

Geopolitical context of the issues of providing water resources

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Abstract

The paper deals with geopolitical contexts of the growing demand for water resources in a global level. The fact of increasing water consumption is caused by number of reasons, e.g. growing population, development of agricultural production, rise of towns, etc. Therefore it is possible to expect the increasing number and the growing extent of areas where the lack of water will cause the emergence of conflicts. Dealing with the problem will become an important challenge of the future.

Key words

geopolitics, resource wars, water-related conflicts, water resources

Whisky is for drinking, water is for fighting over.

Mark Twain

The most frequent reasons for armed conflicts between states but also inside them are generally considered as ethnic, racial and religious differences, border and territorial disputes or power and political rivalry. Their control over raw material resources has played an essential role in many conflicts although this reason was not apparently dominant while the conflict was arising.

In connection with the anticipated development it can be expected that especially this factor will play an increasingly important role in the genesis of conflict situations in the world. Growing demand for raw materials will undoubtedly cause a change in behaviour of the power and political entities (especially countries) at the international level. It relates to the fact that more countries share majority of raw material resources. It may be assumed that in case a country exhausts resources in its own territory it will look for alternatives apart from its territory, i.e. in the territory of another country. Such solution may face resistance, which in case of further existing animosities will increase a mutual conflict potential. In 1980

M. T. Klare used a term "resource wars" in his homonymous work and the term was introduced in the terminology of international relations.

One of the key material resources is freshwater considered as a non-renewable resource. The reason is especially its scarce amount, growing consumption and uneven distribution of water resources on our planet. Therefore, it may be expected that one of the main reasons to create tension between countries in the nearest future will be control over freshwater supply. Even today there are disputes over water behind many armed conflicts, e.g. the Arab-Israeli conflict. For several decades experts from various fields have been pointing out a risk of causing many problems in connection with control over water supply.

Water has been always a strategic resource that influences the existence of human societies. Every country, if it wants to survive, must provide its population with enough water. Water is a condition for development of population, agricultural production and industrial output, and last but not least, hygienic and epidemiological stability. Thus freshwater resources are a limiting factor of civilisation development and the future trend will undoubtedly cause that they will become one of the greatest national wealth of the countries that will use them.

M. T. Klare (2002) compares water to crude oil. In his opinion they are both indispensable for the full scale of human activities, their resources are depletable, and can be replaced only with considerable and costly effort. Additionally, with growing population their consumption increases, and simultaneously the concern that their supply in the near future will be exhausted grows. Another common feature is that both crude oil and freshwater resources lying underground cross borders and develop a conflict potential. There is a well-known conflict between Saudi Arabia and Jordan over the al-Disi aquifer.

In the future, creation of conflicts may be linked with using the deposits of underground waters that are located in disregard of borders of countries. Using underground water supply in arid areas needs relatively high investment; therefore, unlike crude oil, there have not been any bigger conflicts over the resources. A wide-ranging programme for their use that Libya started to implement may, however, create a precedent since the deposits are non-renewable and the neighbouring countries such as Egypt, Chad, Nigeria and Sudan may be harmed.

In this respect it is necessary to mention that a large part of the available freshwater resources is situated in rivers where many of them cross borders of countries. Such countries are interconnected by using their water potential. The countries that lie up the stream may influence quality and especially flow rate of water, which may lead to some harm of

neighbouring countries or blackmailing in case of disputes. In the past years there have been several conflict situations that were connected with the issue. Especially, it applies to the countries lying on the lower reaches of great rivers, mainly the ones of which population is growing fast. In this context Egypt is especially vulnerable. Building dams in Turkey and Syria on the upper reaches of the Euphrates reduced the flow rate of the river in Iraq, which led to tension between the countries.

Today the number of such conflicts is relatively high. P. Samson and B. Charrier (1997) wrote about conflicts in the river basins of the Chobe, Komati, Nile, Okavango, Senegal and Volta in Africa, the Ganges, Brahmaputra, Jordan, Mekong, Euphrates and Tigris in Asia, the Danube and Rhone in Europe, the Columbia and Rio Grande in North America and the Cenepa and Pilcomayo in South America. The list has to be extended by the river basins of the Indus, Syrdarja, Amudarja and Parana. Obviously, the conflict potential of the countries varies. The highest one is in the river basins of the Jordan, Tigris and Euphrates, Indus and Nile since apart from the issue of water distribution among the individual countries there are other significant contradictions that have burdened relations in the region for several decades.

