosphere. Thus, all of the needs are satisfied only by 1% of the water on the planet, which is surface and thus accessible freshwater. However, in this structure, as much as 70% of the water is snow and ice in mountains and permafrost, 21% of the surface freshwater is in lakes and only 0.5% in rivers, which are the most important source of satisfying the water needs of people on the planet (Bralower, Bice, 2014). Since the amount of freshwater available is finite and cannot increase, the question arises of ensuring the needs of the biosphere, especially people whose number is constantly and fairly rapidly increasing. This also increases the needs, which are not only related to a large number of the world's population, but depend on many other factors, such as economic development, lifestyle, water prices and consequently awareness. Unlike other representatives of the planet's biosphere, man with his (economic) activity has a significant influence on the quality of the water one uses oneself. In other words, due to pollution and other forms of exploiting freshwater, its available quantity and availability for the most biological needs of both humans and the rest of the biosphere is decreasing. Although access to fresh and, in most cases, drinking water in the developed world is simple (it is only necessary to open a tap) and is reasonably priced, it is important to point out the fact that fresh water resources are fairly unequally distributed globally. More than half of all global freshwater supplies are concentrated in only nine countries: The United States of America, Canada, Colombia, Brazil, the Democratic Republic of the Congo, the Russian Federation, India,

China and Indonesia (Freeman, 2015). By far the most water supplies are available to the inhabitants of Greenland (30 million liters a day) and Alaska (3.8 million liters a day), who do not need so much water because there is no agriculture and industry that are the largest water users. Due to specific weight of water and the fact that it cannot easily be transported over longer distances, water is subject to – more than any other commodity – location. However, as there is globally a large disproportion between sufficient quantities of water and the distribution of inhabitants, However, as there is a large disproportion between sufficient quantities of water and the distribution of inhabitants globally, as a rule inversely proportional, various forms of deficiency are already occurring. Australia is the most dried continent, but it has a relatively small population, a completely different picture is in Asia, where nearly two thirds of the population live; the continent has only one third of the available water globally (Pearce, 2006).

The utterly remarkable fact is that access to sufficient quantities of fresh water is not interdependent with the global distribution of the population. Even more significantly, there is a marked disproportion in the case of regional settlement and access to fresh water. From the antiquity or the Roman state, this issue of the state is further solved by means of water distribution systems that enable the transport of water from the source (mostly water catchment) to the user. Due to the importance and necessity of providing water to the population centers, today water supply systems already represent a strategically important or critical infrastructure, since any negative impact on its functioning signifies a security challenge, which may also be of national importance. However, urban centers have, besides the necessity of infrastructure support, at least two extremely important direct impacts on water: the first is consumption and other ways of exploiting water, or the discharge of waste water. For the first, water consumption is much more specific, which is significantly higher, and, in many cases, it represents a multiple of consumption in rural areas of the same country¹. The growth of agglomerations, which is evident in the hard-to-control rapid urbanization of developing countries, represent a major water consumption catalyst, which often represents an

¹ In the case of Mexico, the capital of Ciudad de Mexico (which accounts for around 10% of the total population) consumes as much as 75% of all water in Mexico. The reasons are connected with higher level of living in cities (hygiene) and the concentration of certain industries (food processing industry), which use large quantities of water for their production, as well as extremely high water losses on the water supply system (Cossi, 1993).

overload of water supply systems, consequent losses and operating outages, thus increasing the possibilities for lowering water quality in the system and then in users. The so-called 'hot stains', which even nowadays do not have access to sufficient quantities of drinking water, and include: the northern PR of China, the larger and closed areas in Asia and Africa, the Middle East, Australia, the central western part of the United States and Mexico, among which there are also mega agglomerations (Bralow, 2007).

