WATER AND FOOD INSECURITY

Ciprian Beniamin Benea
Department of International Business, Faculty of Economic Sciences, University of Oradea, Oradea, Romania
c_benea@yahoo.com

Abstract: *Water and food are – along air – the most important things for human life. Even human health depends in a crucial manner on air, water and food. Since ancient times, philosophers analyzed the importance of these elements; Aristotle recalled that cities must have access to fresh air and clean water, in order to have a healthy population. Furthermore, they are interconnected; reduced water availability means poorer harvests. In this century humankind will face very complex phenomena, all reflecting their effects upon water and food. Climate changes, coupled with rising world population and urbanization, would amplify the vulnerability of many countries in the world. Haushofer recalled that a high urbanization degree brings a high geopolitical risk from military point of view; and the world of the future will have to handle all this complex issues with the greatest proportion of urbanized population in history. In this context, the first part of the paper is focused on problems menacing the world and their possible evolution, while the second is dedicated on possible solutions, mentioning the Romania's capacity to become an agricultural power and a political stabilizer in region due to her potential for food production. As climate changes – overlapping rising population's number, rising urbanization concentration and changing lifestyles in developing countries – will make humankind more vulnerable to extreme weather events, water, food and energy will come close to the center of domestic political agenda; anyway all these three elements are interrelated. A water crisis is an energy crisis because all types of energy are based directly or indirectly on water, while an energy crisis metamorphoses instantly in a food crises. These three elements are already moving towards central position in numerous countries' foreign policy agenda. I call here only the case of South Korean state, which is in searching for access to land (and water) in Madagascar, at a very large scale. In this context, Romania's food potential, doubled by its good position in water resources availability, could transform it in a regional stabilizer, changing its current second-rank position towards a more pivotal role. The exploitation in a sustainable manner of Romania's potential for self-sufficiency in water and food areas will bring welfare for its citizens and stability in its geographical region, transforming it in a state with a better position in international relations.*

Keywords: *agriculture; climate change; geopolitics; population; Romania; welfare*

JEL Classification: *H0; I3; R0.*

Introduction

Life is impossible without water. Furthermore, health cannot be separated by water's quality. Since ancient times it has been reckoned that water, together with food and air, are the most important elements which influences human well-being and health. Aristotle mentioned that it is of crucial importance for a community to have access to

healthy water and fresh air (Aristotel, 2001). Things which we use most influence in the greatest measure our health; and air, food and water fit perfectly this category.
The paper intends to signal the problems humankind confronts with, and especially what menaces will come upon in a not very distant future. Water is connected to everything. In this perspective, rising population, industrialization, modern agriculture and sewages, contribute all, to a fast paced water degradation; as a matter of fact, this has brought to half of the aquatic ecosystems biodiversity's disappearance since 1975, as mentioned in 2005 in the Millennium Ecosystem Assessment.
Furthermore, during the 20-th century the world faced a dramatic rise in global population, industrialization, and urbanization. These put pressure upon water resources *directly*, since agricultural output and food industry have required more and more water, and *indirectly*, because urbanization and industrialization coupled with a modern lifestyle, depend on more energy and electricity. Yet, humankind faces the most complex problem in its history, climate change, which will create more pressure on already scarce resources: water and arable land. The flow of the rivers serving as life columns for the most populous countries is already falling, due to global warming; their rising population, coupled with poorer vital resources could trigger major geopolitical shifts, with global implications, especially if they come together with water migrants.
Already in 2008 the UN Secretary-General Ban Ki-moon warned at the World Economic Forum, in Davos, that stress on water resources was a destabilizing factor around the world, from Darfur to the USA, Columbia to South Korea.
As water is connected to everything, and food is about survival, the objective of paper is to highlight the menaces lurking humankind, due to food and water crisis in a world which stands to have some 9 billion people three decades from now. The scope of paper has to do with water and food crisis largely, but it hints upon a more close reality Romania faces, too.
Romania's present situation is a vulnerable one, due to its food import dependence; while water availability is not a problem inside the Carpathian range and in the Moldavian hills, outside these areas water could become a problem in a not a very distant future, and as a consequence – in climate changes context – agricultural land there could reduce its productivity.
Taking account of these, the main objective of paper is to militate for a renaissance of Romanian peasantry, in a modern context, which could be a solution for a national revival, and for transforming Romania in a net food exporter using its well-known natural potential. And this is inevitably connected to a greater internal stability, a key aspect for the possibility of playing active and positive roles on international arena by the Romanian *state*. A stronger and rational agriculture based on natural capital conservation, could be a sustainable solution for both Romania, and for other countries which will confront food crises in the future. Its stabilizing role will be easy identified in this situation.