Conflict potential is also hidden in lakes that are shared by several countries. There is a well-known issue of the Caspian Sea, however, since that is a reservoir of salt water, the issue is not about the distribution of water but about crude oil and gas deposits. The disputes that relate to water resources include: Chad lake, Malawi, Ukerewe, Tanganyika, Titicaca and other lakes.

The current situation is documented by many statistical figures that were published in professional publications that we used in our contribution (See e.g. Moldan 1995, Situation of water resources (Stav vodních zdrojů) 2003, Krpec 2004, Kolářová 2005, Nátr 2005 etc.). We are going to mention only the ones that are essential for the focus of our contribution. Particularly, it is necessary to realize that out of the total volume of water on our planet (1,386,000 thousand km³) freshwater forms only 2.5% (35,029 thousand km³). Major part of that is bound, particularly, in the ice and permanent snow cover. Usable percentage of freshwater resources amounts to 200,000 km³, i.e. less than one per cent of the entire volume of freshwater on Earth and only 0.01% of water on our planet.

Uneven distribution of freshwater resources has a considerable influence on conflict creation. Statistical figures state that approximately one third of the world population lives in the countries that suffer from a moderate or severe shortage of water (where water consumption is higher than 10% of renewable resources). The differences in approach and

consumption of freshwater are very high at the global level. The population of the developed countries consumes on average 500 to 800 litres of water daily per capita, whereas in the developing countries it amounts only from 60 to 150 litres. Lack of drinking water is at a very critical level in the region of Near East and Northern Africa, where about 5% of the world population lives, however, there is only 1% of the world drinking water supply available.

Future development poses a certain threat. While ten years ago 40% of the population of our planet suffered from water shortage in 80 countries, this percentage will increase in several years to two thirds. In 2003 the world population used 54% of freshwater resources available, by 2025 the percentage will increase to 70%.

In terms of freshwater consumption in the individual spheres of human activities, most water is used in agriculture (69%), then industry (23%) and households (8%). However, that is only a global view – the percentage is different in the individual regions. In arid areas where agricultural output depends on irrigation the percentage of freshwater consumption is significantly higher. In contrast to that there is a more significant percentage in industry or households in the developed countries.

According to *Water Conflict Chronology*, compiled by P. H. Gleick (2006) that covers the time period from ancient times until 2006, first conflicts caused by rivalry over control of freshwater resources arose in ancient times, particularly, in the area of Near East. Altogether the chronology includes over 170 conflict situations. With respect to those facts it is clear that control over water resources as a reason for conflicts is not isolated.

A worrying fact is that in the beginning of the 21st century, i.e. after 2000, many water-related conflicts remain but several dozens have arisen. From the geographical point of view we can set aside many problem regions (especially Near East, Northern Africa and South Asia) with a high conflict potential. Particularly in these regions demand for freshwater resources exceeds supply. The individual countries are mutually sensitive about using freshwater and excessive consumption leads to conflicts that pose a threat of wars.

Review of reasons for creation of conflicts over water resources indicates that their probability may grow in the future. That is linked with fast population growth in problem regions, which will cause that volume of water per capita will be decreasing. Growing population brings pressure on agricultural production that is dependent on irrigation by freshwater to a large extent in the countries. This fact may increase tension between the countries in the regions where freshwater supplies concentrate in the limited number of great rivers (the Nile river basin, especially, in the context of Egypt, Sudan and Ethiopia, the river

basin of the Euphrates and Tigris in the context of Iraq, Syria and Turkey, the river basin of the Indus in the context of India and Pakistan).

Global climate change and its consequences gradually and in an increasingly high amount contribute to the current factors that influence the creation of water-related conflicts. It is anticipated that increase in global temperature will lead to changes in distribution of precipitation on Earth, where the most endangered areas will also be the current problem regions. It is anticipated that the differences between dry and wet regions will become more dramatic. Higher evaporation from rivers, channels and reservoirs will worsen water supply in terms of quality (salination) and quantity. A shortfall in precipitation will likely cause not only an escalation of problems about providing water but also a decrease in agricultural production, famine and mass migrations. That will be linked with an increase in tension in problem regions, which might result in wars with the objective to control water resources.

