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WATER RESOURCES IN THE CONTEXT OF GLOBALIZATION

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Abstract
A rational use can lead to the protection of water resources. In a community, the state of the environment is influenced by both the quality and the quantity of water resources. The state of the environment is also given by measures to protect water resources in other areas such as energy, transport, agriculture, fisheries and tourism. The supply of drinking water is influenced by water quality. A prudent and rational use of natural resources, including water resources, can help preserve, protect and improve the quality of the environment. Water management and use of water resources are very important. The importance is the multiple use of water. This may lead to deterioration in the qualitative parameters of water resources. This raises the issue of implementing rehabilitation and development measures for wastewater management systems. The application of modern and non-polluting technologies can lead to pollution prevention. In many areas, it is used in addition to surface water and groundwater. From this point of view, the article presents an analysis of the quality of surface waters and groundwater. Globalization has favoured technological transfer from developed countries to developing countries. Given the economic development of a country, globalization has made the role of human capital grow. It also had an effect on competitiveness. The article presents the evolution of the population served by the public water supply system, respectively the quantity of drinking water distributed to the consumers. In a globalized economy, increasing competitiveness is based on knowledge.

Keywords: *environment, globalization, water resources*

Introduction

Changing the physical, chemical and biological characteristics of water, in other words water pollution, has consequences for the health of the population.
Proper drinking water supply has consequences in reducing the impact on quality of life. Also, the quality of surface and underground water is influenced by the way waste is collected and stored.
In a global economy, human capital is an instrument that can lead to success. The fight against climate change and the maintenance of social cohesion can be achieved through a sustainable and highly competitive social market economy (EC 2010).
New global challenges with long-term effects are emerging globally. Due to population growth, pressure on natural resources is increasing. At European level, the aging process is proving to be an additional challenge. Increased vulnerability of crops and animals to climate change (MADR 2015). These, together with increasing

urbanization, will lead to the limitation of food production. Globally, it is forecast that food demand will increase by 70% by 2050 (FAO 2011).
This trend will mostly contribute to developing countries for which demand for food will double in the coming years.
It is estimated that by 2050 the world population will grow to 9 billion and 95% of this growth will be in the least developed countries (in 50 of the least developed countries around the world, where the population will double) (EC 2008). Also, by 2050, 70% of the world's population will live in urban areas (FAO 2009).
EU water policies have contributed to the protection of water resources. However, fresh water accounts for only about 2% of the total amount of water in the planet (McKinsey 2009). Thus, the estimated supply of water supply worldwide is approximately 40% (EEA 2012).

Surface water

Food security is affected by climate change. Through impacts on water resources, local effects can be generated for different areas around the globe. Thus, some areas may benefit from productivity gains in the vegetable sector, as well as from crop and farmland expansion. For other areas, global warming and water scarcity can affect productivity and production in the vegetable sector, thus affecting food security. In order to prevent such situations, both low-water irrigation systems and renewable energy systems can be developed. There is also the possibility of creating water reserves as well as afforestation. Climate change and extreme weather phenomena generate negative effects. For example, in the agricultural sector, they influence the resistance and adaptability of some plants. Under these circumstances, measures to support water supply, as well as increasing the efficiency of its use, are necessary and welcome. In this case, it is important both effective access to water resources and access to drought resistant varieties (MADR 2015).
Climate change can help reduce water and food resources. This could contribute to triggering regional conflicts, hunger and refugee flows (EC 2014).
Thus, at the level of local communities, measures supporting water management activities are also important.
Afforestation activities are designed to protect water resources. In water resource management, consideration should also be given to the non-use of all water in the production processes. Thus, by not using all the water, part of the water returns to the water source. In this way, the qualitative parameters of this source deteriorate. The importance of this observation is necessary because, later, this water source can be a water resource for other communities.
Worldwide, people are in increasing interdependence. The manifestation of the globalization process has allowed markets to expand globally, as well as the opening of new markets. However, negative effects, which are more and more dangerous than positive effects, must be considered (Zaman & Gherasim 2007). Thus, positive effects can be cancelled by the duration and amplitude of seizures. In crisis situations, even if wealth is produced, there are still prerequisites for more poverty. Some social categories may be affected more than ever by such problems.
Effective water resource management enables local and regional communities to better prepare for extreme weather events. Due to climate change, these extreme weather phenomena are becoming more common and cause serious damage.