Water and food insecurity

When I first heard about Haushofer and how urbanization coupled with water contamination or stopping its running into a city can bring total collapse of that city, it was in the context of geopolitical studies which I had started 15 years ago; in his book "*De la geopolitique*" the geographer Haushofer (1986) cites a warning published in "*Journal du Geneve*" (17/10/1939), presenting in a logical manner the

way Warsaw suffered because of its numerous population and water's flowing interruption into it, by German aviation. In a wider geopolitical analysis, I focused my researches upon the role big dams could play in regional geopolitics and water transportation, connected to water management of an international river; here the case study centred upon Iron Gate System on Danube. My researches went further to include hydro-politics and water conflicts, with Elhance's book as a cornerstone presenting 6 international rives systems with their peculiarities (Elhance, 1999).

Climate change brings with it higher complexity to my research framework; this coupled with rising global population and urbanization, as presented by Goldstone in CFR's (*Foreign Affairs,* 201: 31-43) doubled by modern lifestyle spreading across much of present day developing countries, will put water availability under great stress. Water paucity could bring intrastate civil strife or even interstate conflicts, as presented by Chellaney (2013). Water, even if we regard it as a calm natural resource, has been in fact involved in 367 conflicts, between 3000 BC and 2015, as mentioned by Pacific Institute's site, coordinated by the world reputed scientist, Peter Gleick. Furthermore, Shiva (2016) puts water, food and citizens' interests face to face with those of multinational corporations, underscoring problems which a score of developing countries – especially India, Bangladesh, South American countries – have faced due to land and water overexploitation by private interests. Yet Solomon (2010) is for marketing of water, arguing that in this "age of scarcity" is important to trust de market efficiency; anyway such a standing hardly stands if we regard water as a common, and not as a marketable commodity.

But let numbers speak alone: nowadays some one billion people still lack access to minimally safe drinking water, and over 2.6 billion live without proper sanitation, a critical element for children's survival (Nickum, 2010). This is connected to the fact that during the 20-th century the world faced a dramatic rise in global population by a factor of 3.8 times, in water use by 9, in irrigated area by 6.8, in fertilizers use by 342 (Chellaney, 2013). A key signal of impending water crisis is that global water consumption has grown with more than double the rate of population growth in the last hundred years; from some 770 billion cubic meters/year (1900) to 3840 billion cubic meters/year (2000), it is expected to hit the dangerous threshold of 5000 billion cubic meters/year in 2025 (Chellaney 2013).

Connecting water with food, the world's growing middle class is orienting toward consuming food that requires more water: it is noteworthy to be mentioned that it takes up to 75 times as much water to produce one kg of beef as it does to produce one of wheat. Nowadays, a rapidly expanding middle class eats more meat, while seeking high water consuming devices for home comfort. And it takes 2400 liters of water to produce just one hamburger patty (Chellaney 2013) while for feeding an adult with a purely vegetarian diet, it would be enough just 712 liters of water/day/adult to produce the needed food (Chellaney 2013).

Changing lifestyle could be a viable solution in this context, as meat consumption means more water needed for food production, while lower quantity of meat would contribute to water stress' amelioration.

In this point there could be mentioned that water stress is defined as per capita availability below 1700 cubic meters/year, while water scarcity is found where the number goes below 1000 cubic meters/yearly per capita. When water availability goes under 2000 cubic meters/yearly per capita, this fact could act as a constraint upon wide socio-economic development, and environmental protection. Countries filling this category are South Korea, Belgium, South Africa, and India; while the

constraints are very severe upon countries which enter below the 1000 cubic meters/capita/yearly threshold (Algeria, Tunisia, Jordan, Cyprus, Kenya, Maldives, and Rwanda).