However, the increasing consumption of water is not related only to the rising number of people through the prism of drinking water. This is even more important because of indirect use of water in the form of production of various goods and food. In this case, we are talking about the consumption of virtual water. The amount needed for the unit of a particular good. In defining virtual water and, consequently, calculating the quantities of the latter for the production of a unit of a certain good, two principles have been introduced: (1) First represents the actual and direct amount of water actually needed for production and, in addition to the production characteristics of the goods, will relate to the production characteristics, the rationality of organizing the production (so-called water efficiency) and water prices, which in many ways define water management and consequently its consumption. (2) The second principle is the understanding of water consumption for the production of a good unit through the prism of its user. In this case, this is an evaluation of water consumption considering the specificity of the state of the environment and the perception of water where this good is required. In other words: how much water would be used on the concrete good and how much water would be saved if that particular good were imported. Although it seems quite easy to calculate this type of water consumption, this is not the case. At least two factors have a significant impact on the required amount of water in the production of exactly the same good: the first is water efficiency in the process of production itself and is often connected both with the knowledge of organizing production as well as water prices, while the other is represented by the physical and geographical circumstances in the production region (the production of a kilogram of grain in the arid region will also require twice as much water as for the humid environment). A more far-reaching view complements the above-mentioned definition of virtual water from the point of view of the life cycle of the good, which also includes the water necessary not only for its production, but also for destruction. Concerning the complexity of modern goods, whose destruction processes are demanding, this

complement of the virtual water understanding is essential (Hoekstra, 2002).

The presented concept of virtual water is supplemented with the concept of trading or replacing real consumption of water in the production of goods and with the indirect water import, always when we are talking about import of goods. Of course, this reciprocity also applies to exports. Trade in water between countries rich in water resources and countries with limited water resources is difficult to implement because of voluminosity and mass of water, and the associated high transport costs that this good does not transfer. It is, however, realistic in the field of trade in water-intensive goods, i.e. those goods whose production requires large amounts of water. Therefore, it is worth considering the solution of water stress by means of trading with virtual water, because in arid regions it will not be possible to improve access to water resources and thus mitigate water stress. The import of virtual water would allow the concentration of the consumption of already limited water resources for vitally important functions of the country (Hoekstra, 2002). The import of food would thus reduce the pressure on water consumption, and this amount would be intended to provide drinking water to inhabitants in arid areas.

At the same time, with the phenomenon of virtual water, the water footprint is also becoming increasingly important (following the CO₂ footprint). It expresses the consumption of freshwater at the individual, social and national levels and includes direct and indirect water consumption, including the segment of the production of goods that have been created. The latter argument is particularly important because the water footprint of an individual includes the water that was needed for the production of food one eats, the products one buys and needs (including those that are not vital and define the lifestyle) and the energy one consumes (Hoekstra, Chapagain, 2008). Calculations on this basis explained the extremely large gap in water consumption between individual countries, as well as considering life styles, predicted no bright future in terms of further water consumption and the associated disproportion between the available quantities of water and the aforementioned consumption. According to S. Leahy's estimates (2014), the consumption for 2030 should exceed 40% of the available water resources, which will be further enhanced by climate change and the most likely consequences in the characteristics of the entire water cycle. Therefore, the understanding of the water footprint is so important, as it can (although not necessarily) enable both predicting future trends in

water consumption and indicating the potential for rationalizing consumption².

In the design of data and the definition of water imprint, a modern methodology separates the different categories of used water, from the point of view of the source the following:

- blue water = the amount of surface running water and aquifer water required for (directly or indirectly) the production of one unit of a good;
- green water = the amount of precipitation required (directly used or through evaporation) for the production of one unit of a good;
- gray water = the amount of fresh water needed to remove pollution and, by means of cleaning, the maintenance of the water quality through the prism of defined standards (Hoekstra et al., 2011).

2. Theoretical definition of the water (in) security concept

The uniquely and completely clear definition of the concept of water security is due to complexity extremely difficult. The reason for this is the systemic interconnection of the role of water in all social systems and subsystems and the direct and indirect impact on the security of societies and also individuals.