At the EU level, the water resources sector comprises 9,000 active SMEs and offers almost 500,000 full-time equivalent jobs (EC 2015).
In order to support a sustainable economic recovery and adaptation to climate change, the European Commission launched in 2012 the European Water Innovation Partnership.
At European Union level, the Europe's Water Rescue Plan was developed. It aims at removing obstacles to Europe's water resources and is based on an extensive assessment of existing policy. Europe's water security plan provides some key themes. These include topics addressing better land use, water pollution, increasing water use efficiency, and resilience of water resources (EC 2012).
Depending on the level of development, for 2015, Table 1 contains data on water resources. It is noticed that, among the surface waters, Jiu hydrographic basin has the highest flow of 2,109 million m^3 / year.

Table 1. Water resources depending on the degree of amenity

Water sources/ Hydrographic basin	**million m^3 / year**
Total	38346
Surface waters	33679
Inland rivers	13679
Tisa	256
Someş	715
Crişuri	395
Mureş	1,044
Banat Space	608
Jiu	2,109
Olt	1,682
Vedea	40
Argeş	1,672
Ialomiţa	430
Siret	1,956
Prut	726
Other basins	2,046
The Danube	20000
Underground waters	4667

Source: Authors' elaboration based on National Institute of Statistics (NSI) 2017 data

Certain activities may contribute to adverse effects on water status. Climate change and land use have such negative effects. Negative influences on water status also arise through energy production, industry, agriculture and tourism.
However, water, through natural retention measures, contributes to limiting the negative effects of drought and floods. Water transfers or desalination have a high impact on the environment. Thus, measures for treating wastewater or industrial wastewater make reuse of water applicable to both irrigation and industrial purposes.
The assessment of surface water quality involves monitoring the hydro morphological, physicochemical biological parameters of the priority pollutants as well as other pollutants discharged in significant quantities. According to the regulations, the 5 quality classes are the following: I (very good condition), II (good condition), III (moderate), IV (weak) and V (poor).
The following table presents the comparative situation (1995-2015) of the length (km) of the main river basins.

Table 2. Comparative situation of the main river basins

River basins	1995	2015
Tisa	467	1294
Somes	1602	3169
Crisuri	1093	1926
Mures	2402	5124
Banat Space	1241	2815
Jiu	944	2141
Olt	1567	3539
Vedea	875	1101
Arges	2221	2257
Ialomita	1193	1371
Siret	4135	5439
Prut	1655	3492
Dunărea	1903	2491
Litoral	69	349
Total	21367	37111

Source: Authors' elaboration based on NSI 2017 data

It is noted that in 1995, the Siret Basin had 4135 km, and the Mures Basin had 2402 km. Compared to 1995, the situation remains in 2015. However, in 2015 there are also increases for other basins (Litoral, Jiu, Banat Area).
From the point of view of surface water quality, the following table presents the comparative situation (1995-2015) for hydrographic basins with the highest lengths in 2015, as well as correspondence with the respective quality classes.

Table 3. Comparative situation for hydrographic basins with the largest lengths

	Siret		Mureș		Olt		Prut	
	1995	2015	1995	2015	1995	2015	1995	2015
Total lengths	4135	5439	2402	5124	1567	3539	1655	3492
Category I	2464	-	1073	-	543	-	584	-
Category II	776	3801	713	3457	582	2072	425	1322
Category III	235	1638	163	1659	264	1287	335	2062
Category IV	-	-	-	-	-	161	-	108
Category V	-	-	-	8	-	19	-	-
Above 3rd category limits	660	-	453	-	178	-	311	-

Source: Authors' elaboration based on NSI 2017 data

It is noticed that, compared to 1995, in 2015 we no longer find the classification in the first grade (very good condition). For the first three hydrographic basins, it is found that the majority is the classification in the quality class II (good condition). For the Prut River Basin, the majority is the grade III (moderate) class.