It is necessary to realize that every freshwater-related conflict presents a complex set of factors. On one hand it is a problem of providing quality of water (influenced by local natural conditions and human activities, in particular, housing, industrial and agricultural production with their negative effects, especially, in the form of waste waters), as well as quantity (influenced by population development and distribution of water resources), while quality and quantity is influenced by global environmental changes. In combination with political animosities in the form of territorial, ethnic and religious disputes, nationalism and power and political rivalry, a conflict over water resources arises (See Samson and Charrier 1997).

Classification of water-related conflicts is a relatively difficult issue. P. Gleick, who has been dealing with the issue for many years, states the following types of conflicts:

1. Control of water resources where (state and non-state actors): where water supplies or access to water is at the root of tensions.
2. Water as a military tool (state actors): where water resources, or water systems themselves, are used by a nation or state as a weapon during a military action.
3. Water as a political tool (state and non-state actors): where water resources, or water systems themselves, are used by a nation, state, or non-state actor for a political goal.
4. Terrorism (non-state actors): where water resources, or water systems, are either targets or tools of violence or coercion by non-state actors.
5. Military target (state actors): where water resource systems are targets of military actions by nations or states.

6. Development disputes (state and non-state actors): where water resources or water systems are a major source of contention and dispute in the context of economic and social development (See Gleick 2006).

Many events can fall into more than one category. It is apparent that in the future the number of conflicts, especially, of the first, third, forth and sixth category will increase. It is linked with scarce water resources but also with the growth of terrorism and unresolved conflict situations in many parts of the world.

Therefore, it is necessary to adapt geopolitical thinking to the current situation in distribution of raw materials and put together “a new geopolitical atlas of the world”. A geopolitical “map” analysing international relations through a prism of distribution of freshwater resources. It must come out especially of their spatial distribution in the context of population density, intensity of human activities (mainly agriculture and industry), level of water consumption, as well as real political borders and power potential of states. The analysis will allow to anticipate creation of conflicts and also to look for resolution possibilities. Simultaneously it is necessary to use any experience in the development of conflict situations in the past, in which a problem of providing drinking water played an important role.

In this respect it is necessary to mention that the experience in the development of conflict situations related to water resources indicates that the geopolitical analysis will have to take into consideration especially the following factors: insufficient local resources, distribution of resources between more states, different power potential of the states and the level of demandingness of approach to alternative freshwater resources (See Gleick 1993). Global climate change also causes that it is very difficult to formulate prognoses dealing with the use and capacity of water resources.

A look at a map indicates that the distribution of human habitation influences access to freshwater resources to a large extent. It is apparent not only in arid regions where population concentrates around big rivers and deposits of underground water. Human habitation is linked with sufficient water supply in other regions of our planet as well. Water-related problems lead to migration of citizens to the regions with sufficient water supply. This phenomenon can undoubtedly increase tension not only at the national but also international level.

However, the population growth will generally build up more pressure on control of material resources, especially, water. In this respect it is necessary to emphasize that the population grows more in the regions where water resources are significantly scarce and the

states that have such regions have a dominant percentage of agriculture in GDP. The system of food output in such regions is based on irrigation of agricultural soil.

In general, agricultural production is significantly conditioned by water resources. However, simultaneously it is necessary to take into consideration different demandingness of its focus in terms of water consumption in the context of its resources. Prevalence of water-demanding crops in the regions with scarce water supply puts considerable pressure on securing water supply and high investment in irrigation systems and building dams. The countries with such nature of agricultural production are, to a large extent, dependent on the rivers that flow to their territory from other states. In this respect there is a solution of the so-called “virtual water”. This solution is based on import of food that is produced with high demand for water consumption from the countries that have abundant water supply. However, that creates a risk of food dependence of the states with scarce freshwater on food import.

While constructing a current geopolitical view on the issue of control of freshwater resources it is necessary to take into account also fast development of industrialization in the developing countries including problem regions. The process runs unrestrainedly and the natural conditions in the areas where industry is located are not taken into consideration. Industrialization is linked with fast development of cities that do not have funds to provide their citizens with basic conditions for living, including drinking water.