Food and agriculture depend directly and in a crucial manner upon access to fresh water. Some 70% of water which humankind takes from lakes, rivers, and underground reservoirs is used for irrigating crops. Already, few months, each year, up to 25% of the quantity water of the greatest rivers on Earth doesn't arrive at sea, because of over-exploitation of fresh water resources used for food production. Some 7000 cubic kilometres of fresh water are used each year for food production, and rising population's number will demand even more food, and consequently water (Wijkman and Rockstrom, 2013). Put in just a few words, *modern agriculture is the biggest fresh water consumer*. And despite all modern works and engineering activities connected to water since 1950s', over half of the countries are classified by the United Nations as lacking sufficient water resources needed for a rapid expansion of agricultural and industrial development, in a sustainable manner (Chellaney, 2013).

Industrial agriculture has determined food production to use methods which diminishes the soils moisture, and as a direct consequence, the demand for water has steady increased (Shiva, 2016). More, industrial farming and agriculture harm seas and rivers, impairing groundwater aquifers, too (Shiva, 2016). Soil erosion is another direct consequence connected to bad irrigation management. Salt accumulation due to over-irrigation doubled with inadequate drainage create soils salinity, which translates in reduced yields in irrigated farms, while sodic soils becoming uncultivable. Each year there are abandoned about 10 million hectares of cropland due to soil erosion (Pimentel, 2006).

Furthermore, a lot of water is lost in irrigation; following FAO's estimations, this inefficiency of irrigation system translates in a global average of only 45% of water withdrawn reaching crops' roots; and the number is smaller in peculiar geographical areas such Central Asia.

In this context it is noteworthy to be mentioned that watercourses often cross over states' boundaries: there are 276 *transnational* river and lake basins crossing through the territories of 148 countries, together representing 60% of all river flows in the world (Sadoff and Grey, 2005). Close to half of dry surface of the Earth is covered by transnational river's basins while in sub-Saharan Africa almost all surface water flow is transnational.

As was already noted, already humankind faces water shortages, and to lessen them, a solution can be given by *dam reservoirs* built with the aim to store water during wet season and release it during dry periods. As the water footprint is already 1385 cubic meters/year/capita (Chellaney, 2013), the prospects of the year 2025 remember us that almost 70% of world population will live in water stress. And world population is rising with 1% yearly while natural capital is receding with 1% yearly (Georgescu, 2012), while 2/3 of the world ecosystems are utilized in an unsustainable manner.

Putting together all these, there could be easy observed that rising temperature, weather patterns volatility, longer and more severe droughts, and massive rainfall – due to climate changes – and water diminishing quality and quantity due to human lifestyle connected to industrialization, urbanization, rising population, unsustainable irrigation, doubled by regional and global environmental changing, coupled with deforestation, desertification or losing nutritive qualities of the land due to irrational

farming, will bring great stress in a world which already registered in the last decade rising food prices, and fresh water availability is receding. The poorest societies will be hit the hardest. And the spillover effects will be connected to massive social movements, civil strife, migration, interstate tensions, even wars. If we look at these things, and on Arab Spring, or Syrian war, the violent events which have taken place in this area have to do in some way with food prices and water stress (especially in Syria and Sudan). Taking account of the possible evolution of humankind, this scenario could be multiplied in the future in other parts of the world; which means that our future could be far from the much desired tranquillity. The character of possible future wars induced by scarce water and food resources could contain irrational elements, being generated not only by conquering motivations, but involving survival; as a result, they could be harder to be contained, and to be solved. The biggest attention should be paid to resources upon which the survival of poorest people is dependent: water, forests, and fisheries. Water nationalism coupled with dams racing especially in international river basins is a very possible scenario, with all tensions they could generate; furthermore, environmental problems could create social effects which would augment the risks of violent conflicts.

In this global challenging environment, there are peculiar geographical areas which, due to their location and peculiarities, could play a stabilizing role in a more populated, and more waterless world. There are global players such as Canada, Russian Federation and Brazil which have plenty of water resources and vast arable landmass, but there could be mentioned smaller players, which could play an active and beneficial regional role, too.

Romania *could* fit this category, but its past and present situation is far from its real potential. Even Romania belongs to developed countries' club, it has great security vulnerabilities brought by dependence on foreign imported food; as Georgescu (2012) cites from the Japanese Bank Nomura's data, which places Romania on the 12-th place in the world regarding the danger of famine, there is no doubt that this is a matter of national security! Having one of the best soils in Europe, it imports 80% of agricultural products, some of them having a dubious quality, with hidden dangers; in this bad example, food security and safety become unfortunately, interconnected. But this weakness could be transformed in advantage: sustainable agriculture, better water management and a more enlightened administration of forests could become the pillars for Romania's future sustainable development, as mentioned by Hera and Giurgiu (in Maliţa and Georgescu, 2010: 81-108).