Distribution of drinking water

For areas related to water quality and nature protection, European Union legislation includes provisions requiring high levels of protection (EC 2016b).
At the same time, the EU's environmental policy also covers the protection of water resources, aquatic ecosystems and the water we drink, as well as bathing water. This approach is foreseen in the Seventh Environment Action Program (the framework agreed for EU environmental policy by 2020) (EC 2016a).

In the field of water, the European Union's environmental policies aim to achieve a good environmental status for inland surface waters, transitional waters, coastal waters and groundwater. The regulations on drinking water, bathing water and urban wastewater monitor the pollution caused by nitrates, industrial emissions, pesticides and persistent organic pollutants. The importance of sustainable water management is also addressed in the EU Strategy on Adaptation to Climate Change. Thus, in order to achieve sustainable water management, account must be taken of the impact of climate change. Increasing the efficiency of water resources, by improving the conditions for its reuse, can be achieved by moving to the circular economy.
Inadequate water supply, sanitation and hygiene are the causes of various diseases that affect the health of members of any community. Food security is affected both by the lack of water resources and the poor quality of water. They exert a negative influence on how people choose their livelihoods, but also on educational opportunities (EC 2014).

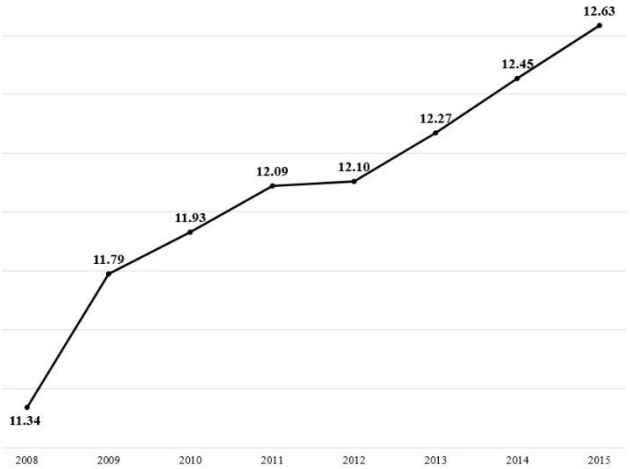

Figure 1. Evolution of the population served by the public water supply system
Source: Authors' elaboration based on NSI 2017 data

Water supply is considered to be a service of general interest. Thus, water resources must be protected and defended. They cannot be classified as commercial goods.
The provisions of the Directive establishing a Community Water Policy Framework can only be successful through cooperative and coherent community action (EP 2000).
Supplying the population with drinking water is guaranteed by the good quality of water resources. Thus, the protection of water resources promotes the sustainable use of water.
Worldwide, it is noted that mankind faces the danger of lack of water resources, but also the degradation of the quality of these water resources.
The Fig. 1 shows the evolution of the population served by the public water supply system, for the period 2008-2015 (million people).
There is a continuous increase in the number of people who have access to the public water supply system.

According to the data presented on the NIS website, the highest increases are registered in the following counties: Ilfov (+ 43.30%), Dambovița (+60.22%), Iași (+51.22%), Gorj (+50.01%), Salaj (+31.63%). Even if the national increase was 11.45%, there are counties where the number of people served by the public water supply system has decreased. These counties are the following: Braila (-8.62%), Dolj (-7.44%), Botosani (-1.94%), Vaslui (-1.80%).
The following figure (Fig. 2) shows the evolution of the amount of drinking water distributed to consumers in 2000-2015 (thousands of cubic meters).