In this respect we can point out a fact that long-term good relations among the states in a region create a condition for a non-conflict solution of material problems including the use of freshwater resources. A condition for creation of a conflict situation arises in the regions where relations among the states have been under tension for many years. As it was mentioned above, such regions include northern Africa, Near East and South Asia that are characterized by a deficit of freshwater resources. Water shortage in the individual states may result in armed violence in the future. Therefore, the geopolitical analysis should focus particularly on those regions.

As we have said such analysis has to take into consideration more factors. Behaviour of states plays an important role among them. Experience suggests that the states with scarce water consider war for water resources as a legitimate reason in terms of its security (Klare 2002). They reason that water is indispensable for survival of their (usually growing) population and for the development of national economy. Therefore, it is necessary to secure enough freshwater at all costs. States have fulfilled the role since time immemorial especially in the regions with deficit of water resources (building irrigation systems in Egypt, Mesopotamia and China). Up to the present time many states put a lot of effort into securing

enough water for their population. However, one of the tools to secure water was armed violence as well.

There is a very important fact that many river systems stretch over the areas of more countries. Differences between demarcating states and river basins pose a considerable conflict potential. Although natural borders of states sometimes correspond with the borders of great rivers, in many cases it is not like that. According to an analysis of Oregon State University, 261 river basins of great rivers stretch over the territory of two and more states, covering almost half of the land surface of the earth (See Klare 2002). A total of 145 nations include territory within international river basins. This indicates that the majority of states in the world is interconnected with their neighbours by river resources of freshwater. Disputes over the use of the resources are based on power position of the individual states as well as their military potential.

If we state that many conflicts in the world currently are of national character then it is necessary to point out that the problems of freshwater distribution may cause other conflict situations and intensify armed confrontation. Today the Tamil separatists battle over water resources with the central government in Sri Lanka or farmers in the states of Tamilnadu and Karnataka in South India. Such development is possible also in other states, e.g. there are problems with water supply in the Southwest of the USA.

Another problem that is linked with providing population with freshwater is posed by the so-called environmental refugees. The reason of their migration is a high level of pollution of water resources or desiccation of water resources. With respect to the anticipated development in crisis regions their number may increase, which may destabilize the situation in the target states.

Culminating problems with freshwater resources resulted in attempts at codification of the relevant international law. In 1996 International Law Association (ILA) prepared a document that set out principles of common international law on water resources (See Macháček 2007). Then in 1997 United Nations Convention on the Law of the Non-navigational Uses of International Watercourses was submitted to the General Assembly that acquired only a consultative character. Despite that it is an essential document for behaviour of states when they settle disputes over water resources. According to that a state has full sovereignty over the part of the stream that flows through its territory but must not harm any other states in the river basis. It also stipulates fair use and distribution of waters of a certain resource among the countries that share it, and mutual information availability about interference with its regime and use.

It is clear that solving a problem of using freshwater resources lies not only in the political sphere. However, it can significantly influence human activities in favour of restricting the development of irrigation agriculture, increasing the productivity of water resources, increasing the volume of water supplies, reforms of institutions that are responsible for using water resources but also for improving the international cooperation in river basins stretching over the area of more states.

In conclusion, it is necessary to note that water shortage does not have to stimulate a solely conflict between states. The problem initiates cooperation between them as well. If we again look at the research of Oregon State University that created a database of 1,831 events in 1948 - 2000 related to the issue of freshwater and involved international relations the cooperation prevailed over conflicts (See Ravnborg 2004). With this respect we can say that creation of conflicts is restricted by current international contracts and institutional mechanisms.

Looking for a solution of a problem of freshwater resources lies especially in international cooperation that will be secured also by accepting contractual international documents and establishing international organizations of a regional character. Such coalitions should involve countries whose area reaches the same river basin. However, long-term tension between the states is an obstacle to such cooperation. Therefore, a possibility of cooperation between hostile regimes in the sphere is almost unreal.

Creation of new conflicts and armed confrontations in the future will likely have a different order of reasons from the one so far. Acquiring control over material resources (including water) will be crucial, while other, so far unresolved animosities will only have an adding character. The theory of international relations in cooperation with the results of geopolitical thinking should be prepared for this alternative.

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