Even Romania's natural resources – especially forests – have been savagely exploited in the last two decades, her natural potential still lays underexploited. Few European countries have wild forests as Romania still has; and this is a key element for Romania in playing the role of genetic multiplier for other countries which had already lost their biodiversity due to chemical fertilizers, pesticides, insecticides, and modern lifestyle. Later in this paper there could be seen the ways Romania could explore in order to gain a better regional position.

Water and agriculture are directly menaced by irrational and greedy deforestation; and as forests, water conservation, and bio-food are connected, their sustainable exploitation could be one important element for resurrecting Romania's economy and self-esteem.

As over 2/5 of Romania population lives in countryside, with a big part of it leaving close to subsistence economy, while agriculture contribution to national production is lower than 10%, this appears as a weakness.

Yet exactly this weakness could be transformed in a chance. Even peasantry represented the most exploited group during history, and peasant could be regarded by some people as a downtrodden man, a more detailed analysis can prove that in Romania's case he could become the pillar for a sustainable development. Romanians' history and their resilience have directly been connected and have been influenced by village, as it is monumentally presented by Blaga (2011) in Mioritic Space, while Motru (1998) praised Romanian peasant's perseverance in agricultural work; taking account of this spectacular dowry and of the fact that a great part of Romanian city dwellers have *direct* connections or relatives in villages, it is imperative that Romanian peasantry be channelized towards agricultural productive work, as it is demanded by a modern state necessities. Modernization and traditions could go hand in hand. Economic revival, based on a better social role of peasantry – conscious about its inheritance – could become a stable stone for a healthy democracy.

In a world which hasn't yet overcome the global financial crisis, and which in future, would be hunted by vital resources crises, Romania could play a stabilizing role regionally; but only *if it does* make well its job domestically. This has to do with sustainable development, forests, water, and land conservation, aiming at transforming it from a food importing country into a healthy agricultural leader and a net food exporter in a hungrier and thirstier world. All what is needed is a decisive leap moving the agriculture from its subsistence peculiarities toward a sustainable perspective. Weak part of Romanian society could promote its base for future development, for its food independence, and more, for moving it from a marginal position toward a more important one on the food market, and as a result, on the international political arena.

This challenging action would involve the change of the state's role in the private/public equation. It should come from the market's margins into a more central position. I want to be clear: I do not mean at all a more authoritarian position for state vis-à-vis market and society, but a state invested with higher authority. Romanian state must become responsible, and for this to happen, it must be representative. If a waterless state such as Singapore does it well, why Romania could not?

If successful in sustainable agricultural development, land, water, and biodiversity conservation, coupled with better energy efficiency, Romania's experience could bring for it a stabilizing role in region. From a marginal European country it could gain a more central position, which will overlap politically with its geographical location, Romania being a country where great commercial arteries intersect. From a vulnerable and week EU member, it could become a regional stabilizer; even if this could sound unrealistic in nowadays capital dominated world, and given moral and social decay it has been steady facing, Romania's history witnesses that this possibility has to do with its past real experience; it is not a very known fact that Romania has valuable experience in conciliation. There were the cases of middleman played by Bucharest in Vietnam War, Israel-Arab relations, and especially Washington-Beijing historical reconciliation process (Maliţa and Mehedinţu, 2016). Furthermore, it actively and successfully involved in negotiations which facilitated cooperation during the Cold War, on the split river of Danube, among Eastern Warsaw Pact countries, Austria and FRG (belonging to Western camp) and Tito's Yugoslavia (belonging to the non-aligned movement), ending with Iron Gate System's construction, which brought navigation conditions' improvement, and direct benefits in green energy and energy security areas for two riparian

countries: Romania and ex-Yugoslavia. And this experience could be used in situations where other countries share the waters of an international river, whose water they want to share for different purposes, helping them in finding sustainable solutions in negotiations carried on with the aim of dams' construction.