² Man, taking into account the water footprint, consumes around 3,500 liters of water per day. As an explanation, here are some facts: for the production of one apple, 125 liters of water is needed, for 1 kg of potatoes 100 liters and 1 kg of beef 15,415 liters, 1 kg of bananas requires 790 liters, 1 liter of milk 940 liters of water, while 1 kg of cheese requires about 5,000 liters. One average pizza indirectly contains 1,260 liters, and for 200 kg of boneless beef, as much as 3.1 million liters of water. Even considerably higher consumption of water is associated with a way of life. The average hotel room consumes about 760 liters of water per day (of which 56% of water consumption occurs with taking showers), and the average consumption in a double room is around 65 liters per day for flushing only one toilet, which represents about 30% of consumption. An average family in their home needs 20% of the consumed water for washing, 30% for personal hygiene (toilets, showering, bathing, ...), 5% for cleaning and 10% for cooking, that is, the part that ensures the existence of an individual. Similarly, in the production of goods: 910 liters of water is needed for one specimen of a smartphone, while for an integrated baseplate of a personal computer 4,165 liters. The production of four car tires requires 7,850 liters of water, 1 ton of concrete 4,633 liters and petrochemical treatment of 1 barrel of crude oil 7,000 liters. Personal hygiene compared to goods represents a significantly lower consumption – 10 minutes of showering about 170 liters of water and a five minute shave about 38 liters (flow rate of an average water tap is 7.6 liters / minute (Leahy, 2014, p. 24-32).

In its essence, which is adequately covered by the following definition: '... it is the protection of water supplies necessary for food production, the needs of the industry and the provision of housing and other needs of the population, under the assumption of maximum rationalization of water consumption, the search for new water resources and the protection of water supplies in the event of a shortage due to natural, anthropogenic or technological reasons' (Tindall, Campbell, 2010, p. 1), the close connection between the already proven complexity of the topic on its own is emphasized on one hand, and the critical infrastructure on the other, which, in a significant part, in fact enables access to water resources. However, since it is indispensable in other areas of security, it can be argued that it directly affects food and energy security as well as economic stability. Moreover: precisely water (in)security causes the number of fatalities among the most vulnerable population groups, such as children. Scientists have found that more children die from lack of drinking water than from war, malaria, HIV/AIDS and road accidents combined. In the last decade, only diarrhea has caused more fatalities among children than the deaths of people throughout the World War II. Every 8 seconds a child dies due to the consumption of contaminated water. In addition, the WHO reports that contaminated water accounts for more than 80% of all diseases in the world (Barlow, 2007). Water (in)security, however, has another phenomenon, becoming a symbol of increasingly clear global as well as national social stratification. While the poor access the dubious quality drinking water, or not even that, the wealthier are using such water for watering greenery, car washing, It is the social differences that are considerably deepened by the consumption of water, where the differences are remarkable. A North American person consumes daily around 600 liters of drinking water, for drinking, cooking and hygiene, although 50 liters would be sufficient for all of the above. While a resident of the African continent may consume only 6 liters (Barlow, 2007). Needless to say, this quantity is used merely for the most biological needs – survival.

The paradigm of water (in)security often occurs in connection with at least two verbal phrases: the first is water shortage and the other is water stress. Water shortage refers to the volumetric water scarcity and water supply. It is calculated as the ratio between water consumption and water stock in a given area. It is an objective and real fact that is used in cases of longitudinal studies in different environments. This criterion is applied in two different areas: the first one represents the physical lack of water and is often referred to as an absolute shortage, as in this case the

existence of an individual is endangered, or it does not allow for life. The second category represents an economic shortage, which refers to poor water resources management and leads to the potential destabilization of the economic aspect of the functioning of societies. Although the verbal phrases are semantically different, there is a direct link between them, as water stress represents a negative frustration, which results in the inability to satisfy the needs for sufficient quantities of water. Naturally, it is possible to determine what is sufficient quantity of water, which depends on the living environment and water management. However, scientists have concluded that the phenomenon of water stress occurs when the quantities of available water for an individual are limited to less than 1,700 m³ in one year. If the quantity of available water is in the parameter between 1,000 and 1,700 m³, then there are already different limitations in the life of an individual and the water stress is even more evident. In the case of areas or countries where available quantities of water are less than 1,000 m³, there is already a phenomenon of water shortage. Unlike water scarcity, the occurrence of water stress is much more subjective (Schulte, 2014). There is, however, also the stress of a water source. This is mainly defined by consumption and occurs in case of a 10% excess of the ability to regenerate the utilized water source. At the same time, the concept of sustainability ceases, because further consumption leads first to the quantitative impoverishment of a water source, followed by a qualitative deterioration and, finally, if the dynamics do not change, the end of the existence of a water source (Tindall, Campbell, 2015).