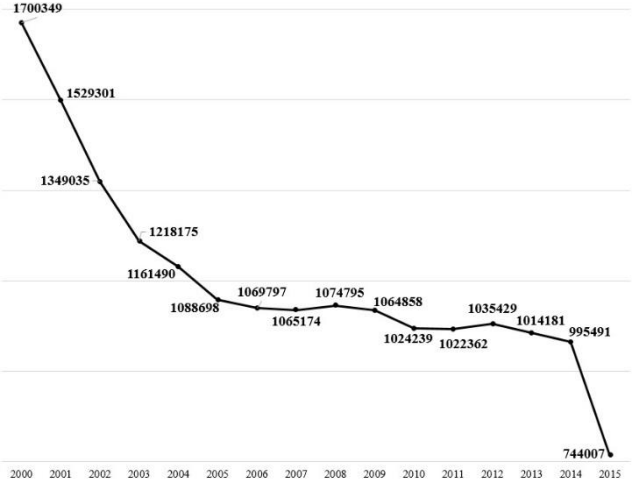

Figure 2. Evolution of the amount of drinking water distributed to consumers
Source: Authors' elaboration based on NSI 2017 data

There is a steady decrease in the amount of drinking water distributed. Thus, as compared to 2000, a quantity of 56.24% was distributed in 2015.
Although this decrease is observed, as compared to 2000, in 2015 the quantity of drinking water distributed for household use in the total quantity distributed increased as shown in the following figure (%) (Fig. 3).
According to the data published on the NIS site, at county level, the counties where the share of household drinking water has increased is: Alba (+39.48%), Botosani (+36.37%), Giurgiu (+29.54%), Bistrita- Nasaud (+25.73%), Suceava (+25.51%). Also, the counties where the share of domestic drinking water dropped were: Valcea (-12.05%), Dambovița (-10.60%), Sălaj (-9.53%), Covasna (-9.39%), Argeș (-8.84%).

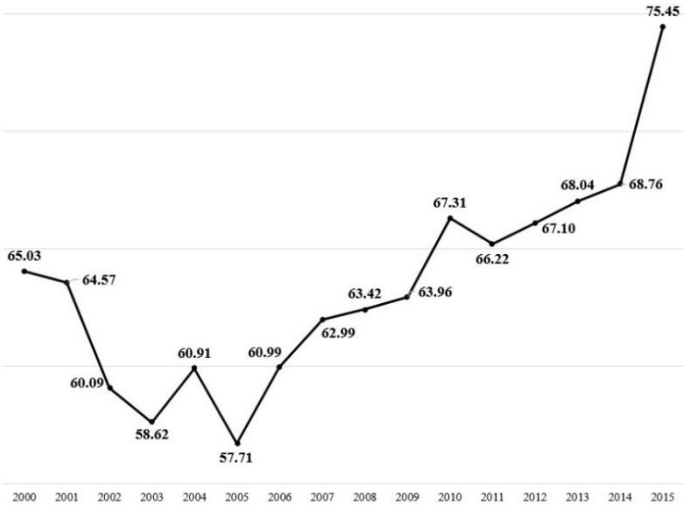

Figure 3. Evolution of the amount of drinking water distributed for household use out of the total quantity distributed
Source: Authors' elaboration based on NSI 2017 data

Conclusions

Climate change can help reduce water and food resources. This could contribute to triggering regional conflicts, hunger and refugee flows (EC 2014). Due to population growth in the coming years, global demand for water will increase. The manifestation of this pressure can be amplified by climate change (EC 2017a).

At national level, as compared to 1995, in 2015, the waters of the main four hydrographic basins (Siret, Mureș, Olt and Prut) are no longer in Class I (very good condition), but in Class II (good condition), respectively in the quality class III (moderate state).

In recent years, there has been a steady increase in the number of people who have access to the public water supply system. However, the amount of drinking water distributed decreases.

Access to clean water, clean cooking, education and healthcare, job creation and support for local businesses are activities that need energy. Climate change disproportionately affects the poor (EC 2017b). Thus, inclusive growth and, at the same time, limiting climate change can be achieved by investing in sustainable energy. In this way, affordable, modern, reliable and sustainable energy services can be based on renewable energy.

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