Conclusions

In a world haunted by scarce resource fears and with steady population's rising, humankind should be aware of the fact that nature can do well without man, while other way around is impossible. Already fresh water is a global problem; and it is expected that in 2025 48 countries, reuniting close to 3 billion people will face fresh water stress. Water stress means not only a barrier to further economic development, but food crises and energy crises, too as iterated by Hera (in Maliţa and Georgescu, 2010: 87). Urbanization rate is expected to rise, too. In this context, the paper wants to point to main risks induced by climate changes in the fields of water and food shortages looming over a more populated world, such as social riots, civil clashes, international migration, and even military conflicts, all having great geopolitical implications. But there are hopes in this gloomy scenario; there are countries which can provide hope. Countries with bad exploited or underexploited agricultural land could head toward sustainable agricultural development, helping themselves and others. Romania is a good example for such a case. From a weak part of economy, Romanian agriculture could metamorphose into a locomotive of national sustainable development. Romanian people could live in a better, greener, and *healthier* society, while Romania state's importance on international arena would change for a better position. Based on a healthy and green agriculture, Romanian industry and innovation would register a good evolution. Romania's past experience and expertise is a proof that it can be done.

There is needed an *educated* population for this to become reality; if each Romanian understands Romania's potential for healthy food production, and regards water as a very precious resource, and use it accordingly, a sustainable economic development in this country will become reality. Education has to do with town dwellers, too: if they become conscious about consuming organic food produced in Romanian villages, their well-being would be improved, helping in the same time domestic food producers. This economic national network would make stronger the Romanian social network, bringing with it a more sustainable political framework. There is needed a new attitude having as central element love for natural capital and care for its sustainable exploitation. Greed or irrational exploitation of natural capital should be changed with rationality and equilibrium. This cultural resuscitation will bring life-style changes, for the better of all Romanians, and for other countries which are not so lucky in having such a natural capital, and which will suffer more than now from thirsty and famine in a not a very distant future.

References

1. Aristotel (2001) *Politica*, Paideia, Bucureşti.
2. Blaga, L. (2011) *Trilogia culturii*. Humanitas, Bucureşti.
3. Chellaney, B. (2013) *Water, Peace, and War. Confronting the Global Water Crisis*, Rowman & Littlefield Publishers, Inc., Lanham, Boulder, New York, Toronto, Plymouth UK.

4. Elhance, A.P. (1999) *Hydropolitics in the Third World. Conflict and Cooperation in International River Basins*, USIP, Washington DC.
5. Georgescu, C. (2012) *Pentru un ideal comun*, Compania, Bucureşti.
6. Goldstone, J.A. (2010) "The New Population Bomb. The Four Megatrends that Will Change the World", *Foreign Affairs*, Vol. 89, No. 1, January/February, pp. 31-43.
7. Haushofer, K.E. (1986) *De la geopolitique*, Fayard, Paris.
8. Maliţa. M. and Georgescu, C. (2010) .: *România după criză. Reprofesionalizarea*, IPID, Bucureşti.
9. Maliţa, M. şi Mehedinţu, A. (2016) *Gong formidabil. Ecourile unor evoluţii remarcabile în China de azi*, Semne, Bucureşti.
10. Motru, C.R. (1998) *Psihologia poporului român*, Paideia, Bucureşti.
11. Nickum, J.E. (2010) "Hydraulic Pressures. Into the Age of Water Scarcity?", *Foreign Affairs*, Vol. 89, No. 5, September/October, pp. 130-137.
12. Pimentel, D. (2006) "Soil Erosion: A Food and Environmental Threat", *Environment, Development, and Sustainability*, Vol. 8, No. 1, p. 119.
13. Sadoff, C.W. and Grey, D. (2005) "Cooperation on International Rivers: A Continuum for Securing and Sharing Benefits", *Water International*, Vol. 30, No. 4, pp. 420-427.
14. Shiva, V. (2016) *Water Wars. Privatization, Pollution, and Profit*, North Atlantic Books, Berkeley.
15. Solomon, S. (2010) *Water. The Epic Struggle for Wealth, Power, and Civilization*, Harper Collins, New York.
16. Wijkman, A. and Rockstrom, J. (2013) *Falimentarea Naturii. Negarea limitelor planetare*, Compania, Bucureşti.
17. ***Millennium Ecosystem Assessment (2005) *Ecosystems and Human Wellbeing: A Framework for Assessment*,.Island Press, Washington DC.

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