Is there any important question about water restrictions or quantities of water accessible to mankind? When looking for an answer to this question, of course, we cannot omit two facts: the first (1) is the movement of water consumption and the factors directly or indirectly affecting it, (2) the restoration of water reserves or the occurrence of water deficit, that we must understand as an imbalance between the actual reserves replenishment capabilities and is characterized by various filtration coefficients and consumption which has a very negative impact and significantly reduces the possibility of regeneration or the latter is simply made impossible – an example of geological aquifers resulting from different orogeneses and chain mountains changes and, consequently, divergences between individual basins, which is changing the direction of watercourses and, consequently, precipitation runoff.

3. Water and energy

The global demand for energy will continue to grow steadily according to most forecasts. Given the high dependence on fossil fuels (whose quantities are limited and gradually decreasing) on one hand, and the growing unacceptability of maintaining or even increasing the amount of energy produced by nuclear reactors, more and more discussions and projects are focused on the field of energy production with the help of renewable energy sources, which still account for less than 20% of all energy produced in the world. An important role in this regard is the high degree of integration of electricity generation, the consumption of which will have increased at least by 2030 and currently accounts for around 35% of all global energy needs. The production of the latter also greatly emission-burdens the environment, through the prism of carbon footprint, since despite all the efforts, the vast majority of electricity generation is coal-based (Victor, 2008). An important role plays hydro energy, accounting for about 16% of all global electricity production. Its share is expected to increase by about 3% every year for the next 25 years (Klare, 2012). Since the costs are relatively low, given the energy quantity produced through many years and the possibility of regulating production, in accordance with consumption and energy demand, new investments in the construction of hydrocentral are to be expected. In 2013, 3,750 TWh was produced globally, with an expected additional output of 40 GWh, mainly due to huge investments in The PR of China (their share in 2014 was estimated at 29 GWh, that is more than half of the global increase) and already has the largest potential for electricity generation through hydrocentrals – currently 17% of the total global production or 140 GW. Countries that, in addition to the PR of China, have a significant share of hydropower are: Turkey, Brazil, Vietnam, India and the Russian Federation. The EU countries also considerably include hydropower in the energy image of energy produced, as it represents about 60% of all energy produced from renewable sources. By far the largest and currently unexploited potential in the field of hydropower has the African continent, nowadays producing only 3% of global production and is significantly behind Asia, leading in this respect with a total of 32%. A large increase in small hydropower is expected in the coming years in India, as the federal government launched the rural electrification program (BP Statistical Review of World Energy, 2014). Nevertheless, there are still significant reserves or improvements and possibilities, but they encounter many scientific warnings of excessive interference with watercourses, changes

in water regimes and anthropogenic (poor) management of water resources³.

4. Water and food

The provision of the necessary quantities of food is closely linked to another important (in)security concept of non-military threats and challenges – food security. It does not make sense to discuss this in the context of this article, but it is not possible beyond the important fact that is closely linked to water consumption and is necessary in the production segment or in the provision of sufficient quantities of food. Due to the increase in the global population and the changes in important nutritional habits, an increasing need for food is expected. It is imperative to recall the facts exposed in the case of virtual water. The consumption of water for the production of a unit of nutritional value is very different (cereals or cattle breeding), therefore, dietary habits represent an extremely important role in this regard – higher consumption of meat is one hundred times or even a thousand times the amount of water consumption of for nutritional needs (Griffiths, Houston, 2008). Regardless the dietary habits, however, there is an increase in agricultural areas also through artificial irrigation of fields.

The following data reveals plenty: 200 years ago there were between 6 and 7 million ha of artificially irrigated fields in the world. These areas increased

³ The Aral Sea was once the fourth largest in the world with an area of 67,000 km² and the third largest freshwater reserve in the world – around 1,000 km³. The Aral Sea was the center of fishing and the commercial hub in Central Asia. The Soviet authorities irreversibly intervened in the lake with a project to irrigate large areas in the semi-arid region of southwestern Kazakhstan and northwestern Uzbekistan and Turkmenistan. In this respect they changed the flow of rivers Syr Darya and Amu Darya, which are inflows of the Aral Sea and together with the mentioned rivers represent the largest endorheic or no water runoff system in the world. Due to the establishment of irrigation systems for the production of cotton (otherwise extremely water-demanding plants), the amount of water consumed per capita per year increased to 2,000 tonnes, the highest in the world (in the EU the average consumption is about 200 tonnes). Each year, 50 km³ less water flowed into the lake, and the lake's surface was also reduced – 20 cm each year. By the end of the 1980s, the water reserve in the lake decreased by 75%, while the surface area of the lake decreased by 50%. In 2004, the surface of the lake was only 25%, while the area of the former lake bottom turned into a salty desert. Due to pollution, water scarcity and the draining of the lake hinterland, the collapse of agriculture in the region followed, and life expectancy of people in the area is around 51 years (Caldecott, 2007).

significantly at the beginning of the 20th century, to 50 million ha. However, the trend did not change over the course of the century, and in 2000, 230 million hectares of land were irrigated. Nevertheless, only 15% of the agricultural area is included in the irrigation system, but it is true that these areas provide 40% of global food. Yet another point is noteworthy: despite the increase in artificially irrigated areas, these, given the increase in the global population, are decreasing. In 1978 there were 48 ha of areas per 1000 inhabitants, also the year when the peak was recorded, followed by a 6% reduction and settled on about 45 ha of area per 1000 inhabitants. Therefore, it is not surprising that 70% of global water consumption is agriculture, while industry consumes around 23% and domestic (household) water consumption is only around 8% (De Villiers, 2001). As irrigated areas are usually in arid areas, water losses to the irrigation point are also very high. Even then, its effect is not expected, as due to the effect of evaporation out of 100 m³ »the loss« is as much as 75 m³. At the same time, the dry soil allows for relatively rapid surface run-off as well as vertically deep water infiltration. Such a process, however, greatly contributes to the leaching of the soil or its salinization. Such soil, as a rule, is changing into a desert, as it is no longer suitable for cultivation, despite all efforts. When irrigating agricultural land, it is mainly the exploitation of underground aquifers as rich water reserves. However, even in this case limitations are in place, as in the case of faster exploitation, such as the aquifer's reproductive capacity, it leads to a decrease in the level of groundwater, a decrease in its quality and the collapse of the earth's layers, which prevents aquifer restoration. As a result of the need for irrigation in India, the quantities of water consumed increased significantly. For irrigation of 40 million hectares of land, 250 km³ of aquifer water is consumed, or 40% more than it is compensated for by precipitation. The proportion of water consumed in this manner is: about 50% of water in the irrigation process is required by evapotranspiration as a result of plant life; the other half returns to the underground or is lost through an »unproductive« evaporation process (Caldecott, 2007).

The global distribution of population and climate effects in a region dictate the distribution of irrigated agricultural land. 68% are located in Asia, 17% in North America, 9% in Europe and only 5% in Africa. Due to the high pressure on these areas, there is a significant decrease projected (33%) of these areas by 2020, which is or will be due to vertical erosion and soil salinization. By 2030, the countries of the Middle East and North America will have already used 60% of all water reserves for farming purposes,

which is an increase of 20%, considering the ratio to-day⁴ (Griffiths, Houston, 2008).

5. Water secure world – reality or illusion?

Since the water is an essential and indispensable pillar or even the very beginning of planning for sustainable and long-term development, the UN is significantly involved in the design of the dialogue and the search for possible improvements in strategic water management and its resources. A strategy for a global understanding of the role of water in modern societies is outlined in the 2014–2020 Strategy, but the countries' clear commitments and the concrete actions of the latter are lacking (Delivering as One..., 2014). It is therefore difficult to expect coordinated action among countries in this area, especially since water scarcity and the restriction of access to water resources are not a universal problem but limited to individual regions or even individual countries.

As a water-secure world, one could indicate the state when every individual in a society had completely satisfactory amounts of water for a completely undisturbed and creative life. In this state, water is controlled for consumption in such a way that it can be returned to the natural environment safely and qualitatively unchanged, which ensures the sustainability. In this way, we would not know the diseases caused by water scarcity, related to the field of hygiene and use water for their spreading water as a transmitter. Water security also represents the control of all the accompanying phenomena of surface water, such as the erosion of river banks, floods, landslides and droughts, and relate to the area of environmental safety and show all the weaknesses of poor water management in society. A water-secure world means sharing and assuming responsibility

⁴ Perhaps the most transparent disparity between access to water resources and food production is the PR of China, which has the worst conditions between population and water supply. In particular, northern provinces representing 43% of all population and having only 14% of the country's water resources. This finding implies that around 500 million people depend on areas where hectare yields of fields are steadily decreasing and desertification is spreading due to the over-exploitation of underground water resources. They are only 200 kilometers from the capital Beijing. Due to the process of urbanization, traffic and other procedures of environmental interventions, the PR of China is losing areas vital for agriculture - in the period from 2002 to 2007, as much as 18%. At the same time, according to estimates, 400 out of 600 major cities in the PR of China are already facing the shortage (Griffiths, Houston, 2008).

for managing water resources, and this must be followed during systemic regulation. In other words, the water favors of an individual social system as a water user must be avoided, which can be seen nowadays in extremely unparalleled water consumption between sectors. Such actions can only be done with a prior strategic approach in the field of water management. The guaranteed water security reduces the likelihood of poverty and social gradient and increases the standard of living. Above all, equitable access to water resources allows protection of the most vulnerable groups of a particular society. And yet there is an increase in the frequency of use of the phrase 'war for water resources', with which we identify conflicts in which the core of misunderstandings is the access to water sources or the causing of water insecurity. This, as has already been stated, is not only a vertical destabilization of a particular social system, but a horizontal collapse of the balance of all social systems as well as subsystems.

It should be noted that water as a basic human good must not and cannot be claimed as a purely economic good. Despite numerous attempts, which are mostly aimed precisely in so-called privatization and indirect monopolization of water. The reasons are hidden in the increasingly dominant concept of neo-liberalism, as well as in the fact of willingness to cooperate with large capital investments in the field of water management and the creation of a public-private partnership. Determining the market value of water resources undoubtedly leads to more controlled consumption and more rational management of water resources (Shiva, 2002). It also means something else: it represents a direct challenge to the concept of human security. We should understand this as a liberation from fear (the absence of violence and wars) and freedom from needs (the absence of threats such as hunger and disease) (Udovč, 2014). The question is, if and whether it is even possible, the ownership of water resources can ensure its basic mission – to be a public good accessible to everyone, regardless the financial capacity of either an individual or a community. The latest events are calming us down and most likely, at least for a certain period of time, the desire to privatize water resources will be halted, yet I am convinced that similar concepts cannot be ignored in the future.

6. Conclusion

In the world, currently 1.8 billion people drink water, contaminated by a varying degree of the presence of faeces. More and more people use water without proper supervision and systematic improvement of

water quality (UN Water, 2014). Adding to this the growing water shortage also in the provision of sufficient quantities of food – F. Pearce (2006) states that food production will have decreased by 2025 due to water scarcity by 385 million tonnes - it is essential to pay more attention to this issue. Despite the fact that humanity does not manage water resources in accordance with the principles of sustainability, water remains the latest form of a completely renewable source, despite the various forms of exploitation of water and its resources. Despite the pollution, exploitation for irrigation, accumulation with dams and use for energy production, the quantities of water do not change. However, it remains essential – the location of water is changing and is inversely proportional to the global distribution of the population.

If we agree with the fact that security cannot be ensured without prior sustainability, then we are undergoing a lot of urgent changes in the field of water resources management. We will first need to focus on the consumption of resources and consider the urgency of extremely irrational quantities of water consumed and the differences between developed and underdeveloped areas. There are certain improvements that must follow that will in future reduce water losses both in the economic as well as in the individual use of water resources. Such measures can most probably be expected by harmonizing prices and an additional tax burden for the largest and perhaps irrational forms of water consumption. An important aspect of consumption is awareness of users and dietary habits. These, considering the consumption of the so-called virtual water, can in the future have a significant impact on the actual consumption of water. Of course, an important aspect in the management of water resources is also the management of already used water. Water, which we used for various reasons either in economic processes or in people's daily lives. There is ample room for improvement right in this field. The speed of the progress depends on understanding the problem of decision makers in important cities. Although in many scientific circles there is already a phrase for water warfare, water stress can be mitigated by using at least a regional approach to more rational water resource management. The question is if we are able to do this ...

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